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Contents

Swedish Vocational Adult Education in the Wake of Marketisation

Per Andersson*, Karolina Muhrman

*Linköping University, Department of Behavioural Sciences and Learning,
581 83 Linköping, Sweden*

Abstract

Context: This study is about vocational education and training for adults within municipal adult education (MAE). Sweden has a long tradition of adult education, and has one of the world's highest proportions of participants in adult education. The Swedish education system is characterised by extensive marketisation with many private actors, particularly in adult education. The focus of this article is on the enactment of the market orientation in vocational adult education, with the purpose of showing how vocational adult education is organised in different ways in Swedish municipalities and how national adult education policy is enacted in local VET practices.

Methods: The data consist of documents presenting relevant national policies for adult education, in particular on vocational education, and semi-structured interviews with adult education leaders in 20 municipalities.

Findings: The findings show that MAE in Sweden has a clear labour market focus on offering education that corresponds to working life's labour requirements. Most municipalities have a shortage of staff in elderly care and childcare, which is why they offer a large number of training places in these professions. Many immigrants choose these training programmes to get a job. It is also common for municipalities to offer these training programmes in combination with SFI (Swedish for immigrants). This means that MAE fulfils an important function for integration. VET in MAE is offered as school-based training, apprenticeships

*Corresponding author: per.andersson@liu.se

or distance education. Offering VET at a distance makes it possible to provide a wider range of training programmes, and enables people who have difficulties participating in on-site training (due to commitments such as work or young children) to take part. Apprenticeship training provides work experience and often leads to employment. However, a weak interest in apprenticeship training among students and difficulties finding apprenticeship placements are examples of reasons why the number of apprenticeships is often very limited.

Conclusion: Swedish MAE is characterised by flexibility and a broad supply of courses. However, there is a clear focus on certain vocational areas – mainly within the municipal organisation. This gives reason to question whether publicly funded VET for adults should mainly prepare participants for publicly funded labour-market sectors, or whether other sectors could also benefit from newly trained adults. Since vocational training within MAE is of great importance for immigrants' establishment in the labour market, there is a risk that unilateral investments in certain vocations will limit immigrants' career opportunities.

Keywords: Adult Education, Employability, Immigrants, Educational Policy, Vocational Education and Training, VET

1　　Introduction

Sweden has a long tradition of education that is free and accessible to all residents, from preschool to adult education and higher education. The OECD (2020) specifically describes adult education as a key factor in the education system in terms of inclusion and the possibility of lifelong learning, and Sweden has one of the world's highest proportions of participants in adult education. In 2020, 7 percent of the adult population aged 20–64 – or 400,000 students – took part in municipal adult education, which is more than the number of upper secondary school students in Sweden (Swedish National Agency for Education [SNAE], 2021a, 2021b). According to the Swedish Education Act, municipal adult education (MAE) has a three-part assignment to support adults in their learning: For personal development and a strengthened position in society, for the purpose of enabling further studies, and for a strengthened position in working life (Education Act, 2010). The Education Act stipulates that municipal adult education must form a basis for national and regional skills supply for working life. During the last decade, the labour market focus has become more visible in Swedish MAE through the introduction of various government grants that have greatly increased the number of vocational education places. One reason why the number of places has increased is the large number of immigrants who came to Sweden in the 2010s. To establish themselves in the labour market, many immigrants are offered the opportunity (or are encouraged) to study vocational training programmes at MAE (Andersson & Muhrman, 2021b).

In addition to being free and accessible to all residents, the Swedish education system is characterised by extensive marketisation. A large number of external, private actors have established themselves in the education market since the mid-1990s, and besides this external marketisation there is also an internal marketisation with more business-like management of public institutions (Dahlstedt & Fejes, 2019b; Lundahl et al., 2013). There has been a particularly strong trend of marketisation in adult education. A quasi-market has developed where many municipalities choose to contract private providers to organise courses, instead of – or alongside – their internal, public providers (Fejes & Holmqvist, 2019). In 2020, about 50 percent of MAE was organised by publicly funded, independent schools, mainly owned by private companies (SNAE, 2021b). There are also high levels of internal marketisation in MAE, in terms of quality assurance work and competition with other providers or organisers, including public, municipal-owned organisers (Andersson & Muhrman, 2021a; Muhrman & Andersson, 2021). However, regardless of which actor organises education, it is always the municipality that is responsible for its quality and accessibility for citizens.

Swedish MAE has its own curriculum (SNAE, 2017) which is enacted in the local education context within the frameworks (organisation and local policies) established by the municipalities. The focus of this article is on the enactment of the market orientation in vocational adult education, in terms of the organisation of flexible vocational education and training (VET) courses to meet students' needs, the labour-market orientation in the selection of what courses are offered to students, and how VET is employed as a tool for integration of immigrants, for example. These issues are governed by priorities set by both national and local policy decisions. As mentioned above, national policy decisions concerning MAE have increasingly shifted in recent years towards a labour market focus for MAE. However, there is a high degree of freedom within the policy, which means that local political decisions can have a major impact on what is enacted in MAE.

This study is about VET for adults within MAE. The purpose is to show how this form of vocational education is organised in Sweden and the reasons behind the policy enactment that can be seen in the local education context. The data consist of documents presenting relevant national policies for adult education, in particular vocational education, and semi-structured interviews with adult education leaders.

Our article will answer the following research questions:

– How is vocational adult education organised in different ways in Swedish municipalities?

– How is national adult education policy enacted in local VET practices?

2   Context of the Study

In addition to the marketisation, there has also been an extensive decentralisation of Swedish primary and secondary education, including adult education, where the local municipality have the responsibility for education, governed by the national policy (cf. Lundahl et al., 2013). There are 290 autonomous municipalities, who have their own political and administrative organisation, including the educational area. MAE is governed by the Education Act (2010) and the Adult Education Regulation (2011). Regardless of whether the training programmes are arranged by private or municipal providers, it is the municipality that is responsible for all municipal adult education, including general courses corresponding to the curricula for compulsory and upper secondary school, vocational courses at upper secondary level and courses in Swedish for immigrants (SFI). The courses included in MAE at upper secondary level have the same syllabuses as upper secondary school courses. However, the teaching is organised as separate courses or shorter training programmes (course packages) preparing students for a defined vocation, which are 0.5–1.5 years long compared to the three-year upper secondary school programmes (SNAE, 2017).

Adults are eligible to participate in municipal adult education at upper secondary level from the year they turn 20, if they are considered to meet the conditions to pass the courses. The municipalities are obliged to offer all applicants a place on basic courses (corresponding to compulsory school), SFI and courses for university eligibility. However, there is no requirement for the municipality to offer a place to everyone who applies for vocational courses within MAE. In the event that there are more applicants than places for a training programme, those who are considered to have the greatest need for the training shall be given priority. According to the policy documents (Adult Education Regulation, 2011), the supply of courses should be flexible in terms of study pace, distance course options and continuous admission. The municipality must offer all courses in general subjects via the municipality's own organisers, via external organisers or by purchasing study places from other municipalities, but the municipalities have the right to decide for themselves which vocational courses or training programmes to offer. As already mentioned, Swedish MAE is extensive. Among the 400,000 students in MAE in 2020, 107,000 studied at least one vocational course. Sixty percent of all students were women, and the majority had a foreign background (SNAE, 2021b).

To meet the need for an educated workforce, there are several government initiatives relating to VET in MAE. In particular, municipalities can receive subsidies for vocational adult education at upper secondary level within the so-called *Yrkesvux* ("vocational adult") initiative. This was introduced in 2009 with the aim of increasing the supply of vocational education within MAE through regional cooperation between municipalities, thereby counteracting a shortage of vocationally trained workers. There is a requirement, even for distance-based VET, that at least 15 percent of the time in training consist of a workplace internship. An initiative with similar conditions and requirements for cooperation between municipalities is

available for apprenticeships at upper secondary level, called *Lärlingsvux* ("apprentice adult"), which also aims to increase the supply of vocational education. Here, a specific requirement is that at least 70 percent of the time should be spent in a workplace (and the rest at a VET school). It should also be noted that these apprentices are not employed by the workplace; they are adult students and do not receive a salary. A supervisor is assigned at the workplace, and the employer is compensated for taking on the apprentice. However, it is still the school and the teacher that are responsible for assessment and ensuring that the apprentice achieves the intended learning outcomes. The subsides for *Yrkesvux* and *Lärlingsvux* can also be used to finance VET in combination with SFI and SvA (Swedish as a second language). In addition to these initiatives, there is another initiative that is specifically aimed at training professional truckdrivers and bus drivers, also with requirements for cooperation between municipalities (Regulation of state subsidies for regional vocational adult education, 2016).

The marketisation of MAE means that there is a widespread system for procurement and tendering which the municipalities use to engage private education providers. It is the municipality that decides the conditions for procurement, and all tenderers must be treated equally based on the conditions set by the municipality. In recent years, an authorisation system has also been developed for MAE whereby the municipality sets the criteria for authorisation to organise adult education, and all providers who meet the criteria may arrange adult education as long as they meet the requirements. Unlike procurement, which only applies for a few years, there is no time limit for authorisation.

3   Previous Research

In the present article, we are studying the organisation of vocational adult education in the marketised MAE with a focus on the enactment of national policy. The marketisation of adult education is not a new phenomenon, as illustrated by Hake (2016) in a historical analysis of the development of a "post-initial training market" in the Netherlands, and there are a few studies concerning the marketisation of adult education that are conceptual or concerned with policy analysis (Fejes & Olesen, 2016). However, empirical studies of the consequences of marketisation in adult education practices are sparse. In Sweden, where this study was conducted, marketisation is a widespread phenomenon. However, other studies show that the marketisation of education is also a global phenomenon. For example, Mikulec and Krašovec (2016) show how marketisation in Slovenian adult education policy is related to policy on a European level.

There are a few studies focusing on the marketisation of Swedish MAE in general (e.g. Bjursell, 2016; Bjursell et al., 2015; Fejes & Holmqvist, 2019; Fejes et al., 2016; Holmqvist et al., 2021). Quality assurance systems have become important as a consequence of the marketisation of adult education with procurement by external providers, and how policy

enactment at local, municipal level strongly influences the outcomes of the possibilities to control MAE (Fejes & Holmqvist, 2019). This represents a tension between desirable market freedom and the possibility of administrative control and quality assurance that is often seen in marketised education systems (Bjursell, 2016; Rönnberg, 2012). In an earlier part of the current research project (Andersson & Muhrman, 2021a), we provided an overview of how municipalities in Sweden combined internal and external MAE providers and chose different types of procurement for external courses. The study also showed the importance of quality control systems when hiring external providers. These systems are often extremely resource-intensive in administrative terms, which is one reason why several municipalities are considering extending the internal provision of courses.

When considering VET for adults from a broader perspective, more international studies are available. For example, there are several studies of adults' identity development in vocational education (e.g. Assarsson & Sipos Zackrisson, 2005; Billett, 2007; Billett & Sommerville, 2004; Brown et al., 2001). There are also a few studies that deal with various aspects concerning teaching adults (e.g. Bernal Castañeda, 2017; Choy & Wärvik, 2018; van den Bogaart et al., 2016). However, there are not as many studies on the organisation of adult education on an overall level, or studies of how adult education policy is enacted in local VET practices.

The present state of vocational adult education in Sweden, concerning marketisation, is characterised by the extensive use of procurement and external, private providers. Swedish MAE has also gained an increasing labour market focus with more vocational education for adults, and marketisation has led to flexibility and good opportunities for adults to be admitted to VET. However, there are also organisational problems with short-term contracts that make it difficult to plan, and entail risks of over-establishment, etc., and difficulties controlling the quality of courses outsourced to many different organisers (Andersson & Muhrman, 2019, 2021b). An attempt to achieve equivalent quality can be seen in Wärvik's (2013) study, where a quality assurance scheme was introduced by a VET provider in MAE to regulate teachers' work. The scheme involved standardising educational content and assessment, but also resulted in tensions concerning teachers' ability to keep to their own pedagogical ideas and to adapt teaching to the special needs of individual students.

The development of adult education in Denmark from the 1990s to the present day shows the same tendencies towards an increasingly strong labour market focus that can be seen in Swedish adult education (Rasmussen et al., 2019). In Denmark, decisions on adult education are being made to an ever greater extent within political networks that work closely with working life. The previous focus on diversity in adult education has become increasingly narrowed towards a focus on vocational education that meets the labour market's need for labour. Employers' associations have become important actors in decisions on various reforms and grants, and have also become partners in co-financing education. National investments have been made with large contributions aimed at expanding vocational education.

The development of more labour market or "work orientation" has also been identified in the SFI curriculum, with more attention being paid to "occupational language" and making students employable. This could risk making the democratic and civic functions of adult education subordinate to the need for labour (Carlson & Jacobsson, 2019). The Agency for Economic and Regional Growth (2018) in Sweden highlights this labour market orientation as municipalities increasingly offer SFI in combination with vocational education. Their evaluation shows that the integration of SFI and vocational education is positive for students' language learning and motivation, because they can practise language in an authentic context which makes learning more meaningful. It also improves labour market integration by contributing to the development of vocational identity and networks.

Participation patterns in adult education in Europe helps to understand the role of institutions and public policy frameworks in resolving coordination problems (Desjardins & Rubenson, 2013). There are many different constraints for adults' participation in education, but even if it is the individual's decision to participate in adult education, political decisions governing adult education resources have a significant impact on the opportunities and limitations that exist in the provision of education and training places. Furthermore, not all participation in adult education is voluntary. There have been changes in the labour market which mean that, in some cases, adults are now more or less forced to participate in education due to demands from employers for formal professional competence (Desjardins & Rubenson, 2013). Formal vocational training has also been identified as very important for establishment in Swedish working life. A study of young immigrants' opportunities for example showed that there are virtually no professions that do not require a minimum of upper secondary education and a degree (Knocke & Hertzberg, 2000). The value of participation in education to be able to enter the labour market, create a future and become a part of Swedish society is confirmed in a more recent study where adult immigrant students describe their career choices and their futures (Dahlstedt & Fejes, 2019a). The latter study raises questions about how adult education can de facto contribute to immigrants' desires for work and integration into society, and what kind of community immigrants are given the opportunity to be included in through adult education.

The group of adults who participate in vocational education is heterogenous concerning life paths and experiences, which makes it important to adapt the teaching to the individual (Masdonati et al., 2017). An investigation of vocational education that combines digital distance learning with on-site studies shows that digital teaching presents many barriers to students' learning, especially for what the researchers call "non-traditional" adult students and for students with a low socio-economic status (Safford & Stinton, 2016). These challenges concerned everything from internet connection to taking notes, saving, storing, editing and reading online texts, and navigating and sorting the information that the students received digitally. Thus, a well thought-out pedagogy is needed for students to succeed with digital

distance studies, and to ensure that there is not a high proportion of dropouts (Safford & Stinton, 2016).

Adult education is thus expected to be flexible and individualised, but with a work orientation. More research is needed to understand the challenges in the enactment of adult education, and in this case particularly vocational education, to meet the wishes and needs of adult students, as well as the demands for labour in the labour market and for integration in society.

4   Policy Enactment

This study continues to analyse policy enactment (Ball et al., 2012; Braun et al., 2010) in Swedish adult education (Andersson & Muhrman, 2021a; Holmqvist et al., 2021; Muhrman & Andersson, 2021) with a focus on VET. From our perspective, the connection between education policy and practice is seen not as a rational process of implementation, but as a complex process of *enactment* that includes the *interpretation* and *translation* of policy into local practice (Ball et al., 2012). Maguire et al. (2015) put it as follows:

> Policy is not 'done' at one point in time, it is always a process of 'becoming'. It is reviewed and revised as well as sometimes dispensed with or sometimes simply just forgotten. There will be multiple subjectivities and positions that will shape how policies are understood, and differences will occur in enactments over time and in different spatial contexts. Enactment then is messy, incomplete and a form of interpretation and intersubjectivity in action. (Maguire et al., 2015, p. 487)

In the local contexts of schools and authorities, multiple actors are involved in these complex processes, where policies are interpreted and translated, and enacted in local contexts in certain ways. Different policies might be contradictory, and the enactment in a local school context might therefore be messy and incomplete. Furthermore, less prescriptive, general policies include a certain degree of freedom for local translation and enactment. Nevertheless, there are certain policy discourses expressing what "good" teaching, teachers, students, etc. are, and these govern the enactment (Ball et al., 2012). In the case of Swedish adult education, the national policies do not prescribe exactly how MAE should be enacted. On the contrary, these policies have a certain degree of freedom, and local actors within the municipalities interpret and translate them into their own models of adult education. For example, the policy defines the adult student to be targeted as the one with the least prior education who still meets the conditions to pass the course, and this must be enacted in the selection of students.

Ball et al. (2012) also identified "master" discourses that define schooling – in their case learning, curriculum and behaviour. The latter discourse defines student behaviour as one of the central concerns in schools. In Swedish adult education, individualisation and flexibility

have been identified as two central policy discourses. However, the master discourses that define Swedish adult education rather concern employability, skills supply, integration and not least marketisation (Muhrman & Andersson, 2021). These discourses put the labour market and VET in focus when the policy is interpreted, translated and enacted in the practice of adult education.

5   Methodology

This article is part of a larger study in which we have used a policy enactment perspective to examine the organisation of municipal adult education, from political decisions to classroom teaching. The study as a whole consists of both qualitative and quantitative data in three parts. Firstly, a nationwide survey was distributed to adult education representatives in all Swedish municipalities (290). Secondly, qualitative interviews were conducted with MAE leaders in a sample of 20 municipalities, which were selected based on information from the first step and from official statistics on Swedish municipalities, to obtain a sample covering different types of municipality as well as different ways of organising MAE. These interviewees were heads of the local administration of adult education, who could report from the enactment of adult education in the municipality. Thirdly, a more extensive study was conducted in six of these municipalities, including in-depth, qualitative interviews with education leaders, with the intention of gaining a deeper understanding of how MAE is organised locally. Here, the education leaders also included principals of MAE schools.

This article focuses on vocational training within MAE, and the data consist of semi-structured interviews from parts 2 and 3. Documents including relevant national policies on MAE, particularly concerning VET, have been used as a background. The interviews were recorded, transcribed and analysed thematically (e.g. Braun & Clarke, 2006). In the article, quotations from the interviews are used to illustrate the findings. All interviews were conducted in Swedish, and the selected quotations have been translated into English.

We have treated all data confidentially, and have been careful to ensure that the empirical examples in the article should not be traceable to individual municipalities. We have anonymised the respondents, and have not reported which municipalities are included in the 20 selected for interviews and the six selected for extensive studies.

6   Findings – VET Enacted in MAE

MAE has a long tradition of offering a compensatory path to supplement earlier (unsuccessful) general studies and to provide eligibility for higher education. However, during the last decade, the labour market perspective of MAE has become evident. The skills supply function has been emphasised in policy, and a growing proportion of MAE consists of vocational

courses in "packages" based on defined needs for skills supply in industries and trades, and a focus on employability and integration, with immigrants constituting a large target group.

Many MAE leaders in this study describe how investments and quality assurances in connection with MAE take place from a labour market perspective, to offer education that corresponds to working life's needs for labour and to make those who participate in education employable. One principal describes how the policy is interpreted and translated into an enactment of MAE where VET has a central position:

> We have been given a clearer and clearer commission concerning vocational education. If you strain it or simplify it for the sake of clarity, municipal adult education was previously seen as a complement to upper secondary matriculation. Now we have a totally different situation. We pay more for vocational education, and it could be anything from salesmen to platers to truck drivers or assistant nurses. For example, when it comes to assistant nurses, I think that adult education accounts for the lion's share of the provision of assistant nurses.

As well as VET having been emphasised more in the national adult education policy, the education leaders describe a growing demand for VET courses from students and also from the municipal policy level. Most municipalities prioritise VET courses in MAE, even if they are not obliged to provide such courses. The translation of national policy into local policy conforms to the national level. Therefore, there are extensive opportunities to be admitted to VET as an adult, as well as good opportunities for employment afterwards. However, despite the increasing demand, a number of education leaders also describe problems in the enactment concerning the recruitment of students to certain VET courses. This challenge will be discussed later in this article.

6.1 Ways of Organising Flexible VET

Flexibility and individualisation are enacted not least in terms of how VET in MAE is organised. These policy discourses are interpreted and translated into different ways of organising courses, based on the expressed intention that they should suit students with different preconditions and needs. The marketisation discourse interacts with flexibility when different providers are procured to organise courses in different ways.

Vocational training within MAE is conducted either by internal provision or by the municipalities engaging external providers. The municipalities offer VET as school-based training, apprenticeships and/or distance education. It is also increasingly common to offer combinations of VET and SFI courses. It should also be noted that a municipality can buy study places from other municipalities. In these cases, it can be difficult for the buying municipality to decide how VET is arranged.

Many MAE representatives consider apprenticeship training to be a good alternative for VET that provides work experience and often leads to employment. Most municipalities therefore offer VET as apprenticeships, in addition to school-based courses. Many of the interviewed education leaders describe how the municipality gives students a choice between these two alternatives, but some municipalities particularly use the apprenticeship as an alternative in vocations where they lack training facilities and teachers.

However, the national subsidies for apprenticeships are not used to the same extent as those for school-based VET. The education leaders describe problems recruiting apprentices for many different reasons. The tradition of apprentices has largely vanished in Sweden, and even if initiatives have been taken to reintroduce apprenticeships (Olofsson & Persson Thunqvist, 2018) it is not well-known among potential apprentices how an apprenticeship works in the MAE system, leading to a sense of reluctance. The education leaders also describe how students want to be in a social context with other students, and that "those who start as apprentices soon want to return to school". In addition to the low interest among potential apprentices, the education leaders also describe other problems concerning the enactment of policy initiatives for apprenticeship training. A certain amount of organisational and administrative work is required for individualised apprenticeships. Supervisors and teachers need good skills, and the apprentices must be interested and skilful. The remuneration paid to the employer is not considered to cover the extra work needed from the employer to take care of an apprentice, which is one reason why small companies with a high workload do not want apprentices. One principal describes the situation:

> We do have apprenticeship training, but it is somewhat tricky as the schools must do more administrative work and establish apprentice contracts between the school and the employer, and there is not always good matchmaking between the student and the employer, and then there is also more administration with different forms of compensation paid to the school for teaching and to supervisors, and the training of supervisors, so this training is more complicated. And sometimes I think that the rules from the National Agency of Education are a little too rigid in terms of which courses and volumes and everything, but generally I believe that apprenticeship training is very good.

Distance education is another enactment of flexibility. On the most common VET courses, which are mainly within healthcare, 20–30 percent of students typically took the course in the form of distance education (before the pandemic, when distance courses became normal). Here, the theoretical aspects of the vocation are studied remotely, but workplace-based learning with a focus on the practical aspects is, as mentioned, also part of the package. In terms of flexibility and accessibility, distance education creates study opportunities for people who have difficulties participating in on-site training due to factors such as work, long travelling times or having young children. Distance education also increases the skills supply, since students can be offered a wider range of training programmes.

However, education leaders are concerned that distance education might hinder the development of social skills, which are demanded by employers. This is particularly seen as a potential problem in service vocations such as caring, and some municipalities are therefore reducing the extent of distance education and promoting school-based courses particularly in VET.

> We have become more and more restrictive when it comes to distance education. Only students with special reasons, such as work or parental leave, are offered distance education. I believe that the students get better training if it is not delivered remotely, and students need to meet other students and teachers to develop social competence, which is strongly demanded by employers. Employers want socially competent people with drive and commitment.

6.2   VET for Which Vocations?

Vocational adult education is enacted not only in different ways of organising courses, but also in which vocations are included in the course offering. It is not compulsory for municipalities to offer vocational courses for adults, which means that they can decide locally which vocations should be taught via MAE.

Nevertheless, the government initiatives for VET affect the range of training programmes within MAE. Virtually all municipalities participating in our study receive the subsidies available for VET in MAE. This means that they can offer more study places in VET than they would otherwise have been able to. However, in addition to the targeted subsidy for professional drivers, municipalities are free to choose which training programmes they want to invest these subsidies in.

The supply of VET is therefore enacted at the intersection of interpretations and translations of the individualisation and skills supply discourses. The individual demands are considered important, but so too are labour market needs and employability. The translation and enactment of these potentially contradictory discourses can differ between municipalities. For example, education leaders in larger municipalities describe a lack of labour in most vocational areas, which means that individual demand could be allowed to have a stronger influence – all VET alternatives would still provide employability and skills supply. Smaller municipalities, on the other hand, might have specific industries and vocations with a high demand for labour which governs the local priorities.

There is extensive collaboration and contact with the employment office, industries and trades, labour market councils, etc., to predict the need for labour. These predictions form the basis for prioritising the supply of VET courses, where for example courses in industrial technology, truck and bus driving, and training for cooks are typically included. As mentioned, there are also programmes where VET is combined with SFI, and these and other

VET programmes are governed by labour market demands. As a result, employability and finding the "right" students are important. One principal illustrates the challenges:

> The labour market needs are important here, to be able to devise a combined programme that results in employment rather than being a sort of temporary holding service for an industry without any demands. Good labour market connections are crucial, to avoid saturating the market as it were, or to start sniffing out other areas where you see that, here it is actually possible for an immigrant student to come through and to get a job later on. But the challenge involves both maybe directing the students more strictly towards different vocations, but also getting the right students who can pass the programme and get a job afterwards.

As mentioned, some VET programmes experience low demand from students, even if the labour market demand and employability are high. The principals typically have no explanation for this low student demand, but think it is a matter of lacking knowledge about these vocations:

> In this region they are crying out for most of them. But the students don't apply for all programmes, for example they don't know what a CNC operator is. And few want to be cooks, and so on. The industries must market themselves to get applicants and new labour. For example, truck mechanics, Scania and MAN started to promise probationary employment after training, and then there were lots of applicants. So, we try to reach partnership agreements with the industries. Otherwise, many of them apply to health and social care, as this is what many of them know about, particularly newly arrived [immigrants].

Another problem that restricts the extent of school-based VET and apprenticeship training in certain vocations is the lack of placements. Some principals describe how the school does not always have a good connection to working life, and therefore has difficulties finding supervisors at workplaces that want apprentices. There is also "competition" with other VET providers that also need placements, particularly for students from upper secondary school. Some employers feel that apprentices have too little knowledge, and that supervising them would be too much work, even if there is a need for labour.

6.2.1 Short Contracts and a Shortage of Teachers Affect the Supply of VET

There are also market-related challenges in the Swedish system of VET for adults that influence the range of vocational training: The procurement of external providers and the high demand for teachers. The marketisation of MAE with the procurement of external providers could be a particular challenge in VET. Public procurement means short-term contracts for VET. The providers are hesitant about submitting tenders to offer courses that require extensive investments when they only will get a four-year contract, and this may affect the supply of training for certain professions.

> The disadvantage is the very fact that it is only for four years. Think about it, how could you dare to invest in buying materials, premises, with long contracts, yes, everything, when you only are safe for four years? […] No, an extreme example could be that we currently have training for CNC operators, and every computerised machine might cost millions. And you might need 10, 15 such machines to cover the whole training programme. It isn't possible. It's not reasonable to imagine that it would work.

This is one reason why the authorisation system has been introduced in some municipalities. The intention is to establish long-term relationships with external providers who do not risk losing the contract after just a few years.

Another challenge which may affect the range of vocational training offered within MAE is the lack of trained VET teachers in Sweden. Some principals were even suspicious if they found a qualified VET teacher who was not already employed.

> There are almost no qualified vocational teachers, and those who are available, you start wondering why they are not employed, if there are any qualified teachers who are not employed. So it's hard to find them. Very, very hard.

Swedish VET teachers typically have a background in a basic vocation which they now teach, and a double competence as both teachers and skilled workers in this vocation. Thus, the problem of the supply of teachers increases with the short-term labour market focus of MAE, where VET is expanding in areas with a current labour-market demand – a demand where the teachers also are attractive as workers in their basic vocations.

6.2.2 Adult Education as a Buffer

A specific demand from municipal services for labour within elderly care and childcare is described by education leaders in many municipalities. By far the most common VET programmes in Swedish MAE are healthcare and elderly care, and childcare and recreation, with 39 and 21 percent respectively of those students who studied VET courses corresponding to at least 0.5 years of full-time studies in 2020 (SNAE, 2021b). What we see here is that MAE becomes a supplementary institution in relation to upper secondary school, where these programmes only had 10 percent each of all VET students in 2020/21 (SNAE, 2021a). A low demand for VET compared to labour-market needs among young students in certain areas results in decisions that prioritise these vocational areas in VET for adults – MAE becomes a "buffer" to meet the needs of these services.

These courses also have many applicants, not least among immigrants, which the education leaders explain as a result of the high demand in the labour market. The demand among applicants has been so high that a selection process could be necessary, particularly for the childcare and recreation programme. Otherwise, all applicants for adult VET are often admitted.

Adult VET could also become a buffer in another way. If there are few applications from young people for VET programmes in upper secondary education, there will be empty places at the VET school which could be filled with adult students. It becomes possible to expand MAE without procuring external providers. One principal explains what could happen:

> I think that adult education is used as a filler. To be honest, this is how it is. It is not obvious that that there must be X study places in… just as an example… HVAC [heating, ventilation, and air conditioning]. Rather, it is filled up [with adult students] when the upper secondary school students do not choose that programme. It is quite a clear prioritisation really, which one might have opinions about. But that's the way it is.

6.3   VET for Integration

The integration discourse is also strong in MAE, and not least in VET. A large number of students have foreign backgrounds, and integration and employability interact with skills supply in the enactment. As mentioned, VET in the areas of elderly care and childcare is popular among immigrants, and has thus become a tool for integration. Many participants on the programmes that supply skills to municipal services are immigrants, who know that training in these areas often enables them to become established in the labour market. Apprenticeships are also considered to improve employability, and are therefore promoted as a good way for immigrants to become established in the labour market. All this fits well with the need to promote the integration of immigrants in society, where employment is seen as crucial to be able to make a living.

However, this interaction between integration, employability and skills supply is not entirely consistent with the discourses of individualisation and flexibility. On the one hand, these VET programmes are popular among immigrants. However, on the other hand, the theoretical courses that prepare students for higher education are also popular. The education leaders say that many immigrants want to study theoretical courses to become eligible for higher education. They also want to avoid large study loans, and see VET as a side track when the ambition is to enter higher education, which they have learnt is important and open to everyone in Sweden.

> Vocational education has exactly the same duration that higher education preparatory education might have, so you might think that it is unnecessary to take vocational training. That you burn your economic resources, as it were.

Another challenge for VET concerning the potential for integration is the immigrants' backgrounds when it comes to language and culture. Some vocations and VET programmes have increased the Swedish language requirements, with a certain level being required to be able to do what is seen as a good job. Therefore, for example, the number of applicants to become

assistant nurses has decreased in some municipalities in recent years, as the Swedish language requirements have become tougher and many of the potential applicants have little proficiency in Swedish. This leads to – and illustrates – the challenges of merging individualisation and integration.

One aspect of this language challenge concerns work placements and the perceived respective responsibilities of schools and workplaces. Some employers believe that they have a responsibility, and that it is important for students to get out and learn Swedish in real-life workplaces, while others believe that students should not be in a workplace until they have sufficient language skills.

The education leaders also identify potentially problematic cultural factors such as clothing and beliefs concerning certain foodstuff. The students should be prepared for a vocation where a large part of Swedish elderly care takes the form of home care, and where care workers must be able to perform all tasks themselves.

> And, of course, with cultures come language problems, but also sometimes their traditions, which might clash with the content of our courses. For example, not having a full understanding for how we work in healthcare and elderly care, or how we work with children in the educational aspects of Swedish society, and this might cause problems in certain situations. For example, if you are going to a placement in elderly care, you might work at a homecare unit. Many workers at homecare units or companies cycle at work, and there are many of these women and men who cannot ride a bicycle, and that is a barrier to taking this placement. Then there are some who don't understand that they must agree to give a shower, a woman must be able to give a strange man a shower, and vice versa. You must be able to serve food such as pork, and so on, because this is what this care recipient is used to eating, and then they [the students] have views that according to their tradition and religion they cannot touch [pork] and so on. And then there are rules concerning clothing. Are you allowed to wear a shawl, are you allowed to wear full-length sarongs and so on? There are many such things that we must start to understand and talk about to understand each other and our cultures.

6.3.1 "Combined Programmes"

To reduce the time that students with immigrant backgrounds spend in adult education and to improve their employability, education leaders describe that they have worked for several years to increase the opportunities to combine SFI with VET. This has been successful, and – as mentioned above – there are now also government subsidies for conducting VET in combination with SFI and SvA. This means that combined programmes are developed in several municipalities. Local policy initiatives are taken to find solutions for combining courses. For example, one municipality describes a proposal to make it compulsory to combine SFI with other courses. The ideal is to have tracks where immigrants with an academic background should be offered SFI combined with theoretical courses providing eligibility for

higher education, while immigrants with shorter educational backgrounds should combine SFI with VET, and it should also be possible to combine SFI with a work placement.

Those municipalities that offer these combined programmes describe positive outcomes concerning the development of language and employability.

> SFI has made up about 50 percent of adult education. We have been working a lot with how to combine SFI and other courses. For example, we have vocational SFI where you can take vocational training in parallel with SFI. The aim is that the students should be able to start vocational education as early as possible, and it's easier to develop language in a vocational context. Language and vocational education strengthen each other.

The combined programmes are often organised in cooperation with local businesses. The selection of VET courses is based on local needs rather than nationally proposed "packages", described as follows by one principal:

> Yes, all combined programmes, before we start a new programme, the employers should be there from the beginning. We have an idea of an employment track. That is probably where we have been working most with the employers now. Placements. And quality assurance that this programme actually results in employability. Because we haven't exactly used the national vocational course packages in the combined programmes. […] So we've produced local packages, and then companies have been involved in the preparation of each new combined programme.

Furthermore, some of the education leaders describe the development of a model in school-based combined programmes where language (Swedish) and VET teachers work together in the classroom. The education leaders see the advantage of teachers planning their teaching together, which makes for a cohesive whole with a natural connection between language teaching and vocational teaching.

In summary, Swedish VET for adults is extensive and flexible. However, the supply is also strongly influenced by market forces, the need for labour in certain vocations, and the intention to use VET as a tool for integration.

7   Discussion

Vocational adult education in Sweden is organised locally in different ways, where the adult education policy is interpreted, translated and enacted in certain ways by the municipalities, depending on their local conditions and need for labour.

In the wake of marketisation, several different providers of vocational training can be seen, as well as different ways of conducting vocational training. Vocational training is offered as on-site, distance and apprenticeship training through municipal providers, external private training providers and various collaboration agreements between the municipalities.

The advantages of this are that there are good opportunities for everyone who wishes to take part in vocational training, in terms of both access to training places and, with distance alternatives, accessibility for those who want to combine education with work, for example. The organisation of MAE, with outsourcing to private providers and a combination of school-based and distance courses, is a way of enacting policy for MAE in general (cf. Fejes & Holmqvist, 2019; Holmqvist et al., 2021). The heterogenous group of adults in vocational education (cf. Masdonati et al., 2017) makes flexibility central, with an intention to meet the needs of adults with different life situations – adults who are to become employable and integrated into society. However, this flexible approach brings organisational problems, including short-term procurement contracts with external providers that make it difficult to plan and the risk of over-establishment when the same courses are offered by several authorised providers (cf. Andersson & Muhrman, 2019, 2021a). Problems are also identified concerning the outcomes of flexible distance courses, such as lack of development of social skills, which are needed in the labour market, and this is a reason for providing more school-based and fewer distance-based courses. Furthermore, studies show that there may also be other challenges when providing distance VET education for adults, which means that they risk achieving poorer results or dropping out of the training (Safford & Stinton, 2016; cf. Muhrman & Andersson, 2021).

Swedish adult education has a strong labour-market perspective (cf. Rasmussen et al., 2019), in which VET plays a central role, and the employability and (labour-market) integration of immigrants are central concerns. Combined programmes integrate VET and Swedish language courses (cf. Carlson & Jacobsson, 2019). There are targeted policy initiatives to strengthen the position and expand the supply of VET in adult education, and to encourage regional cooperation between municipalities. Despite this, the range of different vocational courses and programmes within MAE is not as large as the number of training places would allow. There is a strong focus on providing VET within certain vocational areas within municipal services such as elderly care and childcare. This raises questions about whether publicly funded VET for adults is mainly intended to prepare for these publicly funded labour-market sectors, and what the consequences of not prioritising broader employability among unemployed adults are. There should be other sectors that could also benefit from newly trained workers. However, this prioritisation indicates that vocational adult education has a supplementary role in relationship to VET in upper secondary education, which has a broader offering of different programmes. This supplementary role is obvious also when adult education becomes a "filler" in upper secondary education classes. That is, VET for adults is mainly offered in sectors where VET programmes do not attract enough young people. The labour-market integration of immigrants thereby seems to be narrowed to a few vocational sectors (cf. Dahlstedt & Fejes, 2019a; Desjardins & Rubenson, 2013). Offering training only in certain sectors might result in a subordinate inclusion in the labour market, considering

the importance of formal vocational education for such inclusion (cf. Knocke & Hertzberg, 2000). To understand these prioritisations, the influence of interplay between market forces and administrative control (Bjursell, 2016; Rönnberg, 2012) in Swedish MAE should be analysed in more detail.

Finally, workplace-based learning and placements are required in VET, be it a school-based, distance-based or apprenticeship programme. Here, we see a problem with the shared responsibility between schools and employers in Swedish VET. Even if the school has extensive responsibility for VET in this context, employers must still take their responsibility and provide placements. However, there could be problems gaining access to workplaces and placements. We have described employers' involvement in the development of the combined programmes, but it seems that other employers see neither the potential of placements for recruiting labour nor the value of the workplace as a learning context for developing vocational skills and, particularly in the case of immigrant students, vocational language. Rather, expectations seem to be placed on schools to "deliver" fully trained employees. Here, the Swedish VET and labour market would, even with a mainly school-based VET system, benefit from closer cooperation and a shared responsibility. The development of more combined programmes might contribute to this.

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Biographical Notes

Per Andersson is a professor of education at the Department of Behavioural Sciences and Learning at Linköping University, Sweden. His research interests focus on recognition of prior learning, professional development among teachers in vocational and adult education, and marketisation of adult education.

Karolina Muhrman is an associate professor of education at the Department of Behavioural Sciences and Learning at Linköping University, Sweden. Her research interests focus on the teaching of mathematics in vocational education, and marketisation of adult education.

The Political Economy of Skill Formation in a Rentier State: The Case of Oman

Margarita Langthaler*[1], Stefan Wolf[2], Tobias Schnitzler[3]

[1]*Austrian Foundation for Development Research (Österreichische Forschungsstiftung für Internationale Entwicklung – ÖFSE) Sensengasse 3, 1090 Vienna, Austria*

[2]*Technical University of Berlin, Institute of Educational Science, Department of School and Vocational Pedagogy, Sekr. FH 5-1, Fraunhoferstraße 33-36, 10587 Berlin, Germany*

[3]*World University Service (WUS) Austria, Schmiedgasse 40/3, 8010 Graz, Austria*

Abstract

Context: Against a backdrop of dwindling oil resources and increasing unemployment rates, the government of Oman has set out to diversify its industry and establish a knowledge-based economy. In this context, forming a highly-skilled Omani workforce is considered to be of crucial importance. Yet, the national TVET system suffers from low social status, poor quality, and limited labour market connectivity. This paper offers an analysis of Oman's TVET system in the socio-economic and cultural context of a rentier state.

Approach: We draw on the political economy of skills and socio-cultural approaches that understand TVET systems and the broader skills regimes in which they are embedded as part and expression of particular patterns of the social organisation of work. This helps to locate TVET systems' strengths and weaknesses in the context of their underlying social relations instead of considering them as mere dysfunctionalities at the systemic level. This paper draws on an unpublished study on TVET for industrialisation commissioned by an Omani line ministry in cooperation with an international organisation. For this study, the authors carried out a literature review, undertook two field trips to Oman in 2018 and 2019 and conducted forty semi-structured interviews with stakeholders from government, private companies, business associations, and TVET and higher education institutions.

*Corresponding author: m.langthaler@oefse.at

Findings: Our analysis highlights how skill formation in Oman is shaped by the socio-economic and cultural context of the Omani rentier state. First, the availability of cheap expatriate labour and Omanis' traditional preference for public sector jobs culminate in poor incentives for employing Omani nationals in the private sector. Second, reluctant employer attitudes towards national skill formation deepen quality issues in the TVET system, especially with regard to work-based training. This reinforces negative perceptions of the local workforce, which in turn contribute to biased employment patterns. Both social processes mutually reinforce each other, eventually preventing the emergence of strong national skill formation dynamics.

Conclusions: While immediate structural change appears challenging, it is evident that reforms of the TVET system alone will not lead to its sustainable improvement. More research into how skill formation relates to Oman's specific socio-economic structures, how employment dynamics relate to educational credentials and how cultural traditions shape educational and work practices is needed.

Keywords: Skill Formation, Rentier State, Oman, Vocational Education and Training, VET

1   Introduction

Global transformation processes of economies and labour markets put pressure on governments worldwide. Challenges include the availability of an adequately trained workforce to keep pace with transformations. In this context, Technical and Vocational Education and Training (TVET) has received increased attention globally. However, despite repeated reform efforts, TVET systems in many countries tend to suffer from poor social status and struggle to meet labour market demands (see, e.g., Allais, 2020b on Sub-Saharan Africa; UNICEF & ILO, 2016 on the MENA Region).

Most research focuses on dysfunctionalities at the systemic level of TVET. Such approaches, however, do not suffice to explain the persistent failure of many TVET systems in assuming a supportive role in economic development strategies. In this paper, we draw upon political economy of skills and socio-cultural approaches that understand TVET systems and the wider skills regimes they are embedded in as part and expression of particular patterns of social organisation of work. These patterns are specific to each socio-economic context and essentially shaped by the competing interests of a variety of actors. Such an understanding of skills regimes helps to locate their strengths and weaknesses in the context of their underlying social relations instead of considering them as mere dysfunctionalities. We will apply these approaches to an analysis of the TVET system in Oman in the context of the government's industrialisation strategy.

After fifty years of rapid development based on petroleum export and massive deployment of low-paid foreign labour, the country is facing severe challenges. Against the background of dwindling oil resources, demographic pressure and increasing unemployment rates among Omani nationals, the government has elaborated the development strategy "Vision 2040" (Oman Vision 2040, n.d.), which endeavours to achieve industrial diversification and the establishment of a knowledge-based and technology-driven economy. In this context, forming a highly-skilled Omani workforce is considered to be of crucial importance. However, while government commitment to TVET reform is high, the TVET system continues to suffer from low social status, poor quality, and lack of labour market connectivity.

TVET in Oman is a generally under-researched topic. Most literature is descriptive and policy-oriented, and while shortcomings are mentioned, they are rarely viewed in their socio-economic context. In this research, we argue that persistent challenges in skill formation have a great deal to do with the socio-economic setting of a rentier state[1] in which the Omani skill regime is embedded. Based on this hypothesis, our research question deals with how the specific economic and labour market context of the Omani rentier state and its interrelation with the TVET system and policy level shape national skill dynamics.

In this paper, we first situate our work in a conceptual framework followed by a description of the socio-economic background of Oman and its education and TVET system. We then outline and discuss our findings, drawing upon the conceptual framework, before presenting our final remarks and conclusions.

2 Conceptual Framework

This paper is built upon two theoretical approaches. First, we follow a political economy of skills approach (Allais, 2020b; Brown et al., 2011; Busemeyer & Trampusch, 2012b) in conceiving national skills systems as socially constructed and fundamentally political (Busemeyer & Trampusch, 2012a). Second, we draw on a cultural and social science approach to TVET (Greinert, 2005, 2017; Wolf, 2017) to emphasise social and cultural practices and their impact on forming skills systems.

In contrast to much of the economic and policy literature, the political economy approach views skill formation systems as deeply embedded in their respective countries' socio-economic patterns and framed by the political and social, often conflictive, relations between the actors involved (Streeck, 2012). Formal TVET systems are intertwined with the specific economic and, in particular, industrial development trajectories of their countries.

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[1] Following Beblawi (1987, pp. 384-386), we understand a rentier state as corresponding to a set of particular socio-economic features. These include economic structures where rent situations predominate and which rely on substantial external rent. In a rentier state, only few are engaged in the generation of the rent, while the majority is involved only in its distribution or utilisation. A fourth feature is that the government is the principal recipient of the external rent. Finally, it is assumed that such an economy creates a rentier mentality, associating reward to chance or situation, rather than to work and risk-taking.

In trying to understand and compare the driving forces behind different skills formation systems, various typologies have been elaborated. Busemeyer and Trampusch (2012a), for example, use the two criteria of public commitment to education and training, as well as company involvement in initial education and training respectively, to identify four ideal-type models of skill formation systems (see Table 1):

Table 1: Types of Skill Formation Systems

Public commitment to vocational training	High	Statist skill formation system e.g. France	Collective skill formation system e.g. Germany
	Low	Liberal skill formation system e.g. USA	Segmentalist skill formation system e.g. Japan
		Low	High
		Involvement of firms in initial vocational training	

Source: Busemeyer & Trampusch (2012a, p. 12)

In liberal skill regimes, such as in the USA or the United Kingdom, the markets and the general education system primarily provide for skill formation, complemented with narrow on-the-job training. While institutional settings in segmentalist skill formation systems, e.g. Japan, are similar to those in the liberal type, firms are much more willing to invest in intensive skills training of newly-hired school graduates. Statist skill formation models, e.g. French or Swedish TVET systems, are mostly state-run and school-based, and TVET enjoys high levels of support from policymakers. In collective skill regimes, e.g. across the German-speaking world, skills formation is collectively governed by firms, associations and the state, and both government and private sector commit to investing in TVET (Busemeyer & Trampusch, 2012a; on the German-speaking countries see also Bürgi & Gonon, 2021).

Besides these ideal-type models, many national TVET systems could be classified as hybrid models (see, for instance, Souto-Otero & Ure (2012) on TVET models in Spain and Norway). In recent years, discussion on hybridisation has highlighted different forms of organisational and institutional responses to the gap between TVET and higher education. In essence, hybrid forms provide double qualifications allowing for both immediate entry into the labour market and access to higher education. Increasingly, discussions focus upon whether such hybridisation trends call the classic typologies of governance into question (e.g., Deissinger et al., 2013; Graf, 2013, 2016).

We complement the political economy typology by Busemeyer and Trampusch (2012a) with another typology that opens up the picture to cultural patterns, common understandings, traditions and practices of skill formation. Wolf (2017), drawing on a social and

cultural sciences approach and elaborating upon the classic typology by Greinert (2005, 2017), uses patterns of social regulation and governance to distinguish between the tradition-based, market-based and bureaucracy-based types of TVET systems (see Figure 1).

Regulatory and governance patterns		Factors shaping TVET
Tradition	→	Traditional action, legitimised by customary law
Market	→	Production factor labour and the qualification requirements of the labour market
Bureaucracy	→	Legal regulations of state agencies and state bureaucracy

Figure 1: Ideal Types of TVET Regulatory and Governance Patterns

Source: Own compilation, based on Wolf (2017)

Speaking of governance and regulation, Greinert questions what it is that makes communication partners in the social action system of vocational education follow regulations and accept similar patterns of interpretation of their actions (Greinert, 1995, p. 31, translation by the authors). He points to particular regulatory patterns which, providing a meaningful basis for understanding and establishing the legitimacy of social actions, facilitate coordination of complex interactions in a social sub-sector such as TVET. Through these regulatory patterns, members of a society can easily agree on what is meant by good vocational education and training, creating a "common sense" on TVET models deriving from historical processes (Wolf, 2021b, pp. 217). Regulatory patterns can be assigned to specific legitimation principles derived from the history of European ideas, whereby social action and social stability follow the principles of "Tradition (or the professional (Beruf) principle) – Liberalism (or the market principle) – Rationalism (or the scientific principle)" (Greinert, 2005, p. 15, translation by the authors).

In his historical comparison of European TVET models, Greinert (1995) distinguishes between three ideal types of regulatory patterns. Firstly, a tradition-based pattern is associated chiefly with corporatist TVET models, generally based on (economic) communities (e.g. in Germany). Yet, it can also apply to cross-community associations based on informal settings (e.g. the construction sector in Egypt).

Secondly, a market-based pattern is associated with a market-driven TVET model (e.g. in Anglo-Saxon countries), which is determined by rules of supply and demand, i.e. qualified employees offer themselves to paying employers through the labour market. Thirdly, association with a state-organised, school-based TVET model (e.g. in France and francophone Africa) points to a pattern of bureaucracy (Wolf, 2021a).

Following their specific regulatory patterns, each type of TVET system embodies different manifestations of social activities and has different training outcomes (see Figure 2).
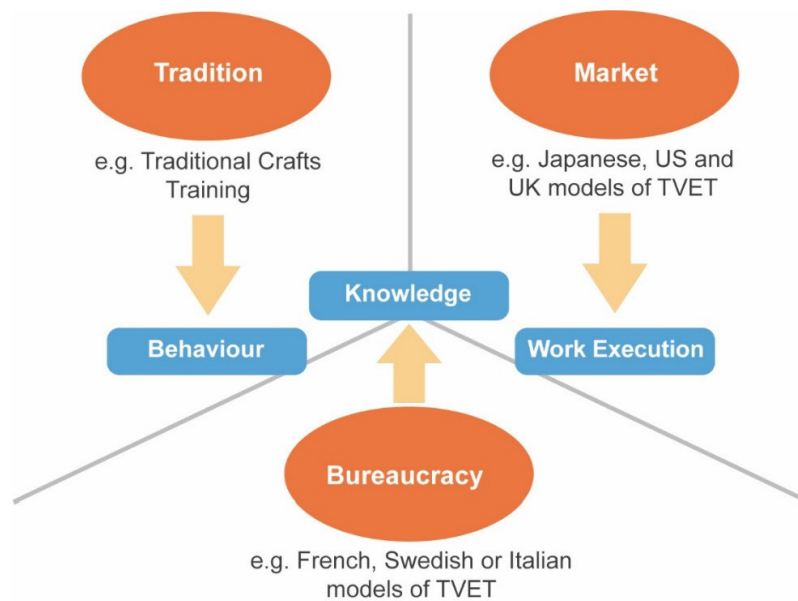
Figure 2: TVET Systems and Manifestations of Social Activities

Source: Own compilation, based on Wolf (2017)

While in practice, many TVET systems might have hybrid regulatory modes these comparative typologies are helpful when analysing national skill regimes as part of their socio-economic and cultural contexts.

However, it has to be noted that most literature on the political economy of skills focuses on Western economies, largely neglecting other parts of the world. Al-Shabibi (2020), in his study on entrepreneurship promotion in Oman, complements Busemeyer's and Trampusch's (2012a) model with categories from the discussion on development and rentier state economies. He emphasises how East-Asian development states such as Singapore had strong government-led macroeconomic policies, including on skill formation, which helped them make the leap from underdeveloped to newly industrialised or even knowledge-based economies.

Ashton et al. (2002) describe the skill formation models of Singapore, South Korea and Taiwan as contingent responses to particular internal and external conditions.[2] An important factor for the emergence of what they call the "developmental model of skill formation" (Ashton et al., 2002, p. 11) included external threats and the ensuing internal pressure by elites to preserve independence through rapid economic development. They see this model widely based on the three components of centralised control over the education system, a clear trade and industry policy and innovative mechanisms to ensure that the industrial skills requirements were guiding education and TVET policies. In Singapore, such policies materialised upon the Ministry of Trade and Industry being granted decision-making powers that superseded all other governmental agencies. Close control over access to higher education served as the basis to channel parents' demands for social mobility to TVET rather than university education. Finally, a strategic alliance with multinational companies and, of lesser importance, with consensual trade unions ensured close cooperation between industries and TVET institutions.

While strong state interventionism is also found in rentier states such as Oman, decisive differences lie in the centrality of skill formation in government policies, the strength of the private sector and the skills demands that this entails. Al-Shabibi (2020) emphasises that Oman's rentier economy has led to a structurally small private sector, particularly in manufacturing, with weak traditions of industrial skills training. It is obvious, therefore, that the typology by Busemeyer and Trampusch (2012a), while useful in guiding analyses of socioeconomic backgrounds to TVET systems, will not suffice to explain their particularities in rentier states such as Oman. Complementing this concept with socio-cultural approaches, which are particularly helpful to better understand non-Western skill formation systems[3], we can identify the origins of modes of governance, rules and regulations, and understand specific outcomes, strengths, and weaknesses as rooted in the underlying socio-cultural relations rather than as dysfunctionalities of the TVET system. For the purposes of this study, the combination of both approaches helps to situate the analysis of the Omani skill formation system in its broader context of a rentier society with "rentier mentality" (Beblawi, 1987, p. 385).

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[2] Similarly, Allais (2020a, 2020b) points to the (missing) link between TVET and economic development in Sub-Saharan Africa. She describes how, as an effect of colonialism, education and, even more so, TVET systems have never emerged out of the economic realities of African countries, mostly characterised by agrarian subsistence and informal economies. Repeated reforms have tended to tackle TVET provision rather than the missing interlinkages with the economic context. Hence, while TVET systems indeed suffer from poor quality, missing labour market opportunities for TVET graduates and a distorted system of school credentials inherited from colonial education turn out to be major structural inhibiting factors to the systems' improvement.

[3] Wolf has worked extensively on socio-cultural approaches to TVET in Non-Western countries, pointing out that often tradition-based skill transmission co-exists with formal TVET systems (Wolf, 2018, see also Wolf, 2021a and b).

3   Methodology

This paper draws on an unpublished study on TVET for industrialisation commissioned by an Omani line ministry in cooperation with an international organisation. For this study, we carried out an extensive literature review covering academic literature, policy papers and grey literature. We undertook two field trips to Oman in 2018 and 2019, where we conducted forty semi-structured interviews following Bogner et al.'s (2009) conception of expert interviews. Our interview partners included stakeholders from the ministries of manpower, education, higher education as well as commerce and industry, government agencies (e.g. the Education Council, the Occupational Standard Centre), state and private companies, business associations, and TVET and higher education institutions.

Due to local regulations, the interviews could not be recorded, but detailed interview reports were written. Following a triangulation approach, we compared distinct data sources (literature, interview reports, government statistics) in an effort to complement and validate sources (Hammersley, 2008). In terms of complementary data, the interviews were particularly informative on issues of work-based learning, company involvement in skill formation and socio-cultural practices in workplaces. We assessed the distinct data sources using content analysis by Mayring (2010) and contrasted the generated categories. Finally, we condensed them into our findings.

4   The Socio-Economic Context of Skill Formation in Oman

In 1970, Sultan Qaboos Ibn Said seized power by overthrowing his father, Sultan Said Bin Taimur, with the help of the British. Previously, the country had been under extremely isolationist and conservative rule with widespread poverty and illiteracy. A popular left-wing uprising in the Southern province of Dhofar had claimed independence and major social reform. Once in power, Sultan Qaboos crushed this uprising and introduced broad economic, political and social reforms that boosted a rapid development process (Peterson, 1978; Valeri, 2013). The discovery of petroleum in the 1960s and the commencement of oil exploration, as in its neighbouring Gulf countries, soon came to be the foundation of Oman's "Renaissance"; the rapid socio-economic development process initiated by Sultan Qaboos.

Following the Dhofar uprising and earlier internal warfare[4], modern Oman's political system is based on well-orchestrated internal power balances, which confer a high degree of political stability to the absolute monarchy (Valeri, 2013). Distributive, albeit stratifying, social policies compensate for restricted democratic participation (Ennis, 2015). However, a range of economic, social and political challenges is putting this model at risk. Dwindling oil resources and a growing youth bulge are increasingly limiting the effects of distributive

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[4]   On the so-called Jebel Akhdar War and the Dhofar uprising see Petersen (1978).

policies. In early 2011, and against the background of the broader Arab spring movements, Omani youth took to the streets to demand democratisation, employment, and education opportunities (Al-Shabibi, 2020; Ennis, 2015; Worrall, 2012).

To cope with these challenges, the government has elaborated its development strategy, "Vision 2040" (Oman Vision 2040, n.d.), to boost employment and reduce the country's dependence on oil resources. The strategy aims to diversify the economy and upgrade it from resource-based to knowledge-based and technology-driven patterns. Education and TVET are seen as crucial tools to supply the economy with a highly-skilled workforce and resolve the issue of unemployment. However, the TVET system continues to be weak.

The socio-economic settings described above decisively shape the national skill formation dynamics. Four contextual factors stand out. First, the petroleum-related state-run industry is by far the most important economic sector. Second, a high share of immigrant labour has resulted in a dual labour market with different wage structures, regulations and legal protection. Third, Omanis traditionally prefer to seek work in the public rather than the private sector. Fourth, this is despite relatively high unemployment rates, especially among young Omanis (Ali et al., 2017; Al-Shabibi, 2020; Ennis, 2015, 2020).

The total population of Oman rose from 2.7 million in 2010 to 4.6 million in 2019, with immigrants amounting to almost 2 million in 2019. The number of immigrant workers has been increasing steadily over recent decades, widely outnumbering Omanis, especially in the private sector (see Figure 3).
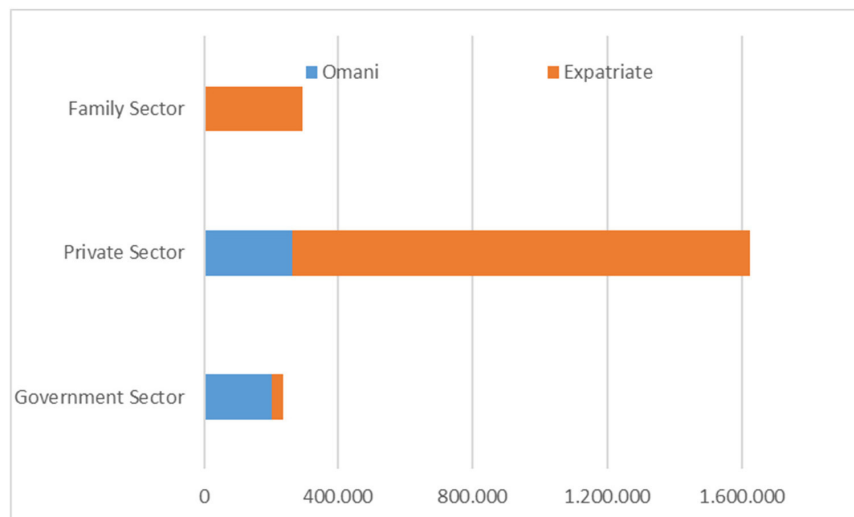
Figure 3: Employment per Sector and Nationality in 2019 (total number)

Source: Own compilation, based on NCSI (2020, Statistical Year Book)

The number of immigrant workers has almost doubled since 2010, accounting for 1,692,581 in 2019. Between 2010 and 2019, immigrants' share in the private sector slightly rose from 82.91% to 83.87% (NCSI, 2020, pp. 107).

Notably, by far the biggest group of workers in terms of skills levels are those of "limited skills" (51.68 % of the total workforce in 2019). Among these, 91.65% are immigrants (NCSI, 2020, p. 121). This suggests that the private sector continues to employ a readily available, low-skilled and low-wage immigrant workforce rather than embarking on technological upgrading and upskilling. At the same time, youth unemployment among Omanis is relatively high. In 2019, 8.5% of the 18 to 24-year olds and 6% of the 25 to 29-year olds were unemployed. Rates among females are significantly higher, at 16.5% and 25.2%, respectively (NCSI, 2020, p. 133). In 2020, the combination of the Covid 19 pandemic and the drop in oil prices led to a further tightening of the job market (Ennis, 2020).

While the informal sector is very small (Ohnsorge & Yu, 2021), small and medium enterprises (SMEs) account for the vast majority of registered companies and employ 40% of the workforce (Riyada, 2018). The government considers SME development as a priority in striving for economic diversification and has founded the agency Riyada for these purposes. Skills levels are reported to be low across the SME sector and, since a considerable share of SMEs includes micro and small enterprises, most do not have membership in business associations and experience considerable difficulties in addressing their training needs.

In the 1990s, the government introduced the so-called Omanisation strategy, requiring employers to hire a certain percentage of Omani nationals, e.g., 35% in the manufacturing sector (Al-Lamki, 2000). In the aftermath of the financial crisis, Omanisation has been reinforced to counter rising unemployment rates. However, while the strategy has been successful in specific sectors, such as banking, results in others, including industry and construction, are weak (see also Al-Shabibi, 2020).

5   The Education and TVET System

Oman's education system has experienced impressive expansion since its introduction in 1970. Prior to this, there were only three boys' schools in the entire country (Al Najar, 2016). Today, more than 2,000 schools account for a student population of 843,598 (NCSI, 2020, p. 402). In 2019, the net enrolment ratio in secondary education stood at 96.4%[5]. However, while participation is high, quality is still an issue. Despite major evaluation studies (World Bank & Oman Ministry of Education, 2012) and subsequent reform efforts, particularly in teacher education, performance of the school system is still perceived to be weak. This is reflected in the mandatory foundation year, which students must undergo before embarking on any post-secondary educational pathway (Al-Shabibi, 2020; Nasser, 2020). Higher education

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[5]   Unesco Institute for Statistics: http://uis.unesco.org/en/country/om (21/11/2021)

has similarly expanded since being introduced in the 1980s with a focus on technical training. Sultan Qaboos University (SQU), the only public university, was established in 1986.

Public education, including schools and institutions of higher education, is largely restricted to Omani citizens, for whom this is free of charge. In the 1990s, in light of increasing demand, the government decided to allow for the establishment of private universities and colleges, contributing substantially to the expansion of higher education (Brandenburg, 2013). The gross enrolment ratio in tertiary education rose from 27% in 2011 to 40.4% in 2019, those of female students from 33.1% to 55.3%.[6] In 2018/19, out of a total of 119,184 students at tertiary level, 55,474 were registered at private institutions (NCSI, 2020, p. 415). However, the quality of higher education, particularly in private institutions, may be inconsistent (Al-Shabibi, 2020). Brandenburg (2013) describes how the privatisation of higher education has led to segmentation of the sector. While the public SQU addresses the domestic elite, the many private for-profit institutions absorb the mass of secondary school graduates. Unlike graduates from the SQU, those from private institutions do not easily find employment in the public sector.

In 1967, the modern TVET system was introduced in the context of the emerging petroleum industry (Al-Rawahi, 2011). Later, the government established vocational training centres at secondary and technical industrial colleges at post-secondary level (Al-Raisi, 2000). In 1991, the High Committee for Vocational Training was set up, whose primary purpose soon became to promote the Omanisation of the workforce. Since then, TVET policy has been shaped by the overarching Omanisation imperative (Al-Lamki, 2000). New TVET regulations introduced in 2015 differentiate between four sub-sectors under the responsibility of the Ministry of Manpower (MoM): Technological education at post-secondary level in colleges of technology; vocational education and training at secondary and post-secondary level in governmental vocational training centres; fisheries institutes and private training institutes (Al-Mujaini, 2018). The Ministry of Higher Education (MoHE) recently introduced Colleges of Applied Sciences (Al Shabibi, 2020). A range of further specialised training institutions also fall under the remit of different line ministries and, in further efforts to strengthen vocational training, the government upgraded the Vocational Training Centres into Vocational Colleges and introduced a new national training system comprising three pathways: Post-secondary diploma courses, apprenticeships schemes and short-term training courses[7]. In recent years, a significant number of private training institutes have also emerged; however, while accredited and supervised by the MoM, the private training market appears to be only minimally regulated (Jax, 2012) with diverse quality standards (Klaffke, 2010).

In terms of enrolment numbers, only a small percentage of youth are trained in the public vocational training system. In 2019, 5,394 persons were registered in vocational colleges

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[6] Unesco Institute for Statistics: http://uis.unesco.org/en/country/om (21/11/2021)

[7] General Secretariat of the Education Council: https://www.educouncil.gov.om/en/page.php?scrollto=start&id=41 (21/11/2021).

(NCSI, 2020, p. 421), which is marginal compared to 33,088 enrolments at colleges of technology (NCSI, 2020, p. 415) and to the student population of private training institutions[8].

Throughout the years, the public TVET system has experienced various reforms. In the mid-1990s, the government decided to adopt the British system of National Vocational Qualifications (NVQ), although this was deemed unsuccessful and dropped soon after (Al-Raisi, 2000; Klaffke, 2010; Wilkins, 2002). In 2005, the government signed a cooperation agreement with the German GTZ (now GIZ)[9] aiming to reform the Omani TVET system in line with German TVET traditions of strong private sector involvement. Moulded on the example of the German BIBB[10], the Occupational Standards and Training Center (OSTC, now OSC) was founded in 2011 with the purpose of introducing a system of Advanced Occupational Standards as the basis for standardised TVET curricula (Jax, 2012; Klaffke, 2010). While cooperation with the GIZ was terminated, the OCS continues to develop what are now called National Occupational Standards in collaboration with respective industries. Sector Skills Councils were introduced to strengthen involvement of the private sector in curriculum development.

Trade unions have been permitted since 2006, having been introduced through a top-down approach and in the context of reinforcing labour policies to boost Omanisation in the private sector (Louër, 2015). The Omani trade union federation (General Federation of Oman Workers) confirms an interest in work-based learning (Bridgford, 2017), but has so far played a limited role in national skill formation policies.

Entrepreneurship education was introduced more than a decade ago (Masri et al., 2010). Following the social unrest in 2011, the government made it mandatory in higher education, hoping to encourage Omani start-ups (Al Shabibi, 2020, p. 45). However, scholars disagree on the effects of entrepreneurship education (Belwal et al., 2015; Ibrahim et al., 2017).

6   Findings: Weak Incentive Structures and Weak TVET Systems are Mutually Reinforcing

Our research identified challenges in both the TVET system and the socioeconomic structure. Quality issues and conservative teaching and learning patterns in the general education system affect TVET as much as higher education. Weak cognitive skills, above all in English proficiency and STEM subjects, as well as weak analytical and creative skills, are perceived to result from little instructional time in schools, low participation rates in early childhood care and education, as well as traditions of teacher-centred instruction and rote learning (Al

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[8] The total number of enrolments at private training institutions is difficult to assess. According to Al-Mujaini (2018, p. 18) 25,702 trainees completed their training at private training institutions in 2014.

[9] Deutsche Gesellschaft für Internationale Zusammenarbeit (formerly: Deutsche Gesellschaft für Technische Zusammenarbeit): www.giz.de (21/11/2021)

[10] The German Federal Institute for Vocational Education and Training: www.bibb.de (21/11/2021)

Najar, 2016; Al-Shababi & Silvennoinen, 2018; Gonzalez et al., 2008; World Bank & Oman Ministry of Education, 2012).

Despite several reform efforts, TVET is still considered inferior to general secondary and higher education. Based on its marginal societal position, many shortcomings persist in the TVET system. Cooperation between the private sector and TVET is weak at many levels. Companies are reluctant to get involved in TVET both at the policy level and in terms of initial training. With the exception of the oil and gas sector, business associations are weak and incipient, and TVET involvement is not among their priorities. Government efforts to set up cooperation structures between industry and TVET have had limited success and are mostly perceived as top-down governance without benefit for companies, especially in the manufacturing sector. Consequently, although work-based training forms part of the curricula in vocational and technological colleges, it is perceived to be weak. Apprenticeship schemes are marginal. This also applies to TVET trainer education, which is primarily theory-focused without meaningful work-based components. At the tertiary level, technical education is also perceived to emphasise theory over practice.

TVET policymaking appears to have followed international TVET models somewhat inconsistently, switching between Anglo-Saxon and German traditions. Currently, government policies and practices deploy a mixed approach. They generally follow the UK model of promoting a market-led system of private TVET provision, which is publicly accredited and supervised, whilst also experimenting with German-type dual models. However, since demand by the private sector for trained Omani youth is low, the state strongly intervenes through work placement agencies. Since government supervision capacities are limited, complaints about poor performance of private TVET providers are common. Placement practices related to Omanisation imperatives are mostly experienced by employers as top-down government imposition, while structured cooperation with employers is weak.

While there are obviously dysfunctionalities at the level of TVET provision and governance, the root causes appear to stem from shortcomings at the structural level. As can be said of many Arabic rentier economies, manual work does not enjoy the same status as other forms of employment. Consequently, most young people do not view TVET as a desirable option for career development. This leads, among other things, to low work ethic and weak commitment among Omani job-seekers in the private sector (Ali et al., 2017; Al-Kindi, 2007; Al Najar, 2016; Matriano & Suguku, 2015; Samman, 2010).

The Omanisation system, established to change this situation, has been subject to debate. Some consider it to have had an adverse effect on productivity as a result of companies tending to employ Omanis in low-skilled positions or including them on their payrolls without expecting any services in return. Other critics claim that the strategy detracts political attention from necessary structural economic reforms (see Ali et al., 2017 for a literature review in the regional context). Ali et al. (2017) describe the employment dynamics that result from

what has been called a social contract between Omani nationals and the government. Political consent is granted for the prospect of obtaining relatively well-paid and secure employment with short working hours and favourable retirement regulations in the public sector. This leads to little motivation among Omani youth to look for employment in the private sector. On the other hand, Ennis (2020) describes that young, unemployed and often well-educated Omanis increasingly experience life at the margins of the national labour market, with private sector companies clearly preferring expatriates. In this contested labour market, migrant workers, themselves subject to the highest levels of precariousness, view Omani applicants as a potential threat. Their coping strategies include the marginalisation or even exclusion of Omani colleagues from learning processes and knowledge transfer within workplaces.

Over the decades, employment policies have created a dual labour market of apparently privileged nationals hoping for jobs in the public sector and a little-protected, low-paid foreign workforce covering the skills requirements across all levels of the private sector. Against this background, the driving forces for the emergence of a dynamic skill formation culture are weak.

7   Discussion: The Particularities of a Rentier Framed Political Economy of Skill Formation

As we have seen, TVET provision in Oman is widely school or college-based, and company involvement in initial training is marginal. Following the typologies of skill formation systems outlined above, at first sight, Oman has similarities with statist systems based on strong public commitment and low involvement of firms. Its regulatory and governance patterns appear to be widely bureaucracy-based with social activities and training outcomes focused on knowledge transmission. However, the high number of private TVET providers, which, to a certain extent, tend to escape government regulation, shows the influence and strengths of market forces, as do oscillating TVET policy trajectories. This moves the Omani skills system closer towards a hybrid model.

It becomes obvious that it is not so much the relation between public and employer commitment to skills formation in itself, but rather the particular framing of a rentier state that shapes the political economy of skill formation in a way that results in a weak incentive structure for national skill development.

In the following, we will discuss the main particularities of the Omani rentier state in terms of skill formation. Recent research on entrepreneurship policymaking illustrates some basic dynamics. Al-Shabibi (2020) describes how rentier states do not have a history of putting human resources centre stage of their economic strategies. In Oman, the private sector has grown accustomed to drawing from an apparently endless supply of workers from the neighbouring South Asian subcontinent. Hence, the cost of industrial skill formation is borne elsewhere. Employment distribution in the public sector occurs along the lines of well-

orchestrated power balances with educational credentials functioning as door openers. Yet, as Brandenburg (2013) describes, the segmented system of elite public vs mass private for-profit higher education secures a selective qualification system for public sector employment. The private sector is neither willing nor able to absorb the remaining mass of graduates. Government policies, although discursively committed to employment creation for Omani citizens, are caught between opposing pressures. The competitive logic of the neoliberal global economy pushes for liberalisation of the private sector and deregulation of the labour market to attract investments. In contrast, internal stability demands employment creation for the growing educated youth bulge (Ennis, 2020).

The shock of social unrest in 2011 has led to ad hoc policymaking. Ennis (2015) describes how, in the aftermath of 2011, policy efforts to support entrepreneurship as a means of employment creation have been inconsistent and evasive of structural change. Abiding by the imperative of minimal political cost and the need to appear to address social demands, these policies have ended up generating "reframed rentier practices" (Ennis, 2015, p. 129) since new entrepreneurship initiatives are part of familiar, albeit enlarged, rentier distribution networks. In his analysis of entrepreneurship education in Oman's higher education sector, Al-Shabibi (2020) concludes that, due to the lack of socio-economic structural change, while entrepreneurship education has led to more knowledge about entrepreneurialism among students, this has not, in practice, translated into notable changes in the labour market.

Based on our findings, we argue that similar patterns of policymaking can be identified in skill formation for industrial development. Efforts to improve the quality and reputation of TVET have failed to include any structural change at the level of production and employment. On the contrary, the private sector remains stuck in low skill-low productivity patterns based on workforce import. Two interconnected cycles of social processes shape skill formation in Oman. First, the availability of cheap and underprivileged expatriate labour and the traditional preference of Omani nationals for public sector jobs lead to a poor incentive structure for employing Omani nationals in the private sector. Second, reluctant employer attitudes towards national skill formation deepen quality issues in the TVET system, especially with regard to work-based training. This reinforces negative perceptions of the local workforce, which in turn contribute to biased employment patterns. Both social processes mutually reinforce each other, eventually preventing the emergence of strong national skill formation dynamics.

At the political level, inconsistent policymaking following imported TVET models that turn out to be inappropriate for the Omani context points to palliative rather than substantial reform approaches. As in many other countries, TVET is promoted as a key solution to youth unemployment. Politically, this allows, on the one hand, for the unemployment problem to be individualised and privatised. On the other hand, it allows for government policies to appear socially committed while remaining politically harmless.

At the level of cultural and socio-political practices, two dynamics stand out that shape skill formation practices in Oman: first, the rentier mentality and second, the impact of a strongly hierarchical social order. Beblawi (1987) understands the rentier mentality as a dissociation of the work-reward causation, reward being associated with chance or situation rather than with work and risk-bearing. In Oman, this mentality is manifest in a pervasive disdain towards manual work. The success of Omanisation in the banking sector is illustrative in this respect. Although this success shows the translation of political will onto labour market developments, other factors such as competitive remuneration packages and career development opportunities have moved the banking sector closer to the public sector in terms of career attractiveness (Al-Lamki, 2005). This, complemented by the perception of banking jobs being "white collar" as opposed to manual work, emphasises that the barriers for Omanisation in the industrial sector have as much to do with cultural attitudes as they do with working conditions.

As for the impact of social hierarchies, Al-Shabibi (2020) notes the political price associated with entrepreneurial attitudes such as active risk-taking, innovation and creativity, since such mindsets can potentially undermine public consent with the current system of absolutist monarchic rule.

Some human resources literature (e.g. Al-Hamadi et al., 2007) describe how employee-employer relations are shaped by hierarchical values and behavioural patterns moulded on family and tribal relations. For instance, boundary setting within the workplace shows collectivist thinking towards what is considered the in-group (family and tribe) and individualist thinking towards the out-group (non-kin and guest workers).

While there is clearly a need for more research, the impact of such cultural traditions on educational and skills imaginaries is evident. The persistent centrality of theoretical knowledge in all forms of education, including TVET, resonates with Wolf's (2017) distinction between different manifestations of social activities in TVET. In Oman's bureaucratically regulated TVET system, the critical social activity manifests itself as knowledge transmission rather than work execution or specific work-related behaviour. The oft-mentioned reluctance of teachers to adopt more learner-centred, practice-oriented and creativity-inducing teaching methods (Al-Najar, 2016; Al-Shababi & Silvennoinen, 2018; Issan & Gomaa, 2010; World Bank & Oman Ministry of Education, 2012) might have to do with the strong value of hierarchies in Omani society and with the political sensitivity of questioning them.

To sum up, the rentier mentality in a strongly hierarchical social order generates social understandings and practices of work that see respect for tradition and hierarchies much more effective in terms of access to rentier distribution networks than skilled work in the productive sector.

8 Conclusions

In this paper, we have argued that persistent quality challenges in the Omani TVET system cannot be explained by analysing the level of TVET provision, just as skill deficits cannot explain low employment rates of Omanis in the private sector. Rather, TVET provision must be considered part of the more comprehensive skill formation regime in its dialectic relation with economic and employment structures as well as the social-cultural context. Indeed, in a vicious cycle, the lack of an incentive structure for national industrial skill formation, typical for a rentier society, reinforces shortcomings in TVET quality and provision, which again feed into the image of an unproductive Omani workforce.

Hence, while immediate reform needs of the national TVET system point to necessary improvements in work-based training opportunities, stronger linkages between companies and TVET institutions and better cooperation among the involved government entities, it is obvious that this will not suffice to create a viable TVET system as long as the structural level is not tackled.

We have attempted to contribute to the scarce political economy of skills literature beyond Western contexts. While not directly transferable to other countries, our analysis of skill formation in Oman might prove valuable for the study of similar rentier states, in particular those in the Arab Gulf region. Using two different classifications of skill formation patterns complementarily has allowed us to show how socio-economic and cultural contexts combine to generate particular skill development dynamics. The institution-focused classification by Busemeyer and Trampusch (2012a) sheds light on the way in which the dominance of the rent-securing oil and gas sector impedes the emergence of a strong incentive structure of skill formation. In addition, the model by Wolf (2017) helps to gain an understanding of how rentier practices have shaped a particular imaginary of work unconducive to manual labour and skills acquisition.

Our paper thus attempts to contribute to the theoretical understanding of the particular political economy of skill formation in a rentier state such as Oman. While sharing strong state interventionism with the "developmental model of skill formation" (Ashton et al., 2002, p. 11) of the East-Asian development states, Oman's rentier model is essentially different. In the former, a strong private sector generates skills needs, leading to concerted national policy efforts towards upskilling. Socio-cultural understandings of work are linked to collective efforts of national wealth-building. The respective social contract underpinning socio-economic relations grants participation in economic profit in exchange for highly productive work. In contrast, Oman's social contract is based on access to rent-distribution networks in exchange for political consent. In such a setting, and regardless of government discourses on skills development, a highly-skilled national workforce is less imperative for political stability than one that is respectful of hierarchies.

In Oman, as in other countries, immediate structural change seems unrealistic given global economic interconnectedness at multiple levels. However, with a view to improving employment opportunities, it seems imperative that we move beyond the global fashion of conceiving TVET as a remedy for deeper structural issues. Instead, more research is needed into how skill formation relates to specific socio-economic structures, how employment dynamics relate to educational credentials and how cultural traditions shape educational and work practices.

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Biographical Notes

Dr Margarita Langthaler holds an MA in Roman and Slavic philology and a doctoral degree in political science from the University of Vienna. She is a Senior Researcher with the Austrian Foundation for Development Research (ÖFSE) and a lecturer at the University of Vienna, Department of Development Studies. Her work focuses on education policy in developing countries, technical and vocational education and training in developmental contexts, and education and development cooperation.

Dr phil. habil. Stefan Wolf is Associate Professor at the Technische Universität Berlin, Department of Vocational Education and School Pedagogy. Until 2020, he has also headed the department of Vocational Special Need Education and Vocational Rehabilitation at the Technische Universität Dortmund as deputy professor. His research interests include vocational didactics and pedagogy for teachers and applied historical systematic TVET research. In the field of international comparative vocational education, he specifically focuses on cultural studies, critical science, and post-colonial approaches to science. He has extensive international experience as an academic and consultant through various development agencies.

Dr Tobias Schnitzler is currently working as a Project Coordinator for the World University Service (WUS) Austria. In 2020, he received his Doctoral Degree in Social and Economic Sciences at the Institute for Ecological Economics from the Vienna University of Economics and Business (WU). The focus of his dissertation lies on how collaborative and transformative learning (TL) could be linked to education for sustainable development (ESD). Furthermore, he holds MAs in International Development from the University of Vienna and Environmental Ethics from the University of Augsburg.

The Theory of Human Relatedness as a Potential Underlying Causative Mechanism in Nursing Student Placement Experiences: A UK-Based Critical Realist Study

Phil Coleman*

School of Health, Wellbeing & Social Care, Faculty of Wellbeing, Education & Language Studies, The Open University, Walton Hall, Milton Keynes, MK7 6AA, United Kingdom

Abstract

Context: This study, underpinned by Critical Realism, re-analysed interview data acquired to examine the views and experiences of four stakeholder groups involved in the delivery of employer-sponsored pre-registration nursing programmes offered by a UK university in which all students already held an appointment as a non-registrant carer and who completed their placements within a block or integrated practicum framework. The re-analysis focused on the extent to which this interview data aligned with the key propositions of the Theory of Human Relatedness and therefore whether this theory, congruent with assertions based on the results of an earlier realist synthesis, might provide a causative explanation of factors affecting nursing student placement experiences.

Methods: Semi-structured, digitally recorded and professionally transcribed interviews, each lasting approximately 30 minutes, were held with a purposive sample of 37, predominantly female, respondents in 4 stakeholder groups involved in employer-sponsored pre-registration nursing programmes. These stakeholder groups were students, employers, mentors, and practice tutors and were associated with programme provision within twelve healthcare organisations in northern England.

*Corresponding author: phil.coleman@open.ac.uk

Results: Although more modest in some areas, data provides support for every key proposition identified within the Theory of Human Relatedness; suggesting this theory may closely reflect the criteria that stakeholders implicitly employ to evaluate placement models. More respondents in all groups described the block practicum model in ways that suggest it is best able to promote a sense of connectedness, belonging and synchrony for learners. In contrast, an integrated placement design was portrayed in terms that implied it may increase the risk of disconnectedness but might also be more likely to promote reciprocity. Insufficient data was available to identify the perceived effect of either practicum design in respect of enmeshment, parallelism, and mutuality.

Conclusion: The results of this research suggest that a block placement may foster more positive relatedness experiences for students and other stakeholders within nursing programmes. Moreover, the extent to which a practicum framework is perceived to promote connectedness, belonging, reciprocity and mutuality, to minimise disconnectedness and enmeshment and to reduce the need for parallelism may underpin stakeholder appraisal of the two practicum frameworks. Little research regarding the effect of placement duration and intensity on student learning within pre-registration healthcare programmes or the application of the Theory of Human Relatedness to practicum experiences, however, has been undertaken to date and such investigation is complicated by inconsistent terminology to describe practicum designs. It is argued that further academic enquiry within both fields should be a priority for healthcare educators; not least because it may provide further insights into curriculum designs capable of reducing student attrition.

Keywords: Practicum, Placement, Duration, Intensity, Theory of Human Relatedness, VET, Vocational Education and Training

1   Introduction

For many years it has been widely acknowledged that practice learning is a critical feature within pre-registration nurse education programmes (Anderson & Kiger, 2008; Andrews et al., 2006; EL Mokadem & EL-Sayed Ibraheem, 2017; Murray & Williamson, 2009; Ntho et al., 2020; Price et al., 2011; Tastan et al., 2015). In the United Kingdom (UK), half of the learning hours within such programmes are assigned to practice-based education (Nursing & Midwifery Council, 2018); an allocation common to the pre-registration nursing curricula of many other nations (Warne et al., 2010). Whilst *"a significant volume of nursing research has focused on students experiences of clinical placements"* (Andrews et al., 2005, p. 142), most of these studies only address the supervision and support offered to nursing students by clinicians and educators, ignoring the potential impact of placement duration and intensity on practice learning (Coleman, 2021a). Most importantly, no specific practicum framework

has consistently been shown to be more effective in facilitating such learning (Bhagwat et al., 2018; Rohatinsky et al., 2017).

Whilst placement designs have a variety of titles, most display the characteristics of either a block or integrated model (Coleman, 2021b). The block model, also termed the *"daily"* (Bonello, 2001), *"full-time"* (Shiverick, 2012) or *"uninterrupted"* (Archer, 2016) approach, provides intense, immersive periods of clinical placement lasting weeks, or months, which are commonly unbroken by academic study (Levett-Jones & Bourgeois, 2011). In contrast, the integrated model, also referred to as the *"concurrent"* (Guin, 2019), *"continuous"* (McKenna et al., 2013), *"day release"* (Institute for Employment Studies & International Centre for Guidance Studies, 2019), *"distributed"* (Reinke, 2018), *"integrative"* (Rasheed, 2017), *"interspersed"* (Grenier, 2015), *"non-block"* (Rohatinsky et al., 2017), *"part-time"* (Sala-Hamrick, 2019), *"protracted"*, (Boardman et al., 2019) or *"weekly"* placement (Sheepway et al., 2011), involves students having episodes of both practice learning and academic study during the same programme week and may therefore offer scope for greater integration of theory and practice (Uys & Gwele, 2005).

In a systematic review of *"school-based integrated teaching for vocational knowing in nursing related training"*, Christidis (2019, p. 19) reports that this topic is scarcely explored and, even globally, relevant research is sparse. Within the existing small body of international work examining the effect of block and integrated practicum models on the learning experiences of pre-registration healthcare students, neither model has so far been identified as predominantly preferable or more beneficial to clinical learning. Some investigations have identified greater value within block placements (Amertil et al., 2020; Coghill, 2018; Peters et al., 2013; Reinke, 2018; Sheepway et al., 2011), whilst others have concluded that exposure to integrated practicum experiences offer better practice learning opportunities (Boardman et al., 2019; Kevin et al., 2010; Ranse & Grealish, 2007; Vanson & Bidey, 2019) or that there is no demonstrable benefit to either design (Perry et al., 2016; Sheepway et al., 2014). Moreover, several studies suggest both frameworks have strengths and weaknesses, and that stakeholder preference may be affected by individual circumstances, including the amount of programme study the learner has completed (Birks et al., 2017; Rohatinsky et al., 2017; Rohatinsky et al., 2018).

Further research related to the use of these models in the context of other disciplines, for example social work, have been similarly inconclusive. Although Rock & Ring (2010) found that, amongst other benefits, a block practicum offered students better opportunities to apply and practice their professional knowledge and skills and helped develop greater awareness of the culture of the service in which a placement occurred, work by Theriot et al. (2006) found no statistically significant difference in student performance between learners undertaking placements based on either practicum design. Moreover, several studies within the discipline

have identified advantages and disadvantages to both block and concurrent [integrated] formats for field education (Curl & Cary, 2014; Hunter & Hollis, 2013).

Critical Realism has been described as *"a particularly relevant philosophical framework on which to base investigations within socially embedded, complex, empowerment focused, practice-based fields such as nurse education"* (Coleman, 2020, p. 203) and within nursing and wider healthcare research this approach to academic investigation is growing in popularity (Bakhshi et al., 2015; Terry, 2013; Parpio et al., 2013). Research underpinned by this philosophy strives to have emancipatory outcomes (Wise, 2019), takes a position within a debate (Edgley et al., 2016), makes pragmatic recommendations (Corry et al., 2018) and seeks to locate causative mechanisms to explain observed phenomena (Bygstad & Munkvold, 2011).

The Theory of Human Relatedness (THR) proposed by Hagerty et al. (1993), which highlights the importance of an *"individual's perception of the quality of the interface between that individual and any perceived external source"*, suggests individuals assign meaning to their relatedness experiences based upon their sense of self and *"the concurrent level of comfort or discomfort associated with that involvement"* (p. 292). In the last three decades there has been growing interest in the THR and it has been applied to various fields, including paediatric nursing (Betz, 2004), the treatment of alcohol dependency (Strobbe et al., 2012) and social processes associated with adolescent connectedness (Karcher & Lee, 2002). A more recent focus, however, has been on its use in explaining the importance of features of relatedness to nursing student learning experiences within placements (Levett-Jones et al., 2009; Potter-Dunlop, 2017).

Indeed, it has been argued that *"if a student nurse does not fit in and does not feel part of the team, this has the potential to hinder his or her learning and ability to progress from the theoretical elements of nurse education to the practical elements of nursing in the real world"* (Vinales, 2015, p. 534). A realist synthesis of existing theories that might be operating as underlying causative mechanisms affecting the practicum encounters of nursing students recently concluded that the THR *"may provide the most complete theoretical framework to explain student practicum experiences"*, since it appeared to account for the *"broadest range of observed phenomena highlighted in research associated with nursing student conduct in a clinical setting"* (Coleman, 2021b, p. 113). To test these assertions, interview data derived from a recent investigation exploring the influence of block and integrated placements on clinical experiences within employer-sponsored pre-registration nursing programmes (ESPRNPs) at a UK university (in which either practicum design may be selected by the student's employer sponsor but in which total practicum hours are identical) were re-examined in the context of the THR.

The application of both block and integrated placements within the ESPRNPs is atypical in the UK where, traditionally, most open-entry nursing degree programmes have been based on a block practicum design. Moreover, unlike most undergraduate nursing program-

mes, all entrants to these ESPRNPs are non-registrant carers (NRCs) employed within organisations providing healthcare services who only need to have the support of their employer and to meet the minimum entry requirements of the Nursing & Midwifery Council (the UK regulatory body) to apply for one of the programmes. Employer support is an entry condition because organisations are required to meet any necessary staff backfill costs associated with providing each student with 2300 hours of mandatory supernumerary practice learning and to arrange appropriate clinical placements and student support from mentors (recently re-termed practice assessors). In most conventional open-entry nursing degree programmes where students are not employees of the organisation, such backfill costs are inevitably absent and the university providing a nursing programme would normally plan all required placements.

The pre-entry experience of ESPRNP students in delivering nursing care, albeit in non-registrant roles, means that most are mature learners who may possess a level of familiarity regarding healthcare provision which is commonly absent amongst younger nursing students on open-entry programmes offered by other universities. Nevertheless, ESPRNP students may, by virtue of their NRC experience, sometimes be assumed to have higher levels of clinical skill than is the reality. A blended learning approach is used for academic study within these ESPRNPs, and student retention and achievement rates are generally much higher than on similar open-entry programmes; perhaps because of the discipline-specific pre-entry knowledge and work experience learners on these programmes possess. The lower level of entry qualification and the fact that ESPRNP students may not have completed any accredited formal learning for some considerable time, however, means that many of them find academic study much more challenging than conventional open-entry nursing undergraduates.

Outside of their placements, students on these ESPRNPs continue with their work duties as NRCs within the organisation; hence learners receiving integrated placements undertake nursing student and NRC roles during the same week as well as academic study in respect of their ESPRNP. Those assigned a block practicum have periods in which they are either a nursing student on placement or an NRC but concurrently undertake their ESPRNP academic studies irrespective of their clinical activity. This investigation, underpinned by Critical Realism, seeks to address the following research question: *To what extent does evidence from ESPRNP stakeholders regarding the use of block and integrated placements support the notion that principles within the THR may be causative features underpinning practice learning experiences and practicum design preferences?*

2   Methods

Semi-structured interviews were undertaken with 37 representatives of 4 stakeholder groups involved in block and integrated practicum models used on ESPRNPs leading to BSc (Hons) awards in nursing and entitlement to join the Nursing & Midwifery Council register. Each interview lasted approximately 30 minutes, was digitally recorded, and involved concurrent member checking (Beuving & de Vries, 2015). Respondents chose the time and location of their interview. Most interviews were undertaken face-to-face, but almost all those completed during 2020 took place virtually due to restrictions associated with the COVID-19 pandemic. Before their implementation, two academics discussed and agreed the interview schedules.

The 4 stakeholder groups, predominantly female (33), were students (12), employers (9), mentors (8) and practice tutors (8), all of whom worked within 12 healthcare organisations in northern England. Students were aged 21 years or older, studying either an adult physical health (8) or mental health (4) pre-registration nursing degree programme and had at least entered the second year of their studies and so already experienced several placements. The employers were National Health Service (NHS) Trust managers in services delivering either physical (7) or mental (2) healthcare who could select the student's placement model. Mentors were all qualified nurses working in either physical (5) or mental (3) healthcare organisations in which ESPRNP students were located and who assessed the learner's clinical knowledge and skills. Practice tutors were teaching staff employed by the university to monitor ESPRNP learner progress and support students/mentors during placements. The professional background of these practice tutors was in either physical (5) or mental health (3) nursing.

All invitations to participate were by email and non-respondents were sent a follow-up email 2 weeks later. Those who still failed to reply were assumed to have declined the invitation. The researcher, an academic at the university, undertook all interviews but had no direct involvement with the student's education and was not employed by any healthcare organisations involved in the study. This individual, however, acted as the line manager for several practice tutor respondents. The investigation was approved by the university's research ethics committee and written informed consent was secured from all participants. Purposive sampling was utilised in this study and audio recordings of the interviews were transcribed by an independent professional transcription service. Data analysis in relation to key principles within the THR focused on manifest rather than latent content (Graneheim & Lundman, 2004). Evidence aligned to features of the THR were shared for consideration by 3 disinterested academics, although no changes were recommended in relation to the preliminary results.

3   Results

The purpose of this study, namely, to determine whether interview data from the 4 stakeholder groups illustrates, and therefore potentially supports, key principles within the THR as causative mechanisms associated with practice learning experiences and practicum design preferences, means that the results are presented in relation to these principles. Wherever possible, examples are drawn equally from all stakeholder groups to facilitate fair dealing (Mays & Pope 2000). Stakeholders are identified by their ESPRNP role; namely employer [E], mentor [M], practice tutor [P] or student [S] and a unique identification number. Respondent comments that may enable recognition of any organisations are replaced by generic descriptors, shown in brackets, and terms to facilitate comprehension are provided in the same way.

3.1   Connectedness

Within the THR, *"connectedness"* refers to interactions with other individuals, objects, or an environment that produce individual feelings of comfort, well-being, and a reduction in anxiety (Levett-Jones et al., 2009). Congruent with the concept of connectedness, several respondents recognised the need to ensure placement provision promoted student integration and accommodated the needs of the individual learner:

> E9: *"We are very aware that, although student nurses are supernumerary, they are expected to be part of a team"*

> P3: *"It's about fitting the placement to the person"*

Most respondents suggested a block model of practice learning was more likely to facilitate student experiences that promoted a sense of connectedness:

> E8: [Better if students are] *"able to immerse themselves in a four-week block, experience the shifts, experience how their mentor will work across that working week"*

> M8: *"She* [student] *found it easier to comfortably slot herself into the team and just really know what was going on with the block placement"*

> P2: *"They* [students] *say that they prefer to come, be a student on block and be a part of the team and be seen as a student and own that identity"*

> S5: *"Being a student at the end of my four week block or whatever, I've very much made good relationships here"*

In contrast, the integrated model was seen as adversely affecting scope for connectedness:

> M8: *"If you were to do like an integrated placement with ward hours, it would be quite flaky really, you wouldn't be seeing as much of them"* [ESPRNP students]

> P4: *"People* [staff and patients] *on the placement don't actually get much time with the students if they're only there for two days* [integrated model]*, and I think that sometimes can have a negative impact on developing those relationships on placement"*

3.2   Disconnectedness

The THR terms a lack of active involvement by an individual within a specific environment as *"disconnectedness"* and suggests this state may cause anxiety, distress, and reduced well-being (Hagerty & Patusky, 2003). Several employer respondents in this study expressed concern that a lack of familiarity with ESPRNPs amongst staff located in placement settings may have adverse consequences for students on these programmes which might propagate disconnectedness:

> E4: *"The students lose confidence in their mentors as well if the mentors feel like 'oh this isn't what I'm used to, I don't know what I'm doing with this"* [student]

> E9: *"They* [ESPRNP students] *are wearing, however, a different uniform to nursing students* [from other universities] *in their more, in previous, you know, and so first of all that makes them look a bit different, and people perhaps then start to think of them a bit differently"*

Unfortunately, some ESPRNP students reported practicum experiences that had indeed contributed to a sense of disconnectedness:

> S3: [Mentors have said] *"you're not a proper student because you know what you're doing"*

> S6: *"From day one they had me, it was written in black and white on the lovely mentor board, and I was written on there as a nursing apprentice* [the individual was not an apprentice]*, which I asked them to change but they didn't"*

> S5: [During placements] *"there's times where I've felt a little lonely"*

The tension caused by being an ESPRNP student and an NRC was also acknowledged and could evoke a sense of disconnectedness during a placement:

> M6: *"Sometimes they* [ESPRNP students] *would like to support the nursing team when we're busy, when we're needing things done, but actually they're not allowed to do that"*

In most instances, respondents appeared to suggest that the risk of disconnectedness might be greater during integrated placements:

> E4: *"I think particularly for students who are only going in for two days a week* [integrated practicum]*, they would probably be a bit lower down the priority list from a mentor's point of view. Because they don't know them as well, they're not as invested in them"*

> M4: *"So they* [ESPRNP students on an integrated placement] *miss out maybe on the, they'll come back and say 'oh how's that man?' and they'll have died, so they've missed out that bit of continuity"*

Nevertheless, one student suggested a block practicum could be equally problematic in respect of their NRC work:

> S7: [With block placements] *"I'm pulled out of that, and then put back in. So, it's starting again, at least for the first week to get back into how the routine goes. You carry over some skills, but not all of the everyday routine stuff"*

3.3 Parallelism

Within the THR, *"parallelism"* refers to situations when a lack of involvement is experienced as comfortable and promotes a sense of well-being (Strobbe et al., 2012). Only limited examples which might illustrate this feature were evident within the interview data. Nevertheless, several ESPRNP students noted their tendency to revert to their NRC role and independently deliver care in the absence of direction or guidance from placement staff. Moreover, most appeared at ease with such parallel working if they felt they were making a meaningful contribution to service provision within this setting. Their actions, however, were not always perceived positively by others:

> S2: *"Sometimes you can come onto the ward* [placement] *and it's kind of 'oh, you're an auxiliary* [NRC]*, you know what you're doing'. So, you sometimes get left to your own devices"*

> S6: *"I have been criticised for being on a ward and just disappearing and getting on with some jobs. Because that's what I've always done as a healthcare"* [NRC]

> S10: *"I said oh, during one of the – one of my mentors, I said 'oh how am I doing?' She said, 'well actually I forget that you're here because you just get on and do it'"*

Demonstration of behaviours which may be associated with parallelism did not appear to be affected by the practicum model to which the student was exposed.

3.4   Enmeshment

The THR suggests that active involvement of an individual can sometimes generate discomfort, anxiety, and a lack of well-being. Such experiences are categorised as *"enmeshment"* (Potter-Dunlop, 2017). Both employers and ESPRNP students reported concerns that having concurrent status as an NRC could lead learners to feel embarrassed about the limits of their knowledge and be less assertive during a practicum:

> *E5: "Healthcare assistants* [NRCs] *who have been student nurses on the traditional programmes, they haven't wanted to admit that they don't know how to do something"*

> *E9: "As healthcare assistants* [NRCs]*, you know what your place is, you know what your role is and lots of healthcare assistants feel that their place is not to speak out because that's not the right thing"*

> *S4: "I almost feel stupid for not knowing"* [how to carry out a clinical procedure]

> *S10: "She* [mentor] *told me that if I didn't take this patient's blood pressure* [despite the mentor not having determined her proficiency to do so] *and anything happened to them it would be my fault"*

One mentor suggested ESPRNP students may also be more likely to be assigned tasks of limited educational value during a placement and that their supernumerary status (although enshrined in UK law) may be perceived differently to that of open-entry nursing students:

> *M6: "They* [ESPRNP students] *may get given more mundane jobs which aren't really great for their learning'. Because they* [ESPRNP students] *are paid members of staff, they are always going to therefore be counted in some form of skill mix and numbers on the wards"*

Indeed, it was even suggested that tension and animosity were sometimes evident between ESPRNP, open-entry students and clinical staff in a placement setting:

> *M2: "On some occasions members of staff, as well as other students from for example [names of three other universities], feel a sense of resentment maybe towards* [ESPRNP students] *… in that they are paid as a health carer for two shifts of the week"*

> *M6: "The* [ESPRNP] *students have sometimes said they* [open-entry nursing students from three other universities] *get treated differently because they are supernumerary and they're not getting paid"*

> *S12: "Because when the staff find out you're still getting paid. The NAs* [NRCs] *are Band 2* [NHS salary scale]*, and they find out you're a student and you're earning a Band 3 wage, they're like 'well they can do more, they can do more work'"*

3.5   Belonging

Within the THR, *"belonging"* refers to those conditions which lead an individual to feel a positive, integral part of a process, activity, or environment (Hagerty et al., 1993). The importance of ESPRNP students having a sense of belonging within a practicum was highlighted by respondents in almost every stakeholder group and, commonly, a block practicum was deemed to best promote it:

> E9: *"I think it* [a block placement] *gives* [the ESPRNP student] *the impression of allowing more consistency: You're a fulltime member of staff for six weeks"*

> P1: *"People* [ESPRNP students] *do definitely feel valued and they often say I felt part of the team. Now those tended to be, the ones I remember are people who've had a block placement"*

> S9: *"I just feel like I'm a part of the team"* [in a block practicum]

In contrast, placements based on the integrated model were perceived as adversely affecting the way ESPRNP students were perceived:

> M8: *"It just more feels like someone doing a bank shift* [itinerant nursing staff input] *with that* [integrated placement]*, rather than getting that full learning experience from a ward shift perspective"*

> P2: *"Because it was too bitty to not do it on block* [placement]*, they* [the employer] *felt that they* [ESPRNP students] *would feel more a part of the team"*

> S6: *"I did not appreciate being shouted at* [by the ward manager]*, but I did understand her frustration. And she kept saying 'you've been here five weeks and I still haven't seen your portfolio'* [competence record]*. I hadn't, I've been there five shifts"* [in the integrated model]

3.6   Reciprocity

Related to the concept of belonging, the THR describes *"reciprocity"* as an *"individual's perception of an equitable alternating interchange with another person, object, group, or environment that is accompanied by a sense of complementarity"* (Hagerty et al., 1993, p. 294). A key illustration of reciprocity in respect of ESPRNP student activity was the scope for such individuals to disseminate the learning they acquired in one setting to others in which they had a role:

> E1: *"So being able to share, they're* [ESPRNP students] *like little bees and pollinating everywhere"*

> M4: *"I find that I learn from them* [ESPRNP students] *and then they learn from me"*

S11: [NRC workplace managers have] *"said that they can see a massive difference in terms of sort of* [my] *competence and communication with the patients"* [through their ESPRNP student role]

One student highlighted the importance they assigned to having a voice during a practicum and of both contributing to nursing care and being assisted to develop their nursing knowledge and skills:

S3: "They've [placement staff] *been quite open with my suggestion". "I got stuck in straightaway with the nursing stuff. So, my first shift I was doing drug rounds, I was preparing IVs* [intravenous infusions]. *She was quizzing me on drugs. She* [mentor] *was explaining things to me, which was really good"*

Interestingly, the potential for ESPRNP students to demonstrate reciprocity via disseminating their learning from different settings was largely seen as being enhanced by exposure to integrated placements:

M4: "To reflect on what they've [ESPRNP students] *learned on the two days out of their normal practice and then they can take it back and integrate it in. And it makes you look at things with fresh eyes"*

P5: "Students on the integrated model because it's longer they reflect more on the practices that they're doing, and they can think about where they are as a healthcare assistant [NRC]. *And they start to integrate those changes in practices into their everyday"* [NRC work]

3.7 Mutuality

In the context of the THR, *"mutuality"* describes situations in which a person believes they share a vision, goals, sentiments, or characteristics with others, but can also accept recognised differences between themselves and those with whom they interact (Haggerty et al., 1993). Evidence of mutuality within the study data was modest, although several nursing students highlighted the way in which they perceived some registrant clinicians with whom they worked as highly desirable role models:

S1: "Your mentor can be a good role model for you, [so you] *just* [want] *to do what she does or what he does"*

S5: "Then there's certain aspects [nurses] *who are complete inspirations and* [you think] *'I want to be that practitioner'"*

Student expressions of mutuality did not appear to be affected by the model of practice learning underpinning their placements.

3.8   Synchrony

The THR suggests that *"synchrony"* occurs when a person's experiences are congruent with his or her internal psychological, social, spiritual and/or physiological rhythms and their interaction with the external world (Haggerty et al., 1993). The tension and dissonance associated with moving between the NRC and ESPRNP student roles, not least in respect of appropriate conduct and skills application, was recognised by virtually all respondents in the 4 stakeholder groups. Which practicum model best contributed to synchrony, however, was a matter of greater debate. Some respondents believed that an integrated placement reduced transitional problems:

> *M2:* [With integrated placements] *"the students felt a sense of security maybe that they still kept their healthcare* [NRC] *role, but had one shift a week where they could concentrate on being the student nurse"*

> *P6: "If you are doing say two days a week* [integrated practicum]*, to have* [it provides] *a little bit of time to reflect, because they're not there every day. So, if you've learned something new, or been in a new situation, when you then go back for a few days into your comfort zone so to speak, where you've worked for a long period of time, it gives you that little bit of time to think"*

Since most ESPRNP students were mature learners and therefore had other significant commitments beyond both their course learning activities and NRC duties, the integrated model was also described as more accommodating in respect of wider commitments:

> *M3: "It's the first time I've come across anybody* [nursing student] *doing the training this way* [with an integrated placement]*. So, I thought 'oh it's a bit odd' at first, then actually as I got to know her I realised that it actually really suited her, but it also suited the department's needs as well"*

> *S7: "I've got children to get to school and having two days a week* [integrated placement] *would be much better personally than having the full block placement and having to cover four weeks, six weeks, ten weeks of childcare, whereas two days a week my mum and dad could handle that"*

> *S12: "From a financial perspective* [if] *I was full-time* [block] *on placement, I'd lose out on enhancements"* [additional NRC unsocial hours payments]

Other respondents, however, suggested a block practicum reduced the difficulties related to fulfilling a nursing student and NRC role by enabling periods of uninterrupted clinical learning and helping the NRC role of the ESPRNP student to be set aside for longer periods:

> *E9:* [A block model was chosen] *"to stop any dis-settlement from a mentor's point of view which may then impact on the student or their learning experiences"*

M8: "They [ESPRNP students] *voiced that they preferred the block method, they found it easier to, as I say, slot them self into the team and just how the ward ran really. It made them more comfortable"*

P4: "Students who were on block placements found it easier, because what they then say to me was that during the time when they're on placement they don't actually have to think about their role as a healthcare assistant" [NRC]

S8: [In a block placement] *"I wouldn't be torn between my role as an HCA or a support worker* [NRC]*, and my role as a student as much"*

4 Discussion

Analysis of interview responses from members of the 4 stakeholder groups against key features of the THR suggests this conceptual framework provides a useful theoretical explanation of the factors underpinning ESPRNP practicum perceptions and experiences. Indeed, every key structural element of the theory, namely *"connectedness", "disconnectedness", "parallelism", "enmeshment", "belonging", "reciprocity", "mutuality", and "synchrony"*, was evidenced within the data. The number of responses supporting the influence of parallelism and mutuality, however, was more limited. This paucity of reported experiences reflecting parallelism may be attributable to stakeholders wishing to avoid any suggestion that such activity, which may be seen as professionally undesirable, might occur during a practicum. Although located outside this study, the researcher has since been advised of anecdotal accounts related to mental health pre-registration nursing students in physical care placements who have responded primarily to the psychological needs of patients in the setting due to an absence of clear supervision or direction from clinicians and yet found such work fulfilling, as well as learners identifying specific practitioners as influential role models with whom they feel an affinity; suggesting wider evidence of parallelism and mutuality may be available.

Critical Realist research commonly examines topics in which underlying structures and relationships may affect observed phenomena but for which it is impossible to prove a cause-effect relationship (Harper, 2011). Hence, investigations such as this study, commonly seek to establish the most probable explanation for empirical findings; an approach known as *"retroduction"* (Meyer & Lunnay, 2013). Arguably, the alignment of stakeholder experiences and reflections upon ESPRNP student placements to the key features of the THR identified within this investigation suggests that these psychosocial variables may have as significant an impact on practicum model preference and the practice learning experiences of nursing students as, for example, the opportunities for clinical skills acquisition in a placement, the inter-relationship between classroom and work-based learning or the effect of concurrent

nursing student employment – factors traditionally given far greater consideration in academic discussion related to placement organisation.

Essentially, the findings may suggest that stakeholders unknowingly base their evaluation of practicum models on criteria largely reflected within the key propositions of the THR. That is to say, what could determine an individual's perception of an effective placement framework more than structural considerations, is the extent to which it is tacitly perceived as promoting connectedness, belonging, reciprocity, mutuality, and synchrony and minimising disconnectedness and enmeshment as well as reducing the need for parallelism. Inevitably, the concurrent NRC role undertaken by ESPRNP students prevents the influence of the workplace in which a student is employed in their NRC role being clearly separated from their clinical placement experiences. Nevertheless, and still congruent with the THR, such employment may be a feature affecting an individual's appraisal of the extent to which a practicum is deemed to promote a positive sense of relatedness and mitigate against the risk of negative psychosocial experiences. The relatively recent introduction within some UK nations of new employment-based programmes enabling a learner to acquire a nursing degree and entitlement to join the NMC register, termed *"Registered Nurse Degree Apprenticeships"*, has triggered an increased use of integrated placements by other universities and so these programmes may offer scope for wider examination of stakeholder perceptions regarding block and integrated practicum models.

Furthermore, it is interesting to speculate if an implicit negative stakeholder evaluation of a specific practicum model (based upon analysis congruent with the THR principles) may alone be sufficient to adversely affect a practice experience. In other words, whether merely perceiving a placement model as less effective in facilitating positive aspects of relatedness might impair the potential for successful student learning within any forthcoming clinical practicum structured upon the model of concern. Given the well-recognised influence other intrapersonal factors may have upon interpersonal relationships, such an effect cannot be readily dismissed. If this form of prejudice is indeed a potential risk, which seems plausible, then it is perhaps one best mitigated by pre-emptive interventions designed to change an unfavourable placement model perception; for example, via pre-placement preparation for nursing students akin to those interventions advocated in several earlier studies (Priest, 2005; Sherratt et al., 2013) but designed to meet alternative goals. Since concerns regarding a lack of high-quality practicum experiences for nursing students have now been expressed internationally for several decades (Barnett et al., 2008, Brown et al., 2011; Gale et al., 2016; Kaliyangile & Ngoma, 2020; National Nursing & Nursing Education Taskforce, 2006; Shearer & Lasonen, 2018), it appears crucial to create conditions in which both models are perceived favourably if use of placement capacity is to be optimised.

It is acknowledged that the respondent sample (37) employed in this analysis was relatively modest and that the interviews from which evidence was obtained were originally structured

to examine stakeholder views, encounters and learning in the context of block and integrated practicum models for ESPRNP students rather than examine the THR as a possible causative dimension of placement perceptions. Alternative questions designed specifically to probe features of the THR might therefore have generated more explicit responses but, since such data re-analysis was not originally planned, it could be argued that the transcriptions provide a more robust and objective evidence base and that support for the THR is strengthened by consideration of this theory having been avoided within the original research design. It is also acknowledged that the researcher was the line manager for several practice tutor respondents although, given that the topic is not value-laden and both practicum models were offered within the ESPRNPs provided by the university and without institutional preference, it seems less likely that any pre-existing relationships would have affected the responses given.

Overall, the results of this Critical Realist study highlight that more respondents in all groups describe the block practicum model in ways that suggest it is best able to promote a sense of connectedness, belonging and synchrony for learners. In contrast, an integrated placement design was portrayed in terms that implied it may increase the risk of disconnectedness but might also be more likely to promote reciprocity within the ESPRNP student experience. Insufficient data was available to identify the potential effect of either practicum design in respect of enmeshment, parallelism, and mutuality. Further analysis of primary and secondary data associated with nursing student placement experiences could enable additional scrutiny of the THR as a framework to explain the factors underpinning clinical learning experiences for a wider student population undertaking pre-registration healthcare programmes. Nevertheless, evidence to date already supports the assertion that nurse educators should give appropriate regard to the likely impact of features highlighted within the THR when arranging placements if these are to consistently be more positive learning experiences which enhance clinical competence and promote the wellbeing of nursing students.

5 Conclusion

In common with other psychosocial theories of learning and development, the THR maintains that the nature of an individual's involvement in an environment and the social relationships they form within it may have significant cognitive and emotional effects. Levels of self-confidence, comfort, anxiety, and a sense of wellbeing are therefore shaped by such activity. Clearly, placements may offer emotionally charged episodes of social, intra-disciplinary and inter-disciplinary interaction for students on any pre-registration healthcare programme and generate either positive opportunities for deep and meaningful learning or have negative consequences that may not only impair future professional development but cause some learners to disengage from their programme. One respondent in this study [P3] articulated her view that, during a placement, nursing students *'are there to learn, not to be a member*

of the team'. Both the THR and results from this study, however, would refute such a view; countering that effective practice learning and positive relatedness experiences, such as that derived from a student feeling a member of the service team within a practicum, are both inter-related and inseparable. Clearly, whilst other factors may also affect placement experiences, it is argued that there is now a need for greater consideration of the influence of the THR principles to such learning activities.

Although a larger body of work may be evident within other professional fields, the effect placement duration and intensity may have on the student experience is a seriously under-researched topic within nursing and other healthcare disciplines and is one complicated by inconsistent terminology to describe the same practicum design. Although there is *"no central record of student nurse attrition in the UK and no standardised method of recording it"* (Urwin et al., 2010, p. 203), it has been estimated that *"the average attrition rate for student nurses in England is 20%"* (Boath et al., 2016, p. 81) and more recent research indicates that student attrition on pre-registration nursing programmes is as high as 50% in some UK universities (Buchan et al., 2019). It seems inconceivable that negative practicum experiences are not a potential contributory factor in student attrition from such courses. Given some existing evidence suggesting placement design may affect student wellbeing, but the lack of a comprehensive knowledge base associated with the influence of placement duration and intensity on practice learning, it is argued that further research to examine causative mechanisms in such experiences should be afforded a much higher priority within healthcare education than is currently the case.

Acknowledgements

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Biographical Notes

Phil Coleman is currently a Staff Tutor/Senior Lecturer in the Faculty of Wellbeing, Education and Language Studies at The Open University. Since joining this institution, he has undertaken various teaching and management roles and contributed to nursing, social work, and health and social care programmes. He is a Registered Mental Health Nurse, Nurse Tutor and a Fellow of the Society for Education and Training. Amongst other awards, he holds a Master of Education (Lifelong Learning), a BSc (Hons) Nursing Science, a Diploma in Nursing and is in the final stage of a part-time Doctorate of Education with Newcastle University.

A Grounded Theory Study on Motivational Development After Detours in Young Adulthood – How Extra-Vocational Training Affects Aspirations

Monique Landberg[1]*, Peter Noack[2]

[1]Educational Psychology, University of Education Weingarten, Kirchplatz 2, 88250 Weingarten, Germany

[2]Educational Psychology, Department of Psychology, Friedrich-Schiller-University Jena, Humboldtstrasse 27, 07743 Jena, Germany

Abstract

Context: In the present study, we explore what motivates young adults to re-engage with education or employment after a period of non-engagement. Insights into this process facilitate the implementation of tailored support measures for at-risk groups. It is well-known that young people who are not involved in any kind of education, employment, or training face further risks to their professional and psychological development.

Methods: Using a grounded theory approach, interviews with young adults from various educational tracks were analyzed, compared, and contrasted. The sample was focused mainly on apprentices in extra-vocational training and professionals working with young people to describe the process of re-engaging in detail (n = 30).

Findings: Our analyses suggested that frustrating prior experiences and offers to participate in government-funded vocational training prompted motivation to learn an occupational skillset. Undergoing an apprenticeship enabled young adults to develop the motivation to finish vocational training and to plan on further education.

*Corresponding author: monique.landberg@ph-weingarten.de

Conclusion: The implications of these results as they pertain to Germany's labor market policies, which foster a sense of individual responsibility to facilitate the achievement of professional success, are discussed. Furthermore, the implications for supporting further educational aspirations when working with young adults are discussed.

Keywords: Access to Education, At-Risk Youth, Apprentice, Career Pattern, Educationally Disadvantaged Youth, Vocational Education and Training, VET

1 Introduction

In times of uncertainty, the perceived risk of becoming unemployed increases, and some groups become more vulnerable to labor market changes than others. The groups at especially high risk of unemployment include young people and those with low levels of educational attainment (European Commission, 2020). Individualization and de-standardization pose risks for young people who have left school without any formal educational credentials. In the wake of globalization, and in line with trends that have been mounting since the 1980s, these individuals have difficulty finding any work, let alone well-paid, stable positions (Blossfeld et al., 2011). This overall risk is exacerbated by macroeconomic shifts, such as recessions. The last recession took place in 2008. It did not affect Germany as drastically as other countries due to the introduction of underemployment assistance, an instrument for workers who have been forced to reduce their monthly working hours that allows them to receive compensation from the Federal Employment Agency (Rinne & Zimmermann, 2012). However, young people with low levels of educational attainment are also at risk for becoming trapped in unstable careers in Germany, for example, due to their inability to secure training (Bundesinstitut für Berufsbildung, 2013).

Nevertheless, many countries have a system to train apprentices in fields facing a shortage of workers and have attempted to deal with the situation by introducing alternative routes to vocational training (Aspøy & Nyen, 2017). However, these alternatives have advantages and disadvantages, such as reducing the motivation of employers to offer regular apprenticeship placements in the long run (Aspøy & Nyen, 2017). Hence, there continues to be a mismatch between young people wanting to begin an apprenticeship and the available positions (Bundesministerium für Bildung und Forschung, 2021). When no position can be secured, young people often end up entering the so-called "transition system" (e.g., Michaelis & Busse, 2021) to gain the necessary skills to obtain an apprenticeship. However, whether this system is helpful or only a "waiting loop" is a topic of debate (Busemeyer & Iversen, 2012; Solga et al., 2014; Walther et al., 2007).

The present study is focused on interviews with young people who participated in a special form of vocational training called "extra-vocational training" (BaE; "**B**erufsausbildung in

außerbetrieblichen Einrichtungen"). The BaE program is part of the transition system and is a government-funded program offering vocational training credentials to young people who, for various reasons, are unable to secure vocational training under normal conditions in a free-market economy.

The interviews took place in 2011, three years after the 2008 recession. Although the recession affected Germany only mildly overall (Möller, 2010), some subgroups, such as young, male, and poorly educated workers, were disproportionately negatively affected (Jenkins et al., 2013). Interviews with career counselors, teachers, and social pedagogues were integrated for theory-building according to the strategies suggested by grounded theory, the method used to analyze the data. Furthermore, a few interviews with Italian apprentices and teachers were included to add a perspective representing a more critical economic situation. The economic situation in 2011 was much worse in Italy than in Germany, especially for young people (Fiori et al., 2016; Schoon & Bynner, 2019). These interviews helped the researchers compare data with data, a key process within the applied grounded theory framework (Corbin, 2009). The present study is an attempt to understand the extent to which participation in BaE functioned as an educational detour versus an educational dead end. Special attention was paid to the factors motivating the young adults, as motivation is likely to be especially relevant for many people when dealing with such a detour, as well as the demands of the vocational training program. The results illustrate how disadvantaged groups within a society can be supported to enable them to engage with training and education during times of crisis.

2　　The Importance of Work for Young Adults

The domain of work was and is highly relevant for individual identity and for the development of a satisfying life perspective (Jahoda et al., 1975; Modini et al., 2016). Longitudinal research has shown that successful entry into employment is associated with better self-esteem and higher levels of life satisfaction (Winefield et al., 2017) and that well-being is positively influenced by successful work transitions (Schulenberg et al., 2004). Employment is associated with occupational self-efficacy (Seiffge-Krenke et al., 2013), a minimal feeling of being stuck between adolescence and adulthood, and a lower need for identity exploration (Crocetti et al., 2015). Being given the chance to obtain more education throughout the often-volatile young adult years helps people learn to deal with the increased demands of the professional sphere and increases their chances of securing employment (Núñez & Ilias, 2010; Settersten & Ray, 2010).

2.1 The Situation of German Young Adults

In Germany, the vocational education system, which pairs working for a company with attending vocational school ("dual system"), offers a clear path to employment outside the university that is respected by the community (Mortimer et al., 2005), although it is associated with relatively modest career aspirations (Heckhausen & Tomasik, 2002). However, some young people are at an increased risk of being unable to secure vocational training placement. The risk factors include living in regions with few employment prospects or being socially disadvantaged because of learning disabilities or functional limitations (Bundesinstitut für Berufsbildung, 2013). Oftentimes, the young people with the fewest formal educational credentials (the "Hauptschulabschluss", which is awarded after nine years) (or with no credentials at all) are at risk of marginalization and being unable to find an apprenticeship through the regular dual system (Autorengruppe Bildungsberichterstattung, 2012; Öchsner, 2015). Such young people comprise a subgroup within the NEETs—those who are "Not in Education, Employment, or Training"—and they are oftentimes "forced" to engage (in education and training) under the threat of benefit withdrawal or have been discouraged from entering the labor market by a perceived lack of opportunity (Mascherini, 2019, p. 524f).

For disadvantaged youths, governmental training programs offer a way to obtain a vocational training degree. Such disadvantaged young adults are the focus of the present study. One such training program, BaE, offers disadvantaged young people a vocational training degree. Depending on their chosen occupation, these programs usually take two or three years to complete. Unfortunately, this program has become associated with negative stereotypes among prospective employers, who may assume that the participants are unqualified for real-life professional situations and who may be disinclined to offer the program's graduates a job (Braun et al., 1999). However, the quality of BaE training is generally high (Braun et al., 1999), and the graduates who meet specific criteria (e.g., grade point average, years of foreign language instruction) automatically obtain the next-highest educational credential, which is equivalent to ten years of schooling, as opposed to nine (Rahmenvereinbarung über die Berufsschule, 2015).

2.2 Macrostructural Influences on Youths Entering the Labor Market

During the period when the present study was conducted (the data collection took place from 2011-2012), Germany had, overall, been much less severely impacted than many other countries by the 2008 Great Recession (Möller, 2010). The youths who end up in a government training program tend to become especially frustrated in the context of an economy that is, overall, seen as improving, as they are likely to feel an increased sense of personal failure and may encounter less sympathy than their peers in their struggle to find employment (Heggebø & Elstad, 2018).

To account for the various macrostructural influences and economic situations that differ by country or region (Blöchle, 2010; Eurostat, 1995-2015), several Italian apprentices were included in the present study. Northern Italy has an apprenticeship system like the German dual system, while middle and southern Italy have distinct vocational training systems depending on the region. Hence, it is difficult to attain vocational qualifications outside the academic track (Blöchle, 2010). Compared to other European countries, youth unemployment, on average, is higher in Italy than in Germany (Eurostat, 1995-2015). Overall, depending on the characteristics of an area's social welfare system, entry into the labor market can be more difficult for young Italians, who must rely on family support more often than young Germans.

In Germany, the social welfare system supports young adults entering the labor market (Dommermuth, 2008). However, since the 1990s, activation approaches (i.e., those focusing more on individual responsibility) have been increasingly pursued for all age groups and subpopulations (Lessenich, 2003). Direct monetary support is kept to the minimum needed to survive to motivate people to search for work. The goal is to reintegrate unemployed people into the labor market as quickly as possible, with individual barriers, such as illness and debt, being addressed by counseling and support services (Broschinski, 2013).

One result of this focus on activation policies is that individuals are seen as being responsible for their own success or failure in the job market (Lessenich, 2003; Scherger, 2013). Young people who are not successful at securing vocational training positions may, therefore, struggle with feelings of frustration and demotivation as they grapple with their situation while being deemed to be responsible for their failure.

3   Detours During the Occupational Development of Young Adults

Grounded theory uses what are known as "sensitizing concepts", especially in the context of the research questions that are asked (Tarozzi, 2012). In the present study, detours were considered a sensitizing concept. Coined by Blumer (1954, p. 7), the term "sensitizing concept" creates an awareness of which aspects should be examined more closely and focused on in the data (Blumer, 1954): "[Sensitizing concepts] are developed in the comparison of cases by finding similar or common elements among them all. They refer to the general rather than the unique and thus make cross-cultural understanding possible" (Diesing, 1971, p. 209; as cited in van den Hoonaard, 1997, p. 27). In the interview material, "detours" were defined as dropping out of school, having children, undergoing periods of unemployment, switching between training companies, and spending time in transitional programs to complete education or training.

4 Motivation to Learn Throughout One's Lifetime

According to Ford (1992), motivation consists of the goals, emotions, and beliefs related to personal agency. Individuals set goals and decide for or against certain options (Faltermaier, 2008). However, this process happens within societal constraints (Faltermaier, 2008; Mayer, 2004). Agency can be defined as the perceived ability to act (Böhnisch et al., 2008, p. 31) and is influenced by factors such as resources, gender, and socioeconomic status (Settersten & Gannon, 2005). Agency can be considered present when goals are selected, and efforts are made to achieve them (Schoon, 2007). However, in economically depressed regions where the continued pursuit of goals may only result in frustration and distress, disengagement from occupational goals can better support well-being (Tomasik et al., 2009), making disengagement a manifestation of agency. The individual-level factors that influence learning throughout one's lifetime are gender, age, immigration status, and educational background (Offerhaus et al., 2016). For example, people without vocational qualifications are often not interested in pursuing further training. On a societal level, access to options and the availability of opportunities and financing also influence participation in lifelong learning activities (Boeren, 2017; Offerhaus et al., 2016). Besides these factors, the motivation to learn and the ability to transform such motivation in concrete learning activities are essential for the individual's achievement of learning goals (Spiel et al., 2019). Hence, one must be motivated to learn new things and be capable of creating a situation in which new knowledge can be accessed and acquired. It is also necessary to apply strategies to integrate such knowledge into one's existing frame of reference. Remaining motivated daily requires a strong will and the recognition of how remaining motivated serves one's goals (instrumentality) (Rheinberg, 2008). Instrumentality may also be referred to as an "action-result expectation", that is, one must be cognizant of, in this specific case, the link between devoting regular attention to training (action) and how it leads to the successful completion of the training (result) and, ultimately, to the implementation of one's pre-determined goals (consequence) (Rheinberg, 2008). Hence, motivation is a complex construct that has many individual prerequisites; however, a supportive environment is also an essential condition (Ford, 1992).

5 Aim of the Current Study

The successful completion of any training program and, more importantly, one's subsequent successful transition into the labor market, hinges on the motivation level of the participants and on how the goals, energy, and persistence they bring to the program are fostered and encouraged throughout the training. Hence, the aim of the present study was to investigate the participants' life paths prior to participation in the training program, the perceptions of

the participants, how the participants handled detours, what the participants thought about their futures, and the levels of participant motivation.

A qualitative approach was applied to gain in-depth insights into possible processes and to determine the relationships between them and the possible mechanisms driving the processes. Using a grounded theory approach allows researchers to examine "what is going on or what is happening (or has happened) within a setting or a particular event" (Morse, 2009, p. 14). Being in a training program and adapting to this reality represents both a social psychological and social structural process within a specific context (Stern, 2009). Whether young people either feel the outcome is worth the output of effort and are energized by taking personal responsibility for their learning, or whether, on the other hand, they are distressed by the implied deficit orientation and angered or frightened by the threat of decreased social welfare benefits if they do not comply with the program, might lead to different results. Hence, a process-oriented method, such as grounded theory, seemed most suitable for our objective (Dey, 1999).

In the present study, we gathered interview data to shed light on the possible mechanisms affecting why some young people have the ability to return to the pursuit of education as a prerequisite for a successful transition into the labor market. Hence, the research question was as follows: How can the process of developing motivation after undergoing occupational detours be described? Young adults in extra-vocational training (BaE)—who represent a particularly vulnerable group—were contrasted with young people entering the professional sphere under more linear and traditional circumstances, such as being university graduates or apprentices in the dual system. A few interviews with Italian apprentices and teachers were included to add a perspective regarding a more critical economic situation. Interviews with career counselors, university lecturers, and social pedagogues were also incorporated to facilitate theory-building. The aim was to compare and, hence, to identify the motivation development process for vulnerable young adults in the BaE program. This was done by contrasting the responses of diverse interviewees.

6 Data and Methodology

6.1 Data

Thirty interviews were included in the present study. In total, 12 of the respondents were male (40%), and 18 were female (60%). They were young adults involved in extra-vocational training (BaE; n = 11) and members of their support systems, such as social workers (n = 6). Grounded theory relies on the inclusion of contrasting voices, so interviews with a German university student (n = 1), German apprentices in the dual system (n = 5), and vocatio-

nal students from Italy (n = 4) were also included. Furthermore, two women in a training program and one enrolled in a school-based apprenticeship from Germany were included. Including young Italian adults allowed the researchers to gain insights into how macrostructural conditions may result in similarities or differences within the target population. See Table 1 for the interview topic guide.

Table 1: Topic Guide Used for Interviewing Young People in BaE

General questions	For example:
	And now your professional career: How did you get this training here?
Life situation	For example:
	Current living situation
Education	For example:
	Career aspirations during school time
(future) professional goals and values	For example:
	What should the work be like you do every day?
Parents and peers	For example:
	Who was important when thinking about work, decisions in school and training?
Work-life balance	For example:
	How do you combine work/training and private life?
Adult status	For example:
	Would you say you are grown up?
Wellbeing	For example:
	Meaning "happy life"
Possible selves exercise	
Conclusion	For example:
	How was it for you to be interviewed?

Table 2 provides an overview of the entire sample. Most of the interviews were conducted and transcribed by the first author. The participants in the interviews conducted by the first author were remunerated with vouchers or checks amounting to 10 euros. As shown in Table 2, some of the interviews were conducted by psychology students in the context of course assignments. The young adults who were interviewed ranged from 18 to 29 years of age (average = 21.46). The respondents in the support system ranged from 31 to 64 years of age (average age = 41.6; one missing response). The quotes were translated and modified by the first author to improve the expressions and to facilitate readers' ease of understanding (van

Nes et al., 2010). All the interviews were conducted in a professional setting. The process for the interviews conducted by the first author is described in detail below. The participants were approached via a provider of BaE training. Information about the interview was given to a group of apprentices or individuals. The interviewees clarified whether they wished to participate in the survey. The providers and individuals who were approached were open to and interested in the project.

Within the BaE facilities, convenience sampling was conducted, in which all those who were interested in participating or who were present on the survey days were interviewed (Merkens, 2010). However, care was taken to ensure that only trainees in the last year of their apprenticeship were interviewed to focus on their anticipation regarding the transition into the "real" world of work. Within the sample, there were only a few exceptions (see Table 2). In addition to the young adults in the BaE program, four trainees in the dual system were interviewed. These interviews took place either in the office of the first author or in a quiet room at the trainees' workplace.

Four interviews were conducted with vocational school students in Italy. Even though there were only a handful of interviews conducted, they offer the opportunity to pinpoint the extent to which various issues and processes found in the German context can also be found for Italian trainees. To examine the structural and cultural factors influencing the training situation of young adults, the following procedure was used. In addition to conducting interviews in Campania, interviews were also conducted in Trentino-South Tyrol. This enabled a comparison between the youths of Germany and two areas in Italy. Regarding the values and norms of workplace culture, Campania and the autonomous region of Trentino-South Tyrol are assumed to be more similar compared to Germany. If there are differences stemming from the training system, it is assumed that they will show up more in the comparison between the data from Germany and Campania than in the comparison with Trentino-South Tyrol, as the structure of training in Germany and the region of Campania differs greatly. The interviews in Italy were carried out from March to April 2012, and remuneration was provided to the trainees in the amount of 10 euros.

Two vocational students were interviewed in the Trentino-South Tyrol region and in Campania. Furthermore, the perspective of the support system was included in Trentino-South Tyrol, and a teacher and two integration teachers in South Tyrol were interviewed. In South Tyrol, all the interviews were conducted in German. Contact was made with a vocational school via the regional administration of the Autonomous Province of Bolzano South Tyrol, a German vocational training department. In Campania, the interviews were carried out with the help of an interpreter from the Goethe Institute in Naples, and the questions were adapted specifically to the respective narrative and translated into Italian in the interview context. The contents of the two interviews were summarized in German and, with the help of a native Italian speaker, the correctness of the content of the interview recording and

the summary was checked. In Italy, young adults were selected via vocational schools considering the criteria for determining disadvantage and the difficulty of living conditions (e.g., integration status of a student, changes in school/dropping out of school, etc.). In addition, it was necessary to confirm that the potential respondents were also interested in participating in an interview. When the interviews were conducted by students (see Table 2), the procedure was slightly different.

Table 2: Overview of Interviewees

	Interviewee (including gender and age)	Short description (including parental status, migration background/nationality if known)
1	Male, 20 Years, G	Final year in BaE, Turkish nationality
2	Female, 29 Years, G	Graduate of BaE
3	Female, 21 Years, G	From lowest school track to university, migration background, *interview conducted by students*
4	Male, 25 Years, G	In first year of BaE
5	Female, 41 Years, G	Social worker in BaE
6	Female, 46 Years, G	Career counselor
7	Female, 26 Years, G	Social worker in BaE
8	Female, 64 Years, G	Lecturer in BaE
9	Female, 31 Years, I	Teacher (focus on students with more support needs)
10	Female, 23 Years, G	Mother with one child, last year in BaE
11	Female, 29 Years, G	Graduate of BaE, has children
12	Male, 19 Years, G	Last year of BaE, Russian nationality
13	Female, 21 Years, G	Attends a special training program to prepare for a vocational training, *interview conducted by students*

14	Female, 20 Years, G	Attends a special training program to prepare for a vocational training, *interview conducted by students*
15	Female, 21 Years, G	In second vocational training (completed the first)
16	Female, 18 Years, G	Vocational training in dual system
17	Male, 20 Years, G	Vocational training in dual system
18	Male, 18 Years, I	Vocational student in Italy
19	Male, 20 Years, I	Vocational student in Italy
20	Male, 20 Years, I	Vocational student in Italy
21	Male, 20 Years, I	Vocational student in Italy
22	Female, 20 Years, G	Final year in BaE
23	Male, 21 Years, G	Final year in BaE
24	Male, 23 Years, G	In vocational training, *interview conducted by students*
25	Female, 24 Years, G	Graduate of dual system, first child before vocational training, second afterwards, *interview conducted by students*
26	Male, 19 Years, G	Vocational training in dual system
27	Female, 23 Years, G	Graduate of BaE, currently unemployed, *interview conducted by students*
28	Male, /, G	Head of a vocational training program, *interview conducted by students*
29	Female, 21 Years, G	Vocational training in BaE, *interview conducted by students*
30	Female, 20 Years, G	Young mother in BaE

Note. Place of the interview is indicated by G for Germany or I for Italy. The order of the interviewees is according to incorporation into the sample and analysis.

6.2 Application of Grounded Theory in the Present Study

Grounded theory was developed by Glaser and Strauss (1967, 1974), and it can be described as a strategy for facilitating the data-driven development of theory. The goal is to map the process (Morse, 2009). The data are analyzed by comparing the material with other materials, as in the case of, for example, interview transcripts and codes, as well as memos (Corbin, 2009). In addition, this type of theory development uses so-called theoretical sampling, which means that subsequent interviews are included in the analytical process based on criteria that have emerged from previous analyses. In the present study, a constructivist grounded theory approach was applied (Charmaz, 2006) because, in this approach, the process of meaning-making is in the focus (Charmaz, 2006). This process acknowledges that the result of the analysis is an interpretation (Charmaz, 2006). The material is coded in four non-linear steps (Glaser & Strauss, 1967): Open, focused, axial, and theoretical coding. Open coding is focused on the data and descriptive, while focused coding is more analytical and abstract and aims to group and summarize open codes (Charmaz, 2006; see Table 3 for an example). Axial coding relates categories and subcategories and helps researchers to connect focus codes with abstract theoretical coding and bring a coherent structure to the data based on a set of systematic questions (e.g., when, where, why, how, and with what consequences) after the previous coding steps have been used to parse the material (Charmaz, 2006; Strauss, 1987; see Table 4). Finally, theoretical coding is conducted when the axial coding results have been integrated into the theoretical background, and the research questions are finally answered.

Table 3: Some Focused Codes With Selected Open Codes

Focused Codes	Open Codes
Difficult Life Circumstances	Problems within family
	Stepfather deceased
	Financial problems
Frustrating Experiences	Restricted career choice
	Practical skills should be given greater weight
	His school diploma is not enough for his career aspirations
BaE as an Intermediate Step	Goal is not higher school leaving certificate
	Intermediate step for more education
	Interested in studying
	Transition phase

Willingness to make an effort	High willingness to perform
	Intermediate exam taken seriously
	Wants to learn everything
Occupational Aspirations	Further plans
	Career planning
	Master craftsman as a goal
	Occupational advances
	Being self-employed as a goal

Table 4: Axial Coding

When?	After detours which are necessary for participation in BaE: preparation schemes as a prerequisite for the beginning of a BaE
Where?	Within the context of a strong and well-established vocational training system in Germany, special support for youth below the age of 25 years, System of unemployment benefits
Why?	Frustrating experiences and possibility to participate in a BaE
How?	Perception of the BaE as a chance, sheltered space, boost in motivation
With which consequences?	General motivation high, daily ups and downs in motivation, Further occupational aspirations → understanding of inflation of educational credentials, further goals vary in how concrete they are

7   Results

The results are focused on young people taking part in the BaE program, outlining their transition to the BaE program, and, from there, back to a more normative pathway into the labor market. To summarize the key findings, the frustration experienced by the participants while taking detours, combined with the offer of assistance through BaE, led to their willingness to see the BaE program as an opportunity. Various life circumstances, such as having had children at a young age, combined with the possibility that BaE would offer enhanced educational credentials, motivated the participants to complete the training. The lack of motivation that the participants sometimes experienced was partially compensated for by the special setting of BaE, in which the policies regarding being late were relaxed and they received tutoring to enable them to keep up with the demands of vocational school, for example (Landberg & Noack, 2017a). For an overview of the process, see Table 4.

The young people interviewed reported having had many frustrating experiences that could be attributed to their lack of educational credentials and low level of social capital before participating in BaE. They somewhat understood the importance of obtaining formal

qualifications, and they highlighted the importance of education and their plans to attain more education. Their experiences, therefore, appeared to reflect an understanding of the importance of lifelong learning in the neoliberal sense (von Felden, 2020).

7.1 Conditions of the Transitional System

<u>Detours</u> were characterized as something caused externally, and the interviewees emphasized that there was still time to compensate for such detours and that there was no reason to focus on feelings of regret. Unsuccessful prior efforts to enter the labor market, as well as periods of unemployment, led them to realize that education is important and beneficial. The young adults in the BaE program reported many *frustrating experiences,* which had made it clear to them that they had no chance with their existing education:

> *"The writing applications are, of course, not difficult. [...] For [the position of a] salesperson 'Hauptschule' was required and then, [...] then you read 'secondary school or students preferred' or such things and then you think, 'Wow, okay, extreme.'"* (female student in BaE, age 23 years)

The interviewees accepted that they had to complete *"some" training* even if it was not in their desired occupation, as the BaE program only offers training in some selected occupations. Some of the respondents saw this as an individualization process: *"You always have to try everything on your own [...]"* (male student in BaE, age 25). Although many of the young adults were happy to obtain an apprenticeship, some further refined their career aspirations while completing the BaE training.

The young adults reportedly always had *contact with the job center system* during their job searches. The contact persisted through the acquisition of social welfare support and implementation of pre-employment measures. This type of contact was considered helpful because it eventually made training possible; in some cases, it resulted in the completion of a high school diploma. In comparison, while the young adults in the dual system reported having contact with a job support system as well (for example, with career counselors), they showed much more initiative in the career orientation and application process:

> *"Ok. Yes, so after secondary school, I wanted to do something with foreign languages, especially with English. That was very interesting to me, then I was just at the employment office and asked what opportunities there were, and, among other things, just the school in [place name] just the [name of the school] was mentioned, recommended [...]."* (female student in the dual system, age 21)

Even though the young adults who enter the BaE program often come from underprivileged circumstances, securing a spot in a training program offers them the opportunity to build a *more traditional biography* after taking some detours. The desirability of this more straight-

forward, linear life path was clear to the interviewees, both among the apprentices in the BaE program and the participants in the conventional dual system. A young mother in the BaE program expressed this normative view when she said the following:

> *"[...] first the education, then I wanted to first be together with my friend a little bit like that, and then we wanted a child, well, now I was just pregnant, then we moved in together and [laughs] and then I was just finishing the training, so I did not really want that, but in the end, it worked out better than we thought."* (female student in BaE, age 20)

Overall, among the participants, the time before entering the BaE program was characterized by frustrating experiences. The participants' educational attainment was mainly low, their general life situations were difficult, and detours were taken. The young people in BaE had career aspirations that they generally could not fulfill within the context of the BaE program. This phase ended in accepting a new vocational goal and starting the BaE program, which participants perceived as the major, final change leading them to a more normative path in life. Compared to the Italian apprentices, only a few differences were found. The detours made before entering their current vocational training were not as long, and their difficulties came more from personal circumstances and issues (e.g., learning difficulties). Plans for more education were also included in their aspirations.

7.2   Taking the BaE Offer

The offer to participate in the BaE training reached the young adults at what they considered the right moment, or the point when they were willing to go through the training. At this point, they had perceived that the costs of dropping out or not entering the program were greater than those of pursuing the training, even if it would not prepare them for their originally desired profession.

Previous behavioral strategies contributed to the participants' inability to find a professional path. This experience created a willingness to accept the BaE offer. Oftentimes, the participants framed the BaE offer an opportunity "happening" to them, instead of a choice they made, which they then took, seeing it as a chance to improve their lives:

> *"Yes, I just, I had an appointment at the employment office and then said, I could go into this program now and then I will do a year of internship and so on and a bit of school on the side, and I went "Yes, good, better than sitting around at home," then I did that for a year and then after that I was unemployed for a few more weeks, and then I had another appointment and then they offered me the training here [BaE]."* (female student in BaE, age 20).

7.3 Differences in Motivation

The important role that the participants' children played in motivating them to pursue further education was especially evident in the responses of the young mothers interviewed (there were no fathers in the sample). This attitude was mainly echoed among the members of the mothers' support systems. The young mothers reported that they were motivated to complete the program and that they managed various demands and obligations, such as the apprenticeship and childcare. However, two social workers who worked directly with these young adults disagreed (at least to some extent) regarding the positive effect of children on motivation. The motivation created by being a mother would, accordingly, only be relevant to a small portion of the sample. However, for the whole sample, motivation involved several factors and was reflected at several levels. The BaE training presented new options that could lead to normal career biography, indicating the presence of normative expectations. The young adults interviewed increased their *occupational aspirations,* and the more they achieved, the more they sought to obtain further education. The opportunities that the BaE program offered the young adults created motivation. Within the *safety net of the BaE training*, the young people developed goals, experienced success, and developed a greater sense of self-efficacy. Thus, undergoing the training and developing other goals were positively associated. It seemed that, after having experienced many setbacks when jobs or vocational training positions could not be secured, the BaE program finally functioned as a facilitator of entry into the next level of higher education, which, of course, presented new (job) possibilities. Hence, almost all the interviewees planned to acquire more educational credentials after the completion of the BaE program. The willingness to engage in lifelong learning was present, with BaE graduates showing levels of willingness like those of the regular apprentices in the German dual system of vocational training and the Italian apprentices within the sample. Almost all the young adults in vocational training who were interviewed aimed to continue their education. One trainee in a dual education program, however, was unsure about continuing his educational trajectory, attributing his hesitation to his *"inner weaker self"* (male student in the dual system, age 19). One trainee in the BaE program reported wanting to graduate and gain employment, saying, *"I'm just trying to finish my training now, with a good average, so I then will have more opportunities"* (female student in BaE, age 20). However, not all the young adults interviewed, unfortunately, can pursue the dream of transitioning to higher education because, while the BaE program gives young people who would otherwise have no career opportunities a chance for qualification, it is by no means a guarantee of success.

7.4   Perspectives on Further Education

All the young people in the sample, regardless of whether they were German or Italian, wanted to obtain more education after the training in which they were participating. One German apprentice in the regular dual vocational training system mentioned that he was unsure about further learning:

> *"On the one hand, as a technician or master, whether I want to study there again and become a technician, well, I do not know [laughs], I do not think so. But I could definitely imagine it, let us see if I can get over my weaker self by the end of the fourth year of my apprenticeship."* (male student in dual training, 19 years)

8   Discussion and Conclusion

In the present study, we shared stories of young people who were motivated and engaged in the BaE program. Having made detours was not only a prerequisite for receiving a BaE offer and an integral component of this vocational pathway, this type of experience seemed to contribute to the participants' understanding the necessity of lifelong learning and the need to build motivation. The specific setting of the BaE training is especially characterized by an understanding stance toward shortcomings, such as being late in the morning, which helped to compensate for the naturally varying levels of motivation that the participants regularly experienced. Together, the data support the assertion that the BaE is a helpful means through which to integrate young people into the world of work.

The participants' realization that their accumulated education was not sufficient, and hence their frustration about the situation, helped to increase their motivation to participate in the BaE program. Most of the young people perceived that they had few chances, and this "forced" them to participate in the BaE training (Mascherini, 2019, p. 524f). Indeed, the research shows that prior competence-related frustration strengthens motivation (Fang et al., 2018). Obviously, one could argue that, nevertheless, our treatment of fellow humans should be humane, and we should not aim to purposely frustrate people. Instead, the possibility of reconnecting people with the educational and vocational system throughout their lifetimes is more important, as this approach could allow people to reach new educational goals whenever they feel ready to tackle them.

Employment was also associated with agency in our sample (Seiffge-Krenke et al., 2013). The sample used the program to improve their chances of accumulating more education, which increased their chances of securing employment in the long run (Núñez & Ilias, 2010; Settersten & Ray, 2010).

Some results require special emphasis. Despite the sometimes-difficult life situations from which the young adults in the program came, they managed to find their way into an apprenticeship, and most of them were likely to graduate because they were already in their final year of training. The agency that these young adults have has been proven. Since it is also likely that they will experience career changes throughout the course of their lives, the experiences that they already have can be built on, and a resource-oriented approach can be pursued.

One must question why taking various measures, undergoing phases of unemployment, and pursuing various jobs are necessary before the offer to participate in the BaE program is given to young people. The stigmatization that young adults experience in the system of career counseling and social security produces a very one-sided image of humans. As has already been shown in other studies, obtaining gainful employment is still a central goal for most people (Dörre et al., 2012). The question of whether motivation would have been created in the participants without the experience of frustration remains unanswered. A vocational preparation measure may be useful for developing their maturity and consolidating professional ideas. However, undergoing multiple phases of unemployment increases the risk of experiencing unemployment again in the course of one's life (Gregg, 2001; Schmillen & Umkehrer, 2014). To minimize this risk, an earlier placement is recommended to keep periods of unemployment as short and infrequent as possible. This would also be an expression of the belief that all people within a society should strive to lead meaningful and independent lives through employment and be integrated into a society's social structures (Blustein, 2011).

Even though the young people in the BaE were essentially forced to engage in the program (Mascherini, 2019), they did not view the experience as negatively as the literature suggests.

One could interpret these frustrating experiences as being essential for the development of motivation, as only successful young people were interviewed (most were already in their last year of the BaE training). Hence, it is likely that those who were less successful in coping with and reframing these challenges had already dropped out. The prevalence of high BaE drop-out rates supports this interpretation (Feldens & Bennett, 2019), and, in 2018, six months after leaving the BaE program, only 61% of the program's participants were employed in positions subject to social security contributions (Bundesministerium für Bildung und Forschung, 2019). However, this statistic does not clarify whether these young people had graduated successfully from the BaE training or dropped out and found employment anyway. For comparison, in a regional pilot program that offered even more support than the BaE, the dropout rate was 38.8% (Becker et al., 2011). In the dual system, one can look at the rate at which apprentices and companies cancel employment contracts to better understand the success rates. In 2017, 25.7% of the contracts in the dual system were canceled (Bundesministerium für Bildung und Forschung, 2019). However, this figure does not reflect the dropout rate because these cancelations could simply indicate a voluntary switch to another

company. It is reported that the dropout rate of young people in the BaE training is higher than that of those in regular training positions (Hecker, 2000).

As seen in other studies, the young adults in BaE preferred to delay starting a family because they had poor job-market prospects (Settersten & Ray, 2010). They showed a fundamental willingness to establish themselves professionally. For this reason, further experiences of frustration should be minimized, and the placement system should support young people even after completion of the training to aid them in entering employment and, for example, in finding a balance between needs-based training and consideration of the professional interests of young adults.

Even if goals are relevant to creating and maintaining motivation (Ford, 1992; Rheinberg, 2008) and meaningful aspirations are predictive of professional success (Ashby & Schoon, 2012), overambitious goals also involve the risk of (renewed) experiences of frustration (Tynkkynen et al., 2012). Good advice and support are, therefore, important and helpful in the absence of clear ideas for one's professional future (Ashby & Schoon, 2012). It is also especially important that the training qualifications achieved are not devalued by unsuccessful transitions to work during the transition from training to gainful employment and that the work obtained is not precarious (Castel, 2008). For young parents, it is especially important that the costs of gainful employment, such as, for example, those stemming from the need for childcare, are not greater than the benefits, as they keep young people entrenched in social security systems (Edin & Lein, 1997).

Furthermore, young adults must learn strategies for continuing to learn independently and, thus, continuously acquire skills. The equal opportunities proclaimed by the educational expansion in the 1970s are recognized as illusions (Ecarius & Wahl, 2009; Schultheis, 2005). Social origin still determines the perception of educational opportunities and one's attitude toward lifelong learning as well as the development of the skills needed to acquire new knowledge independently and the qualifications needed for positions involving high income and prestige (Ecarius & Wahl, 2009; Schultheis, 2005). Regarding further professional development, the representatives of the support system emphasize that the young people in such programs are still too young to make decisive professional decisions. Therefore, the Italian integration teacher also welcomed the efforts to have students acquire the university entrance qualifications during a year more at a vocational school (made possible by law by the Ministry of Education in Rome at the beginning of 2013; Autonome Provinz Bozen-Südtirol, 2010). Hence, the opportunities and risks perceived in the pedagogical support system do not differ between Italian teachers, German teachers, and social workers regarding apprentices in the BaE program and integration students (Landberg & Noack, 2017b). Overall, it can be said that within this controversial discussion of whether a scheme such as the BaE program is helpful to young people (Busemeyer & Iversen, 2012; Solga et al., 2014, Walther et al., 2007), the present study offers evidence of its advantages.

8.1 Practical Recommendations

Remaining motivated daily requires a strong will, and the recognition of how to remain motivated serves one's goals (instrumentality) (Rheinberg, 2008). Instrumentality may also be referred to as an action-result expectation, that is, it reflects how closely, in this specific case, the link between regular attendance of the training (action) leads to the successful completion of the training (result) and, ultimately, to the implementation of one's pre-determined goals after the BaE program is completed (consequence) (Rheinberg, 2008). Absenteeism in the BaE program was identified by both the trainees and members of their support systems as a persistent problem and implementing learning strategies for enhancing self-motivation could be a means of reducing drop-out rates (Shane et al., 2012) and increasing motivation. Absenteeism can also be addressed by providing regular, individualized feedback that highlights and praises positive individual development (Rheinberg & Fries, 2010).

The findings of multiple studies indicate that all young adults have, to some extent, internalized the idea that pursuing additional education is important and even normative as a means of survival in today's knowledge-oriented society (e.g., Settersten & Ray, 2010). The same conclusion applies to the present study. However, young adults continue to formulate educational plans that are sometimes too diffuse, generalized, or disorganized, which, in turn, minimizes their likelihood of achieving them (Ford, 1992; Rheinberg, 2008). The goals of young people should be as specific as possible and, whenever appropriate, divided into intermediate, small goals so that there is also the possibility of receiving intermediate feedback and engaging in goal adaptation (Wild et al., 2006).

The young adults themselves must learn strategies to continue learning on their own and to continuously acquire skills (cp. Spiel et al., 2019). However, at the same time, equality of opportunity, as proclaimed by the educational expansion in the 1970s, seems to remain an illusion (Ecarius & Wahl, 2009; Schultheis, 2005). One's social background still plays a key role in determining the distribution of educational opportunities and attitudes toward lifelong learning, as well as one's likelihood of having the competencies needed to acquire new knowledge independently (Ecarius & Wahl, 2009; Schultheis, 2005). Since one's home environment plays a key role in whether and to what degree one acquires these vital skills, educationally disadvantaged young adults require special support (Ecarius & Wahl, 2009).

8.2 Limitations and Future Research

Further research should include BaE dropouts and compare their motivational trajectories to those of the successful trainees interviewed in the present study to better determine the factors for success. Future studies should also follow up on BaE graduates to examine their long-term integration into the labor market and lifelong learning patterns. The sample analyzed in this study had only a few Italian interviewees. Future studies should aim at including

a more balanced sample to systemically identify the effects of macrostructural influences and the specific features of the vocational training systems in various countries. Furthermore, depending on the availability of regular training positions and alternatives, the motivation to employ apprentices varies between employers (Aspøy & Nyen, 2017). Hence, it would be relevant to include this perspective in further studies.

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Biographical Notes

Monique Landberg is a research fellow in the Department of Educational Psychology at the University of Education in Weingarten, Germany and teaches various classes on developmental and educational psychology. She received her PhD at the Department of Psychology at the University of Jena, Germany. She works as a trainer and coach as well, mainly focusing on career guidance. Her research interests comprise discontinuous educational pathways and lifelong learning, such as the influence of learner identity and mindset on learning activities.

Peter Noack is Professor of Educational Psychology at the University of Jena, Germany. His research focuses on socialization and development during adolescence and early adult years and addresses learning and instruction in school, occupational orientation and development, political socialization, and the workings of school and family contexts of young people. This research is based on several longitudinal studies conducted in Germany and in international collaboration. Findings of these studies have resulted in over 150 publications. He served as President of the European Association for Research on Adolescence and as an ad hoc reviewer for various scientific journals and funding organizations.

Supporting Young Immigrants in Their Transition From School to Work? A Staff Perspective on Challenges of Vocational Integration Classes

Hannes Reinke*[1], Michael Goller[2]

[1]Department for Business Education and Educational Management, University of Bamberg, Kärntenstraße 7, 96052 Bamberg, Germany

[2]Institute of Educational Science, Working Group Educational Management and Research in Further Education, Paderborn University, Warburger Straße 100, 33098 Paderborn, Germany

Abstract

Context: The implementation of successful measures to support immigrants' integration in cultural, social, and economic life can be considered as one of today's greatest challenges for many societies. This is especially true for adolescent immigrants who have not yet been able to finish education or gain qualifications relevant to joining the labour market. That is why many receiving countries have developed and implemented special programmes that aim at supporting immigrants' integration by facilitating their employability. Unfortunately, not much is known about the process of implementing these programmes or about how education systems, schools, and teachers are dealing with the new situation and target group. In this contribution, the implementation, development, and challenges of German Vocational Integration Classes (VIC), as an example of comparable programmes in the EU, are investigated to address this research gap. The paper considers the following exploratory research questions: (a) What challenges have been experienced by teachers and social workers in the implementation of VIC as well as in the integration of immigrants into the labour market in recent years? (b) How can these challenges be met in the long run and how should VIC be developed to better achieve its aims?

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*Corresponding author: hannes.reinke@uni-bamberg.de

Methods: To answer these questions, a sequential qualitative study containing questionnaire and interview elements was conducted. First, teachers and social workers involved in VIC filled in a questionnaire about their experiences and experienced challenges in implementing VIC (N = 46). Then, supplementing interviews were conducted with participants from the first sample in order to generate further insights and to contextualise the findings from the first study part (N = 14).

Findings: From the respondents' answers, it appears that the VIC programme is well implemented. The results show, however, that central challenges continue to exist. This concerns, for example, legal regulations or the development of adequate curricula, but also the scope and quality of language education. In addition, problems have also been identified with regard to students' culture-specific education and their individual attitudes. These prevailing problems seem to affect schooling and educational processes. In addition, respondents report feeling left alone to deal with problems and that their experiences from their daily work in VIC and with immigrants are not sufficiently taken into account in policy and school-related decisions.

Conclusions: Although VIC seems well implemented, key challenges remain in the view of the participants. It was found that teachers cannot solve many of the identified problems themselves, as they require action at the level of policy or school organisation. For staff, this can be accompanied by increased stress and demotivation. For the young immigrants, the existing challenges can have a long-term impact on school success and transition to vocational education and training. The study thus highlights the importance of targeted and holistic strategies to support immigrant integration through education.

Keywords: Immigration, Vocational Education and Training, VET, Educational Policy, Employability, Transitions From Education and Training to Employment

1   Introduction

Due to increased migration in recent years, the integration of immigrants[1] has become an emerging issue for many European countries. The implementation of successful measures to support immigrants' integration in cultural, social, and economic life can therefore be considered as one of today's greatest challenges for many societies. A particularly important issue in this context is to enable newly migrated adolescents and young adults to participate in educational schemes and local labour markets to support individual integration processes

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1   The term immigrant can be used to subsume a variety of reasons and circumstances for migration, an indefinite period of residence in the receiving country, and different legal statuses of residence (Braun & Lex, 2016; Crawley & Skleparis, 2018; IOM, 2020). In the following article, we refer to the group of newly arrived immigrants and thus explicitly include asylum seekers and refugees.

(Martín et al., 2016). Especially for this group of relatively young immigrants, preparation for the labour market is particularly important, as they lack relevant knowledge to navigate the host society's education system and labour market (Beicht & Walden, 2019; OECD, 2015). The transition from school to work can therefore be considered as a highly relevant developmental task for these individuals as they have to adapt simultaneously to new requirements defined by the receiving society's education system and its labour market (Hirschi, 2009; Obschonka et al., 2018). Thus, support and guidance are needed for young immigrants in the transition from school to work.

However, the education systems of many countries were not prepared to offer such assistance when immigration streams began to come in. Due to a lack of adequate and sufficient programmes, new educational schemes had to be developed and implemented from scratch. Different countries have been implementing different strategies in this regard. While in some countries immigrant students directly enter the general education system, in others they are initially educated separately (OECD, 2015). Many of these integration measures take place outside of formalised educational contexts and schools and often end without officially recognised qualifications. In fact, obtaining a broader education, formal qualifications and certificates, and informed vocational exploration has often not been an explicit goal of short-term educational courses. This is also indicated by the rather short duration of the educational courses, which often last only a few months (see in detail EMN, 2020; Martín et al., 2016). This can be considered as too short if goals like general education, literacy in the host language, cultural familiarisation, and employability are pursued. This applies for example to the Italian job intermediation programme or the Bulgarian refugee employment and training programme. In contrast, one example of a more comprehensive scheme that is firmly anchored in the national educational system and aims at supporting immigrant integration by facilitating sustainable career choices and employment is the German Vocational Integration Classes programme (VIC). It has been one of the first programmes for newly arrived young immigrants in the transition from school to work in the EU and is one of the largest programmes within Germany (Braun & Lex, 2016; Riedl & Simml, 2019).

Unfortunately, not much is known about how educational schemes like VIC have been implemented in practice or about how schools, teachers, and other stakeholders (like employers) have dealt with and experienced the new situation with the commonly unknown target group. Insights into these questions are, however, highly relevant as they might inform political and educational actors on how or how not to implement such programmes in their respective countries in the future. This contribution addresses this research gap by investigating teachers' and social workers' perception of the development and existing challenges of VIC over the last years. By investigating the perception of these stakeholders this contribution tries to identify both focal points and potential pitfalls in the process of implementation of education programmes for immigrants using VIC as an example. Another aim

lies in generating insights on how VIC or similar programmes might be improved in the future. Teachers' and social workers' perceptions are used as a starting point here as school development research identified these stakeholders working on the operational level as particularly important for the success of change processes in education (Fullan, 1996; Rogers, 2003; Townsend, 2014).

The first part of this contribution focuses on challenges connected to school development in the context of migration (Section 2) as well as both individual and structural challenges concerning the integration of immigrants in general (Section 3). It follows a short discussion of challenges that educational programmes like VIC faced in the past and still face (Section 4). The second part then describes the study conducted to shed further light on the implementation of VIC over the years. For this purpose, the methodological choices behind the study are described (Section 5) before the findings are presented (Section 6). A discussion of the findings (Section 7) and a conclusion deriving policy implications follow (Section 8).

2   Challenges in School Development in the Context of Migration

Research on school development and improvement has shown that change processes in the education sector are complex and long-term in nature (Hall & Hord, 2011; Rogers, 2003). This is mainly due to the fact that educational actors like schools cannot simply adopt new concepts without adapting them to the prevailing structures and conditions (Holtappels, 2014). In fact, local aspects like school staff's idiosyncrasies (demographics, competences, beliefs etc.) or the concrete features of the school itself as well as its geographical and socio-economic location have long been emphasised as highly relevant factors affecting change processes in the education sector (e.g., Fullan, 1996). Thus, change processes must not simply be understood as top-down processes, but have to be mediated locally and against the backdrop of existing external conditions (Fullan, 2009; Holtappels, 2014). Particular attention must be paid to the staff involved and their motivation to participate in change processes (Förster, 2015; Townsend, 2014) as it can be stated that change is adopted by organisations but implemented by individuals (Hall & Hord, 2011). In the past, however, the assessments and needs of actors at the operational level, such as teachers or social workers, have often not been considered enough, which can have negative motivational effects on participation in change processes (Förster, 2015).

Besides such operational and organisational structures of local schools including professional stakeholders in their wider networks (e.g., administration, companies that offer internships), the students as the target group and their characteristics also must be taken into account when implementing change. Thomson (2010) suggests that students should be more systematically involved in change processes and that development efforts should be closely aligned with their necessities. Consequently, for the successful implementation of

new programmes for immigrants this means that learning requirements as well as individual needs of this special kind of students on the one hand (Reinke et al., in press), and structural barriers to integration and participation in social and economic life on the other hand have to be considered (OECD, 2006; Phillimore, 2020).

Special challenges for staff at schools working with newly arrived immigrants are, for instance, dealing with heterogeneity in the classroom, assisting students with legal issues, supporting them to cope with trauma, as well as helping learners to overcome knowledge and language deficits or inaccurate conceptions concerning the receiving country (Friede-richs, 2016; Maué et al., 2021; OECD, 2006, 2015). To support young immigrants in their integration, education systems play an important role as socialisation institutions (OECD, 2015; Wicht, 2016). For schools, this situation means an immense challenge as they have to deal with vast cultural, linguistic, prior knowledge, and performance-related diversity. This diversity implies that a considerable part of the learners has special needs. For school staff this means that they require both, additional time resources and special support strategies to take this diversity into account (Leithwood et al., 2006). At the same time, the special needs of learners as well as their migration-related experiences and foreign socialisation back-grounds can be considered as an obstacle concerning success in school and the transition to vocational training due to psychological issues, learning absence, lack of knowledge for educational pathways, as well as a loss of linguistic, social and cultural capital (see Section 3). Hence, migration-related barriers must be taken into account when developing educational programmes in order to successfully implement change. Therefore, findings from migration research should be considered more strongly when designing interventions and programmes to promote the integration of immigrants. This will be highlighted in the following section.

3   Individual and Structural Challenges in Immigrant Integration

The previous chapter dealt with the challenges of implementing change processes in the education sector at the administrative level. In addition to steering issues and the impor-tance of the participation of stakeholders at the operational level, the importance of the tar-get group orientation was also emphasised. The following paragraphs explore the challen-ges immigrants face during integration and the associated difficulties that also need to be addressed in schools.

Integration can be understood as a two-way process of mutual recognition of rights and obligations of immigrants and their receiving society (Entzinger & Biezeveld, 2003). Whereas the host society has to provide structures and support that enable immigrants to participate in the first place, Chen (2008) emphasises that immigrants simultaneously need to adjust on a personal level (e.g., adapt vocational goals, personal and social lives). However, opportuni-ties for such individual adjustments also have to be provided for immigrants—e.g., through

educational schemes that support integration. Structural support is highly necessary since migration processes are often accompanied by a loss of immigrants' individual resources like social, economic, cultural, and symbolic capital that would otherwise allow them to manage adjustments on their own (Reinke et al., in press; Sinnerbrink et al., 1997; Wicht, 2016). Completing educational qualifications that facilitate access to the labour market and finding a vocation as well as gaining and keeping employment are relevant facilitators of long-term integration (Martín et al., 2016). Education and employment help to build social bridges in the host society and enable individuals' economic independence (Ager & Strang, 2008; Cantle, 2005).

The prerequisite for this is often the successful completion of a school education and the ability to present officially recognised qualifications. Securing employment opportunities is particularly hard for individuals that migrated in their adolescence (Anderson et al., 2019). Quite often those immigrants were neither able to complete education in their home country nor to gain necessary formal qualifications (Beicht & Walden, 2019; Brücker et al., 2017). Thus, it is not unusual that young immigrants lack basic literacy or numeracy skills. Furthermore, besides the necessary orientation in the institutional structures of the receiving society, young immigrants often miss sufficient personal agency and (career) adaptability, which are important to take advantage of the opportunities offered by the receiving society and to deal with uncertainty (Obschonka et al., 2018). In juxtaposition, a relevant share of immigrants was able to spend a considerable time in their home country's education system before migration. However, due to incompatibilities between education systems, the corresponding school qualifications are often not recognised by their receiving societies, which can lead to dissatisfaction and motivational dropout (Matthes et al., 2018; Verwiebe et al., 2019) as well as to disadvantageous acculturation strategies, such as separation or marginalisation (Berry et al., 2006; Skrobanek, 2009).

Despite their literacy skills in their native language, many immigrants experience substantial shortcomings in using the language of their host society. This is an important issue since linguistic competence in the target language is perceived as one of the most relevant facilitators of integration (Beicht & Walden, 2019; Dumont et al., 2016; Esser, 2006; OECD, 2015). Moreover, participation in work contexts requires immigrants to be able to not only use colloquial but also professional language on an elaborated level (Terrasi-Haufe et al., 2018). As strong language skills are indeed a necessary condition for finding work after migration, they should be targeted and developed in educational schemes.

Another important requirement for integration, including entrance into local labour markets, is cultural familiarity (Ager & Strang, 2008). A lack of knowledge about cultural practices and socially appropriate behaviour makes it difficult for immigrants to navigate the education system and the labour market. This includes unrealistic aspirations regarding their desired educational goals, including the occupations in which they wish to work (Salikutluk,

2013; Wicht, 2016), or a lack of employability (OECD, 2006). Employability describes both more generic capabilities and attitudes like adaptability and flexibility, willingness to learn, or the ability to work in a team, as well as the competences to gain relevant skills and to react to changes in skill requirements in order to be able to find and keep employment in specific contexts (Inkson et al., 2015; Rothwell, 2015).

Following Chen (2008), cultural adaptation becomes particularly challenging for immigrants from non-Western cultures. The higher the individually perceived cultural differences between home and the host society, the more strenuous integration appears to those individuals and the more coping strategies, agency and career adaptability are required to deal with the challenges of integration (Obschonka et al., 2018).

In summary, there are many issues at the individual level that can pose barriers to participation in social and professional life after migration. At the organisational level, therefore, the main challenge is to support immigrants to develop those individual prerequisites that are required for participation in the host society. To be more concrete, any kind of measure needs to compensate for immigrant's lack of competences and language skills as well as cultural familiarity. Consequently, compensatory measures such as target group-specific educational programmes that address the special educational needs need to be implemented.

4   Educational Programmes for Immigrants

As a reaction to increasing migration in recent years, many EU member states tried to recognise the special demands of minors and young immigrants by introducing changes in their asylum systems. These changes encompass granting young migrants' access to their education system including secondary education to facilitate integration. This task, however, was challenging for many countries due to a lack of existing programmes that were specifically tailored towards supporting vulnerable groups like adolescent immigrants (Heinrichs et al., 2016; OECD, 2015). In consequence, new educational schemes had to be developed that ranged from isolated language and integration courses to more comprehensive school-based measures within their respective educational systems that specifically focussed upon young immigrants on the transition from school to work (EMN, 2020).

Although numerous measures have been implemented to promote the integration of young immigrants (EMN, 2020), there are hardly any educational schemes for adolescents and young adults in transition to vocational training that are firmly anchored in the countries' education system and that lead to recognised qualifications (see Martín et al., 2016). In fact, most of the existing programmes are aimed at placing immigrants in the labour market as quickly as possible, which is why the measures often only take a few months (EMN, 2020; Martín et al., 2016). Internships and separate integration and language courses are often offered for this purpose. Obtaining formal qualifications as well as linguistic and cultural

capital, employability, and vocational exploration, which are particularly important for this group, have been given little attention. Examples of such short measures include the Italian job intermediation programmes, Bulgarian refugee employment and training programme, the Austrian nationwide apprenticeship placement, and the Danish integration education programme. While these programmes are ambitious, they include little formal education or vocational preparation. School-based training programs that lead to formal qualifications, such as lower secondary school leaving certificates, are rarely offered to young adults. The programmes are also often regionally limited and only have low capacities (e.g., the Swiss vocational introduction program). Of those mentioned, only the Danish programme concludes with a formal qualification. Despite broad measures and offers for rapid entry into the labour market, a large share of immigrants remain without employment even years after entering the country (Dumont et al., 2016; Martín et al., 2016). This is often due to segregation and a lack of language skills, formal qualifications, and cultural proficiency. Basic school qualification programmes that conclude with formal qualifications can therefore be of great importance for long-term integration.

In this respect, the German VIC is different from other programmes as it is firmly anchored in the school education system and concludes with a lower secondary school leaving certificate, which entitles graduates to transfer to secondary schools or VET. VIC is integrated in vocational school centres in order to provide more proximity to the vocational training system and to facilitate the transition of the students into vocational training. Unlike other programmes in Germany, VIC has been implemented comprehensively and has a high capacity. High capacities were also necessary because VIC covers a large educational and training-relevant target group of people aged 16 to 25, which further distinguishes the programme from other existing programmes. VIC's implementation was scientifically monitored as part of a pilot project (see Riedl & Simml, 2019). Other programmes, however, have not been evaluated.

Table 1: Specifications of VIC According to the Curriculum (see for ISB, 2020)

Characteristic	Description
Duration	2 years (school years can be repeated)
Age of target group	16 – 21 year old, in exceptional cases up to max. 25 years
Main objectives	
	▪ Preparation for vocational training and successful integration
	▪ Preparation of a career choice
	▪ Promotion of personal development
	▪ Acquisition of competences for self-organisation and social behaviour
	▪ Acquisition of everyday skills that enable them to organise their lives in a self-responsible, planned, and structured manner
Main study areas according to the curriculum	▪ German language acquisition
	▪ Knowledge about the education system and professional world
	▪ Mathematics
	▪ Ethical behaviour and communication
	▪ Politics and society
Teaching methods	Competence-based and action-oriented teaching
Educational degrees	(Qualified) lower secondary school leaving certificate (in case of taking of additional final examinations)

The aim of VIC as a two-year programme is supporting young immigrants at developing competences which are necessary to successfully complete VET, and to promote successful integration into the receiving society (see Table 1 for the specification of VIC according to the official curriculum). Therefore, the completion of VIC comes with a lower secondary school leaving certificate for students, which is intended to facilitate their transition to further courses in the regular education system. VIC is part of German VET and aims to support participants in developing language skills and basic vocational knowledge to make sustainable career decisions. The programme was developed by the federal state of Bavaria and implemented for the first time in 2010 (as the first programme for young immigrants in Germany in general). From 2015 onward, the programme had been restructured and expanded significantly. Since its start it has been steadily developed in terms of its didactic design as well as personnel and financial resources. The number of classes in the VIC programme has risen from 6 in 2010 to 1'150 in 2016 (about 20'000 students) and then slightly decreased after immigration numbers started to drop (Riedl & Simml, 2019).

First evaluations of VIC indicate that the programme has been well established in the educational landscape (Riedl & Simml, 2019). The early problems indicated by teachers declined over time due to a stronger institutionalisation of the programme, the availability of curricula

and teaching materials. However, these changes were also accompanied by a reduction in the scope of action of the schools and teachers at the local level. At the same time, certain challenges, like cultural conflicts and violence among students, associated with the implementation of VIC and its further development persist or increase. Furthermore, many teachers repeatedly expressed scepticism as to whether VIC really meets it educational goals as only between 10% and 30% of VIC leavers in their respective years succeeded to find a VET apprenticeship or even find a way directly into employment (Heinrichs et al., 2018; Riedl & Simml, 2019). In fact, it has been reported that many VIC graduates lack the necessary basic skills, for example in colloquial and professional language, but also the necessary soft skills and cultural competencies, such as learning aptitude, discipline, or social behaviour required to successfully find and maintain employment (Riedl & Simml, 2019).

This raises further questions regarding the implementation of the programme from a school development and improvement perspective. In fact, not much is known about how VIC was implemented and has been developed over time. Even less is known about how teachers and other school staff, being directly responsible for educating immigrants in VIC, have been experiencing the introduction and maturation of VIC. The same is true for teachers' and school staff's perspectives on how VIC can be further developed and where room for improvements exist.

This staff perspective is highly relevant as teachers and social workers are in close touch with their students and therefore directly experience any issues connected to the schooling of immigrants. At the same time, it is the staff that needs to implement any specification defined on the organisational level (e.g., curricula). In other words, VIC staff at the operational level needs to negotiate between the pedagogical needs of students and any requirements that are defined on an organisational level. The challenge here is that the needs of students and the externally defined specifications of VIC might not fully overlap.
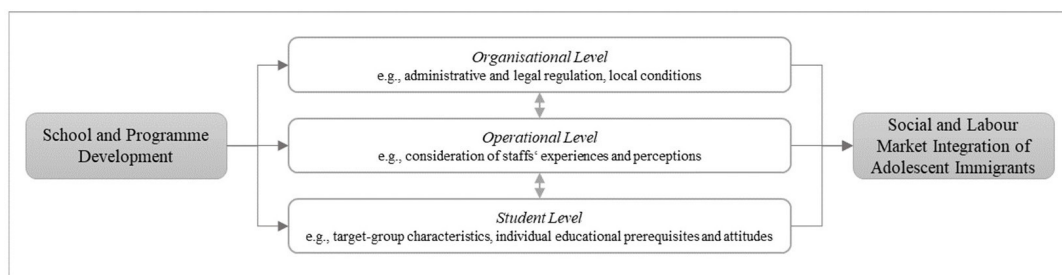
Figure 1: Theoretical Framework

In the context of school development processes, it is quite important to consider the inter-dependencies between the organisational, operational, and student level (see Figure 1; see also Sections 2 and 3). It follows that top-down strategies to implement new educational programmes like VIC that do not take the existing conditions on the operational level (e.g., dealing with diversity in the classroom) as well as the highly specific requirements of young immigrants (e.g., catching up on education, language acquisition, overcoming traumata) into account might not be effective. If the main goal is to help young immigrants to develop competences that allow them to participate in the host society's social, political, and economic life, then designated programmes need to be designed and developed in such a way that these goals can really be met. For this purpose, facilitators as well as barriers of migration-related educational processes on all three of the described levels (organisational, operational, and student) need to be identified and reflected. Unfortunately, at this moment no empirical insights exist about how VIC developed in this regard. To further bridge these research gaps and to identify opportunities for improvements, this study aims to answer the following research questions:

1. What challenges have been experienced by teachers and social workers in the implementation of VIC as well as the integration of immigrants into the labour market over the last years?

2. How can these challenges be met in the long run and how should VIC be developed to better achieve its aims?

By answering these research questions, this study will add to the literature threefold: First, the insights gained through this study will derive implications for the further development of VIC as well as other comparable programmes that are already implemented. Second, the findings will shed light on challenges connected with young immigrants' transition into VET and the labour market on all three levels (organisational, operational and student). Third, insights will be generated that might help authorities to newly implement programmes that focus on young immigrants and their transition into employment.

5 Method

5.1 Study Design and Sample

To answer the research questions, an explanatory sequential research design was chosen. For this purpose, two different data sources were used sequentially (and based on each other). In a first step, a questionnaire study was conducted that was, in a second step, complemented by

a subsequential interview study. The questionnaire included mostly standardised open questions on the development of VIC, including perceived challenges and approaches to overcome them. The interviews were structured around the main findings based on the answers to those questions. In fact, the interviews were aimed at complementing and contextualising the results of the questionnaire study. On the one hand, this procedure allows the creation of narratives that explain, supplement, and deepen the questionnaire data. On the other hand, interdependencies between various aspects of the questionnaire data could be further explored.

The study was conducted with teachers and social workers from vocational schools in Northern Bavaria (Germany) in 2019. All participants volunteered to take part in the study after having been invited to participate by the school authority. The original invitation initially referred to the questionnaire study only. At the end of the questionnaire, the participants were asked whether they would like to participate in a follow-up interview. Thus, the interview partners were selected from the participants in the questionnaire study. Due to the sampling process all data of this study is based on a convenience sample and cannot be assumed to be representative of the underlying population. However, the reported sample characteristics do not speak in favour of any systematic sample bias.

In total, 46 participants took part in the questionnaire study (31 females). On average, they were 46.3 years old ($SD = 14.0$; Range: 26-75[2]) and have been working in their professions for 12.6 years ($SD = 12.0$). Most of the participants worked as teachers ($n = 38$) or as social workers ($n = 5$). However, two respondents indicated they work as school principals and one person did not give any information about their job title. Of these participants, 14 (6 females) could be recruited for the interview study. On average, participants of this subsample were 29.1 years old ($SD = 16.5$) and have been working in VIC for 3.9 years ($SD = 1.0$). Of these, eleven worked as teachers in VIC, two as social workers, and one as school principal at the time of the interviews.

The reason to investigate VIC from the perspective of the staff involved can be explained twofold. First, these actors work on the operative level of schooling young immigrants and thereby deal with most of the practical issues of VIC. Second, in the context of VIC, teachers and social workers have been key drivers for the implementation and development of the programme. When VIC was first implemented only a rough organisational framework as well as unspecific curricula existed. Teachers and social workers therefore designed curricula and teaching materials largely on their own initiative. Due to their strong involvement in the operational development of VIC as well as their hands-on experience with adolescent immigrants, teachers and social workers presumably have a strong understanding of the covered research topic.

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2 The high age of some participants is due to the fact that some of the VIC staff works on the basis of contracts after their retirement from their prior teaching career.

5.2   Instruments and Analyses

The questionnaire was created based on the theoretical framework sketched out in Section 2 to 4. To gain insights into how VIC developed over time, the questionnaires used short open questions to ask the participants what positive and negative advancements they experienced during their professional activity as VIC staff. This section was then followed by explicit questions regarding challenges linked to VIC schooling and the chances of young immigrants transitioning into the labour market. The questions addressed the preliminary defined levels not explicitly in order to avoid biased responses. The aim was to identify those barriers concerning young immigrants' participation in education and successful completion of VIC as well as their transition into the labour market that are experienced by staff to be subject to school and programme development activities. The selection and formulation of the questions also drew on preliminary work of Heinrichs et al. (2016, 2018). The respondents were asked to reply in an open format and as detailed as possible. This approach allowed us to generate a wide range of rich answers concerning the development of VIC over time and related challenges without restricting the participants to predetermined categories. The questionnaire also included a set of socio-demographic questions.

Based on the findings of the questionnaire study a semi-structured interview guideline was developed. First, the interview questions focussed on the individual learning requirements of VIC students (student level). Individual and cultural influences such as motivation and socialisation were considered. Furthermore, questions on legal structures and their effects on the learning and working behaviour of the students (organisational level) as well as the professional actions of staff were also specifically asked (operational level). The participants were invited to answer those questions in as much detail as possible and give illustrating examples. The interviews lasted from 35 to 103 minutes, depending on the willingness to talk and the available time of the interviewees. All interviews were recorded and later transcribed.

The data of the questionnaire and the interviews were analysed with qualitative content analyses based on Creswell (2014) and Kuckartz (2014) using a deductive-inductive category system. To reflect the change process and the implementation of the VIC, *inductive* categories were formed based on the changes experienced by the participants (improvements or challenges). Here, inductive categories were used to reflect the subjectivity and context-specificity of the statements that might not be covered yet by the theoretical ideas discussed above. In fact, inductive coding was used to remain as open as possible for new ideas concerning the development and challenges of VIC. However, *deductive* categories on perceived challenges regarding the implementation of the VIC, including its effectiveness in helping young immigrants to integrate socially and economically, were formed based on the considerations discussed in Section 3, and partly supplemented by inductive subcategories. The categories on perceived challenges regarding the implementation of VIC capture both external factors influencing schools and the development of the programme, and also the particular challenges

of working with newly arrived immigrants. Hence, categories include issues concerning the legal framework (based on Da Lomba, 2010; OECD, 2006; Phillimore, 2011), individual learning prerequisites and learning backgrounds, which mainly include individual educational attainment and ability to learn, cultural adoption and familiarity (Cantle, 2005; Chen, 2008; OECD, 2006), language proficiency (Chen, 2008; Esser, 2006), as well as employability and labour market orientation (OECD, 2006; 2015; Wicht, 2016).

The analysis of the interviews was based on the findings of the questionnaire study. It focused on challenges regarding the legal framework, language acquisition, individual educational prerequisites, and attitudes of the students as these have emerged as key aspects for implementing the programme and managing change processes. In addition, the analysis aimed to extract interview passages that were concerned with ideas of improvement or articulated needs for support. This addressed the second research question.

As a measure for the stability and reproducibility of the coding process, intercoder reliability was calculated. For this, Lombard et al. (2002) and O'Connor and Joffe (2020) recommend to double code between 10% and 25% of the data. In line with this recommendation, 13 (28%) questionnaires and 2 (14%) interviews were coded independently by a second person. Acceptable to good reliabilities could be obtained (κQuestionnaire = .87, κInterviews = .74). The data analysis and the calculation of the κ values were carried out with the support of MaxQDA 2020. Once the interview data was categorised, the categories were further explored to identify central themes across interviewees (Kuckartz, 2014). These are illustrated in the presentation of results (Section 6).

6 Results

6.1 Questionnaire Study

6.1.1 Changes and Developments of VIC During Time

In order to outline how VIC developed over time, teachers and social workers were asked about how they experienced changes in the programme during their service as well as how they assess these changes in terms of advancements or continuing or upcoming challenges. Improvements were perceived at three distinct levels: (a) *Organisational*, (b) *operational*, and (c) *students*. On the *organisational level* it was emphasised that both teaching material and comprehensive curricula were not available in the beginning because the VIC programme itself had to be developed quite quickly. However, the introduction of newly developed teaching material, being available to all VIC staff up from 2017, made lesson preparation

much easier. Moreover, coordination processes between different actors (e.g., teachers and social workers, as well as with administrative personnel) improved over time.

Concerning the staff themselves on the *operational level*, the growing experience with newly arrived immigrants largely improved their daily work. In the first years, working in VIC was perceived as especially challenging since none of the involved professional actors had any experience in working with immigrants. Missing experience was not only an issue affecting teachers or social workers but also the administrative personnel.

> *"The schooling process runs more and more smoothly due to the increasing experience of the invol-ved teachers, social workers, and the staff of governmental and non-governmental institutions."*
> *(Q6)*

On the *student level* it was emphasised that German literacy of students enrolled in VIC improved over the years, because students nowadays have already been staying in Germany for a longer time before entering VIC than in the early years. This positively affects classroom management and teaching due to improved language skills of students.

Challenges were both perceived on the organisational and the student but not the operational level. On the *organisational level*, curricula are criticised for being "out of touch with reality" (Q4). In some cases, content suggestions in the existing VIC curricula were too childish and thus not prepared in an age-appropriate manner, in others the learning goals were set far too high–e.g., in listening comprehension. In addition, the VIC staff described the number of classes in German as a second language as not sufficient. It was emphasised that VIC should focus more on language and communication skills. In this context, it was particularly criticised that VIC only lasts two years as this is seen as far too short to prepare students for further education or VET in many cases.

In relation to the issues on the *organisational level*, educational requirements and working attitudes of the *students* were mentioned. It was described that over time "the performance and motivation of students decrease[d]" (Q8). This phenomenon was accompanied by changes in their behaviour including decreasing gratitude and punctuality. One interpretation could be that students lack important knowledge about culturally and socially desirable behaviour. Thus, further support measures and curricular adaptations might be necessary.

To obtain a more differentiated picture, further analyses were carried out on currently perceived challenges in the schooling of students in VIC. These particularly take the requirements of the target groups based on the previously illustrated barriers to immigrant integration into account. The aspects of legal regulations as well as the individual starting positions of learners seemed to be of particular importance for the participants.

6.1.2 Challenges due to Legislation

About half of the participants describe the current asylum legislation as the main challenge for VIC schooling. It was emphasised that an uncleared legal status of students and the omnipresent threat of deportation have an impact on their social, learning, and working behaviour. After all, students with an uncertain status lack a perspective, because they are not granted a work or training permit outside of VIC and constantly fear of being deported.

> *"Students with poor prospects of staying (e.g., from Afghanistan) are less motivated in the 2nd year of schooling when they realise that their chances of obtaining a residence permit are low." (Q24)*

This also causes problems at class level as these students feel demotivated to engage themselves in VIC schooling. This results in absenteeism, refusal to participate in classroom activities or even active classroom disruptions challenging staff and other students. It is the "struggle to stay" (Q32) that threatens continuity in schooling for many of the affected students.

6.1.3 Challenges due to Students' Individual Dispositions

Apart from legal aspects, the respondents also mentioned challenges connected to particular features of the migrant learners themselves. In fact, most statements were concerned with personal characteristics and attitudes of learners that were indicated to be highly relevant for the success of schooling as well as integration processes. Within the questionnaires individual learning prerequisites (previous education, learning aptitude, available learning strategies), language training (literacy in spoken and written language), and knowledge about the host country were described as challenging facets.

Respondents seem to perceive students in VIC to often lack a general motivation or willingness to make the required efforts to learn in school and to learn about cultural norms in order to integrate themselves into the host society. However, it was also acknowledged that they are often not equipped with sufficient learning strategies to engage in the efforts required.

> *"Not all students show willingness to learn. They do not do homework, participate in class, or obtain learning material for months. This also leads to massive disruptions during lessons." (Q16)*

> *"Not all refugees have learned how learning/studying works in their home country." (Q12)*

In this context, it has been suggested that individual students attach only little value to the educational opportunities offered by VIC. This is explained by considerable problems understanding the German education and employment system.

"The discrepancy is that refugees want to work and do not understand why a school-leaving qua-lification is important. They do not understand why education is important and why one simply cannot earn money without learning or being able to speak German." (Q1)

This assumed lack of understanding is, based on the perceptions of the respondents, reflected in learners' behaviour. More than 25% of respondents criticise a missing willingness to adapt and integrate among students, which manifests itself in dysfunctional behaviour.

"For the most part, the students have great difficulty to comply with Central European customs: E.g., punctuality, reliability in the completion of tasks, constant obligatory attendance." (Q45)

Thus, despite that VIC has been well established over the last years, the respondents perceive that there is still need for further development at the curricular and content level, for example, regarding language support (including professional language), vocational exploration, and the facilitation of social and cultural skills. These aspects are strongly connected with external factors that affect the perceived success of the implementation and school effectiveness, such as legal regulations that would contradict the pedagogical goal of VIC and prevent young immigrants from taking up vocational training or employment. In the next section, these aspects will be taken up in more detail based on the answers given in the interviews.

6.2   Interview Study

6.2.1 Legal Regulations

All interviewees agree that regulations that define the legal status as well as the prospects of immigrants directly impact their educational and integration efforts. It was particularly emphasised that an uncertain residence status can negatively affect both motivational and behavioural aspects in students. The organisational and student level appear to be strongly interrelated and therefore seem to affect the operational level as follows.

Legal regulations do not only affect students that fear deportation. Some interviewees described "contagion" or "spill-over" effects on the whole class when one particular student received notifications about their prospective deportation. Furthermore, it was also made clear that teachers and social workers are similarly affected by motivational spill-over effects. Through their pedagogical work, they build up a relationship with students and invest a lot of work and passion in their education. Thus, VIC staff sometimes regard it as a lack of appreciation of their work if the students are not granted a residence or work permit, or are deported. Apart from this, the interviewees draw attention to economic aspects related to legal issues.

"I have students, who have completed their two VIC years, [...] and are theoretically [ready] to start training and then they are [...] deported. So, apart from the fact that this is really cruel and emotional for both fellow students and the teachers [...], it is also a waste of resources from an economic point of view. We have invested 3-4 years in some of the students, [...] so that they could actually give something back, […] and then the students are deported." (I14)

Besides these behavioural and emotional aspects, it was also indicated that legal regulations as well as decisions made by responsible authorities severely impede certain integration efforts like participation in internships.

"Meanwhile, the approval of the foreigners' authority must also be obtained if you want to do an internship; it is not possible without it. As a rule, internships are not allowed during school holidays." (I3)

Statements about legislation as well as authorities are repeatedly accompanied by the hope for as well as the plea for practices that hinder education and integration efforts to change. The interviewees would like to see a clear commitment by the authorities and a new course of action that supports the goals of VIC. In addition, they would like to be involved in decisions affecting their students. However, the interviewees acknowledge that their own scope of action concerning these issues is rather limited. A feeling of resignation is reported.

"I said to the foreigners' authority, 'Just ask us how the student behaves at school, what kind of prediction can be made!' So if someone is in class every day, you get to know these people during the school year [...]. The foreigners' authority answered, 'We did not want to burden the teachers additionally.' Such nonsense, I have been teaching for 30 years now, nobody has ever cared if I work a lot or a little." (I11)

6.2.2 Language and Language Education

Although it was stated in the questionnaire responses that literacy skills of students enrolled in VIC appeared to have risen, the level of colloquial and professional language is still considered as being too low to enable students to successfully transit into VET or employment. In respect to language formation, the interviews were able to explain the ambivalent findings in the questionnaire data.

The interviewees explained that, over time, many VIC teachers have reduced the language requirements of their classes in favour of the target group and in order to meet other learning goals. It follows that students often do not manage to get beyond rather low-level language skills and that VIC classes do not contribute much to language development. In many cases, students are not able to sufficiently communicate with others in German. Hence, poor language skills would directly prevent transitions into employment. This not only makes the

long-term transition into vocational training or employment more difficult but also often leads to tensions and problems when students interact with others as soon as they leave the safe space of the school. In severe cases, this could lead to a loss of motivation that quickly results in students dropping out of employment or VET opportunities. Language barriers thus represent a lasting obstacle to professional orientation, career transitions, and training success.

"This is [...] simply too hard for them language-wise, because the companies treat them like secondary school students who speak the language perfectly [...] and they [the young immigrants] become demotivated and are really afraid to go there again, because there is no pedagogically trained staff there." (I12)

The interviewees expressed repeatedly that two years of VIC are by no means adequate to develop German language skills that are sufficient to take part in VET or to find employment. More time and resources for dedicated language courses are required in the eyes of the interviewees. Some of the interviewed teachers pleaded for an extension of the VIC to three years and others suggested for the first VIC year to consist almost exclusively of language training. Besides this, it was also brought forward that companies offering internships should offer more support that helps students to overcome their language deficits. This is thought to reduce loss of motivation and dropouts.

6.2.3 Knowledge and Attitudes

Within the interviews, similar to the questionnaire statements, it was often stressed that students either do not know much about Germany's culture, including its education and employment system, or they show attitudes and behaviours that are detrimental to successful social or vocational integration. For instance, a lack of adaptability and comparatively lax working attitudes both in school and during internships were frequently addressed:

"In one class (...) we had to, I will say colloquially, work hard to make sure that they arrived on time. Teach them the German virtues and tell them that if they are looking for a job and they are not on time, then this job is gone. That is very important in Germany." (I2)

Within the interviews, different perspectives on these issues as well as approaches about how VIC staff can deal with them emerged. Some respondents showed more understanding for the situation of the students than others:

"They are simply children, young adults, […] but they have to do as they are told from the beginning, that is really tough. So, from that point of view, they would simply need more time to devote to all the customs; the German customs." (I4)

"It's like we discussed before. There's a need for clearer structures and discipline [so that students can answer the questions for themselves] 'what am I supposed to do here?', what do I have to do here and if I don't do it, what happens then? [...] I would say a certain strictness would be good overall." (I10)

A common theme in this context is that behaviour which is based upon some kind of cultural misfit and a lack of knowledge is seen as an educational challenge that can be addressed, especially with more time at hand. In addition, the interviewees brought up an important aspect regarding students' lack of orientation in the labour market which was not yet mentioned. It was pointed out that many young immigrants rely on occupational concepts that they have acquired in their home countries (e.g., what a certain profession is about). Unfortunately, sometimes those concepts are incompatible with the structure of the German labour market. In addition to this, students often do not seem to be sufficiently informed about the occupations they would like to work in, nor do they show much initiative to explore the occupational landscape. It is therefore not uncommon that students either lack an overview of occupational profiles, their requirements, and access requirements or that they have an unrealistic picture about these facets of the labour market.

"We had students who went into geriatric care [for an internship]. They came back after three days and said, 'I had to touch naked people there'. [...] Well, one would have thought that the students do in fact inform themselves about the professions in advance, like the job description, but no." (I14)

It furthermore seems paradoxical that students strongly value employment and any kind of professional activity but seem to not understand the educational pathways leading to a job. This includes difficulties to grasp the importance of pre-vocational education and vocational training in Germany.

"The (value of) vocational training (is) seen differently. They see the profession and the work itself in the same way. I think [the dual system] just doesn't seem reasonable to them, that you simply have to go to vocational school or that you might have to finish your compulsory education before you can go to work." (I9)

According to the interviewees, this problem cannot be solved by simply offering more explanations but rather by practical experience that are built into VIC. At school, work experiences should systematically be reflected to allow students to acquire insights into the world of work and education of their host society. The arrangement of internships in a way that is conducive to learning (duration, curricular integration, reflection) should be implemented, on the one hand, on the organisational level in schools and, on the other hand, on the part of the training companies. The latter requires working conditions that support learning in order to enable experience and reflections to grow. At the same time, however, it has been

stressed that students themselves are responsible for their learning pathways and should be encouraged as well as demanded to use the learning opportunities offered to them.

> *"One would probably have to force students to deal with it during the preparation of the internship and somehow make them present something that proves that they have dealt with it." (I14)*

7 Discussion

The analysis indicates that the structures created within the VIC framework appear to be very promising in terms of successful integration of young immigrants. From the perspective of the participants, it was emphasised that organisational barriers seem to have been reduced and long-term structures have been established—e.g., the development of curricula and learning materials, multi-professional teams in schools or local cooperation networks with regard to the implementation and supervision of internships. These results are in line with findings of prior studies (e.g., Heinrichs et al., 2018; Riedl & Simml, 2019).

In contrast, however, the data of this study also indicates that some challenges and problems continue to exist, and new ones take shape. According to both the questionnaire and the interview data, these challenges and problems are rooted in the overarching legal framework that VIC is embedded in, the concrete curricular and content design of the VIC, as well as particular idiosyncrasies of the students themselves.

From the perspective of school development at an *organisational* level the findings of this study indicate that top-down strategies are not suited for implementing change in education contexts (see Section 2 and Förster, 2015; Townsend, 2014). The needs of local schools and stakeholders as well as the target group are too rarely taken into account, potentially leading to detrimental effects on well-being and motivation of both students and staff. This can be seen, for example, in the respondents' assessment of curricula, as they are considered as partly inadequate in terms of immigrants' knowledge, competencies, or developmental progress. During curriculum development, the experiences of the staff at the operational level were apparently not really taken into consideration. At least two important aspects are mentioned by the study participants in this regard. First, VIC does not sufficiently focus on *students'* technical and intellectual skills (e.g., learning strategies, literacy) as well as their basic attitudes (e.g., punctuality) that have yet to be developed for a successful transition into VET or the labour market. Second, VIC does not seem to include room for *staff* to work with immigrants' idiosyncratic issues like trauma, uncertainty of legal status, or individual attitudes towards learning and employment. Taking care of students with motivational and emotional problems represents a challenge for staff, for which they are not adequately prepared and for which too little time is made available overall. In addition, it has been indicated that more time should be given to practical work experience and its reflection. This also raises the ques-

tion of whether the training period of two years is sufficient. These issues were raised by the participants both in the questionnaire and in the interview.

Concerning the already mentioned curricula, there is also a need for extended language education including the promotion of social and cultural competences, and vocational exploration. Here, it also becomes clear that challenges at the *student* and *organisational* level are strongly interrelated. For example, since it is difficult for students who do not speak sufficient German to find a job, VIC staff suggests that (a) the programme should focus more on language education and (b) the VIC should focus more on measures that help students to orient themselves in society, the education system, and the labour market. These findings are consistent with results from a nationwide survey conducted in Germany, according to which nearly 50 % of immigrant graduates called for further support, particularly regarding language skills (Matthes et al., 2018).

Legal regulations were discussed as a relevant issue that has the potential to endanger VIC's educational goals on an *organisational* level and are also related to challenges originating on the student level. Participants emphasised that due to strict regulations immigrants are prevented from taking up training or employment outside the tight VIC structures. In addition, a constant threat of deportation is seen as one reason why students are not motivated and willing to actively take part in the educational opportunities offered to them. Moreover, an ambivalent picture is painted. On the one hand, further integration and familiarising themselves with both language and culture of the host countries is demanded of the immigrant students. On the other hand, access to opportunities to do so outside of VIC are often legally denied. This is especially stressful for *staff*, as they have to explain these regulations to students, even if they themselves do not approve of them and they are not involved in the decision-making process.

At the level of the *students*, it has been emphasised that learners often lack sufficient readiness to learn and/or the required motivation to engage in learning affordances provided by the VIC teaching staff. In addition, many students seem to struggle to orient themselves in the German education and employment system. According to the staff that participated in this study, support measures should not only focus on fostering employability but also promote students' exploration of vocational fields. This is necessary, since students often lack an understanding of host society's occupational profiles because they might differ from the ones in their home countries (see also Martín et al., 2016). Vocational exploration should include reflection about students' own abilities and interests as well as how these fit with existing vocations and vocational pathways in the host country (see also Blustein, 1992; Nauta, 2007).

All interpretations made based on the data of this study should be handled with care, due to the study design and the selection of respondents. First, the study is based on two rather small convenience samples. It is therefore not possible to generalise the findings to the underlying population of staff working in VIC. Second, the sample was selected on a

voluntary basis which may have led to selection effects and response bias. How the data is affected by such effects, however, remains unclear. Third, the sample has to be characterised as heterogeneous in terms of age, how much time staff spent with VIC schooling, and in what role the study participants worked in (class leadership vs. teacher with individual lessons). Due to the low sample sizes, it was not possible to control for this heterogeneity. Fourth, the results reflect the implementation of the VIC and can therefore not be easily transferred to other programmes outside Germany. Fifth, the study only refers to subjective statements of actors at the operational level. For a more holistic view of VIC's development and changes over the years, other actors' perspectives have to be taken into account. Future studies should therefore examine how actors on governance or administrative levels, as well as other external stakeholders who are not directly located within the educational sector, such as training companies, foreigners' authorities, and caregivers in residential facilities, perceive the role of VIC in supporting young immigrants' transition from school to work.

8   Conclusion

Although the VIC programme appears to be well implemented, challenges and problems still prevail. Further development of the programme with more space for language education, culture-related learning, and career exploration seems necessary—e.g., in the field of internships. Alignment of these aspects does not only seem necessary to support the integration of immigrants, but also to support teaching staff and social workers in their daily work. Thus, the study presented shows the importance of the perceived coherence of measures and systemic conditions which might directly affect the efficacy of school development efforts (Fullan, 1996; Rogers, 2003; Townsend, 2014). If such coherence is lacking, it can have negative effects on students (school dropout, lack of competence acquisition) but also for staff (negative effects on motivation and health) (Förster, 2015). Latter is supported by a study on teacher health in VIC (Simml, 2019), which shows that 42% of the teachers exhibited health risk patterns that are traced back to a high (above-average) willingness to work hard or a concrete risk of burnout. In addition, this study further corroborated prior findings that top-down implementation strategies are often not perceived as suitable for meeting the challenges of sustainable programme development.

Building on the study's findings, the following central aspects for supporting the integration of young immigrants through school-based measures can be derived:

1. Programmes like VIC must strongly be tailored towards their target group. Both psychological and cultural characteristics including the educational biographies of immigrant students need to be taken into consideration. More flexibility for schools and individual teachers as well as more opportunities to implement educational measures that fit the

needs of the concrete students at a local level would be desirable. This also includes industry partners that offer internships for vocational exploration or VET.

2. More attention must be paid to the promotion of vocational transitions and transition-related skills. Target group-specific opportunities for vocational orientation and sustainable qualification that secure students' employability seem to be particularly important here in order to integrate young immigrants into the labour market in the long term (see also Braun & Lex, 2016). In this context, students' own responsibility and agency to learn must be demanded more strongly, but also supported.

3. In order to support all the above-mentioned aspects in a meaningful way and not to lead the efforts of all those involved astray, a transparent legal framework and firm commitments to immigrants who are making efforts to integrate are needed.

Therefore, all stakeholders that are part of immigrant education must be committed, especially regarding the promotion of career transitions (e.g., through additional language support, general culturally sensitive education in schools including sensitivity for language and cultural differences of industry partners that offer internships, provision of career-related real-life experiences through internships that are conducive to learning and exploration). In addition, immigrant education programmes should strongly be tailored towards the individuals' needs and prerequisites of participating immigrants. Unfortunately, however, pedagogical criteria for implementing such programmes and for designing learning environments that fit the demands of young migrants are still not sufficiently developed and evaluated (Reinke et al., in press). It follows that future studies should aim at the identification and the development of such criteria that help students' successful transition from school to VET as well as labour market integration. A special focus should be laid upon both the staff involved in educational programmes for immigrants as well as their target group. This might help to further identify structural and individual barriers for integration and young immigrants' successful participation in social life and the labour market (Maué et al., 2021).

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Biographical Notes

Hannes Reinke is research associate at the department of business education and educational management at the University of Bamberg. His research focuses on the transition from school to work, career guidance and development, and dealing with diversity in the vocational transition system and vocational educational training. Within these fields, his work particularly considers the integration of young, newly arrived immigrants.

Dr. Michael Goller is a research associate at the Institute of Educational Science at Paderborn University. Between October 2018 and March 2020, he served as visiting professor at the University of Bamberg and between April and September 2021 as a visiting professor of Empirical Methods in Educational Research at the University of Jena. His current research interests comprise expertise development and workplace learning in general, including in the particular context of digitalisation, as well as learning and development of students at the boundary of institutionalised and less institutionalised learning environments like internships or particular learning arrangements in VET.

A Quantitative Cross-Regional Analysis of the Spanish VET Systems From a Systemic Approach: From a Regional Comparative VET Research Perspective

Mónica Moso-Diez[1]*, Antonio Mondaca-Soto[1], Juan P. Gamboa[2], Mikel Albizu-Echevarria[3]

[1]*Centre for Knowledge and Innovation, CaixaBank Dualiza, Paseo de la Castellana 189, 28046 Madrid, Spain*
[2]*Orkestra-Basque Institute of Competitiveness, Deusto Business School, University of Deusto, Pº Mundaiz 50, 20012 Donostia-San Sebastián, Spain*
[3]*Orkestra-Basque Institute of Competitiveness, Deusto Business School, University of Deusto, Av. de las Universidades, 24, 48007 Bilbao, Spain*

Abstract

Purpose: The aim of this paper is to analyse comparatively, at regional level, the current state of a wide range of indicators of Vocational Education and Training (VET) in Spain. This will make it possible to characterise and better understand the existence of a variety of regional VET systems, including the Initial VET and Continuous VET subsystems within Spain, doing so under a multidimensional approach examining VET supply and demand.

Methods: Systemic analysis of Spanish VET indicators leads to a selection of 54 indicators, which are then compared at regional level using *k*-means clustering. This approach identifies similarities and differences (clusters) across all of Spain's 17 autonomous communities (Spanish regions). The correlation between the variables is then analysed to examine the interaction between the VET system's supply and demand dimensions.

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*Corresponding author: moso.monica@gmail.com

Findings: The results show that 19 indicators explain the main differences between autonomous communities, which form two distinct clusters. Both VET supply and VET environment and demand influence cluster formation and intercluster differences. In the set of indicators that differentiate the two clusters of autonomous communities, close interaction is detected between certain indicators of VET supply and demand, especially those referring to the STEM occupational group, which confirms the correlation between these dimensions, albeit to a limited extent.

Conclusions: While it is necessary to analyse the differences between clusters in greater depth, the results suggest that Spain's regions are split into two distinct groups (clusters) in which the respective VET systems are developing and advancing differently. Moreover, there is evidence of a small number of significant interrelations between indicators of VET supply and demand, which point to both the VET system's specialisation and its inclusive nature.

Keywords: Vocational Education and Training in Spain, VET Systems, VET Cross-Regional and Cluster Analysis, Comparative VET Research

1 Introduction

1.1 Context

Spain's vocational education and training (VET) system is designed institutionally and legislatively at state level. However, its development and implementation take place at regional level and are closely aligned with the local economic, labour market, business and socio-cultural environment. Although not a federal state, Spain is a highly decentralised country comprising 17 devolved regions denominated autonomous communities.[1] This political-administrative division is enshrined in the Spanish Constitution of 1978, which guarantees the autonomy of nationalities and regions and which places great political weight, primarily, on the definition, implementation and evaluation of public policy (Subirats, 1992). Spain's regions therefore differ at various levels: Demography and population, economy and labour market, sectors and business, and society and culture. Certain phenomena encountered in Spain, such as rural depopulation, industrial concentration, multiculturalism, etc., highlight the relevance of performing regional analysis. Regions are understood not only on an institutional level as political-administrative units but also, from an evolutionary sociological and economic perspective, as social constructs that provide the context in which the different

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[1] Within the framework of the EU's regional classification (NUT), these correspond to second-level regions (NUT2) within the NUTS 2021 classification that lists 104 regions at NUTS 1, 283 regions at NUTS 2 and 1345 regions at NUTS 3 level (Eurostat, 2020).

political, economic, social and cultural dimensions converge to enable the transfer and socialisation of knowledge and innovation (Florida, 1995; Glasmeier, 1999; Hommen & Doloreux, 2004; Landabaso, 1997; Lundvall, 1992; Morgan, 1997; Scott & Storper, 2003).

Spanish VET is made up of two subsystems, Initial VET (IVET) and Continuous VET (CVET), which for decades have operated under different institutions and structures while sharing the same qualifications framework (Chisvert-Tarazona, 2019; Homs, 2008; Rego-Agraso et al., 2017; Sancha & Gutiérrez, 2019). While IVET policies are formulated and implemented at regional level, CVET policies have tended to come under the authority of central government (Tejada-Fernández & Ferrández-Lafuente, 2012). Since 2002, there has been a drive towards integration at institutional level (led primarily by central government), structural level (with a major change in the CVET subsystem) and organisational level (promoting integrated VET schools — created back in 2002 for providing both IVET and CVET), although the global process is still in the early stages given that they account for 5% of the total number of Spanish VET schools (Ministerio de Educación y Formación Profesional, 2019, 2020). Traditionally, Spanish IVET follows the school-based model (Greinert, 2005; Marhuenda-Fluixá, 2019), which in the last 5 years has become increasingly attractive to young people and has seen enrolments rise around 20%. However, this has resulted in greater weight (from the total enrolees) of Basic VET students (characterised by inclusively bridging the transition between compulsory education and VET) and Higher VET students (ISCED 51, characterised by specialisation and which can be accessed via Intermediate VET or the baccalaureate), to the detriment of Intermediate VET (ISCED 3) (Gamboa-Navarro et al., 2021).

In the Spanish context, the comparison between regional VET systems, considering their current state and recent evolution, gives rise to several questions about how an integrated VET system (IVET and CVET systems) is not only an expression of professionalisation; they also indicate the systems' boundaries and interfaces. This paper will be focused on the need for quantification to understand VET from an integrated and systemic approach in order shed light around the boundaries and interfaces between regional VET systems considering context indicators as essential for their differentiation. Therefore, the present study hypothesizes and analyses if regional VET systems in Spain can be grouped based on the idea that there is a significant correlation and interaction with their context which plays an important role in this grouping.

1.2   Main Concepts

Comparative studies of VET are rooted in analyses of national VET systems conducted from a Weberian approach to cross-country comparison (Clarke et al., 2020). The literature shares an underlying vision of differentiation between VET systems, given their specific features

in each country based on their evolution over time and their relationship with the state, the labour market and the productive system (Klaus & Grollmann, 2009; Lauterbach & Mitter, 1998). In this sense, comparative studies of VET have mostly analysed the similarities and differences between VET systems by country from a model and policy transfer approach, doing so not only at political-institutional level (and highlighting Germany's institutional effort to internationalise its VET model), but also at the level of the large corporations that export their proprietary training culture and model and practice benchmarks from their countries of origin to those in which they have operations, thereby influencing the host country's local VET model (Gessler & Peters, 2020; Pilz & Li, 2020). This tradition is extended by the multilateral approach (Kis, 2020) which, taking a neoliberal view of the transition from VET to employment, proposes batteries of indicators that describe these transitions but develop little theory. Another emerging trend in Europe is associated with the challenges and strategies set by the European Commission, which are more thematic in nature and focus on specific issues (e.g. youth unemployment and qualifications, digitisation and skills systems, smart specialisation and VET, etc.), as a result of growing Europe-wide participation in cooperation programmes under the Horizon 2020 and Erasmus+ schemes, among others (Clarke, et al., 2020).

The systemic vision of VET has generally been analysed in terms of the nature of the relationship between VET supply and demand, which has evolved over time. Initially, the relationship between the VET system and its environment was either explained historically from a supply-led perspective (King, 1989) or viewed from a political-institutional standpoint as a result of countries' individual development needs (Green, 2016). Since then, proposals analysing the VET system from a demand-led perspective have gradually gained ground (Gill et al., 1998), emphasising labour market pressures as one of the main drivers of change in VET system transformation processes in the 21st century. In the European context, this trend is mainly reflected in apprenticeship-oriented systems, the embodiment of which is found in Germany, Austria and Switzerland.

The fact that the IVET and CVET systems have been designed, developed and implemented by different stakeholders, interests and institutions within the public policy sphere has usually led to the existence of two distinct subsystems. In this context, CVET analyses have tended to be determined by environmental characteristics as regards economic structure, predominant sectors, size of firms, corporate culture and governance systems (employers' associations, trade unions, etc.), as well as by issues such as immigration, youth unemployment and changes in the labour market (Keating et al., 2002).

In this way, analyses of national VET systems are giving way to other research focusing more on comparison between and within systems and on the diversity of VET from a multidimensional, multiagent and systemic approach. From this perspective, and given the changing nature of the systems, a multidimensional, multilevel analytical approach is required (Clarke

et al., 2020). Within this framework, we believe that analysing the relationship between VET systems and regions from a systemic evolutionary approach opens a window of opportunity to understand their systemic characteristics and possible responses in the context of rapid economic, social and environmental change. Thus, this study is novel since, as far as we are aware, it is the first attempt of a multidimensional comparative analysis at regional level that considers CVET, IVET and the context in which they operate.

At the Spanish level, comparative studies of VET are somewhat limited and have a strong descriptive and qualitative emphasis (Echeverría-Samanes & Martínez-Clares, 2019).[2] Traditionally, this research has usually been carried out from a historical-institutional standpoint and by making comparisons at country level, either with the EU overall, with other countries individually (De Olagüe-Smithson, 2017; Egg & Renold, 2014; Gonzálvez & Marhuenda-Fluixá, 2021; Murua, 2020), or, in a few cases, in the form of a pedagogical and methodological comparison (Gessler & Moreno-Herrera, 2015).

In Spain, the studies that associate the relationship between education and its socioeconomic environment have been carried out primarily in the university environment (Pastor et al., 2019; Pastor & Peraita, 2011) and normally from the perspective of the impact of university activity on the local or regional economy (in terms of attraction of students, mobility, research spending, cultural activities, etc.). In our review we have not detected this type of studies in the field of VET; and in any case, they refer to a more unidirectional relationship of value contribution in terms of the activity; and not so much to the correlation with its environment from the perspective of systemic configuration (economic, social and institutional).

Likewise, the scientific current most in line with this vision is that related to Regional Innovation Studies, which addresses the relevance of VET systems as channels for transferring knowledge and technologies that accelerate regional innovation processes. However, the studies are mainly qualitative in nature (Albizu et al., 2011; Navarro & Retegi, 2018). The results point to the fact that the relationship of VET centres with the environment is very intense, and the VET system is a factor of innovation both in its work of training professionals and in promoting applied innovation in companies close to its environment (Rosenfeld, 1998). Although the VET ecosystem is a newcomer to regional innovation policies, and specifically to smart specialization policies (Foray et al., 2014), there are case studies of leading Spanish regions in innovation that integrate the VET system into their regional smart specialization strategies. However, the deployment of RIS3 agendas differs greatly among Spanish regions, with the Basque Country and Navarre standing out (Hazelkorn & Edwards, 2019; Moso-Diez, 2020; Navarro et al., 2020; Olazaran & Brunet, 2013).

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[2]　The findings of these studies are compiled in a Knowledge Map of Spanish research into VET, which is being updated to include 2018–2020 and which spans doctoral theses, scientific articles, project reports and research volumes published between 2005 and 2017 in Spain and which meet certain scientific criteria.

2 Methods

2.1 Purpose of the Research

The general aim of this paper is to show the interrelated nature of the VET system with respect to its context or environment, in which the surrounding systems converge: The general education system, the socioeconomic environment, the labour market and the social system. Interaction between the VET system and its environment is driven by territorial proximity, which in this study is demarcated at the level of Spain's autonomous regions. We believe that Spain's VET system needs to be analysed from a socio territorial perspective to facilitate understanding of the interactions within the system and the close relationship between VET indicators and their regional context. In this article, we consider the system to comprise an overarching structure that explains the operation of the VET system and that involves both traditional dimensions alongside other, equally relevant contextual references (Kis, 2020; Papakitsos, 2016). Under this systemic view of VET, we will start by adopting a comprehensive (albeit partial) approach that includes analysis of formal (IVET) and non-formal VET (CVET), but which then excludes informal VET due to data limitations.

On the one hand, this paper analyses the differences between autonomous communities (Spain's politically and administratively devolved regions) based on a panel of indicators (a total of 54) whose systemic nature will support the study of the similarities and differences between Spanish regions. This comparative quantitative analysis makes it possible to characterise VET at regional level, an exercise that is important in understanding it and, consequently, in future policy making intended to improve it. The focus of this paper is to analyse comparatively, at regional level, the current state of a wide range of indicators of VET in Spain. This will make it possible to characterise and better understand the variety of regional VET systems, including the IVET and CVET subsystems within Spain. More specifically, this paper aims to identify if regional VET systems in Spain could be grouped according to their features. Based on previous literature and analysis, we hypothesise that there are different VET systems in Spain with different traits and results.

On the other, it analyses the interactions between the VET system's own indicators and its regional context, which implies that the study of regional VET extends to other convergent systems, making it necessary to limit the scope of analysis. Firstly, from the perspective of level of analysis (macro, meso and micro), the current study is limited to the macro level, leaving the rest for future examination. Secondly, this paper is based on a VET framework (Table 1) that considers its evolving nature from a systemic perspective. At the same time, it includes both VET supply and the social and economic demand derived from its territorial environment (social challenges, labour market and sustainable competitiveness) (Green, 2016; Rees, 1997). This framework makes it possible to analyse the fundamental pillars that

constitute VET systems, combining supply pillars (general education system, IVET, Dual VET and CVET) and demand pillars (structural conditions of the territory, employment and labour market and social inclusion and challenges), which helps identify similarities, differences between systems and interactions between the subpillars within the systems.

Table 1: Structured Framework for Analysing VET Indicators

Approach	Pillar	Indicator types
Skills, qualifications and VET supply	Education and training system	Refer, among others, to the structure of the education system in terms of enrolees and graduates and the level of education of the population, revealing VET's position within that system.
	Initial VET	Characterise VET for young people in terms of enrolees and graduates, level of internationalisation, schools and training supply, teaching staff, transition to university, etc.
	Dual VET	Characterise this form of IVET separately, given its relationship with the business environment. Its indicators measure number of enrolees, schools offering this option and the courses available.
	Continuous VET	Indicators covering the various forms, like VET for Employment for the unemployed, VET for Employment for employees (subsidised and non-subsidised training), as well as the sector providing this type of training.
VET environment and demand	Regional structural conditions	Refer to factors that condition the VET system, such as current and projected demographics, GDP per capita, company size and distribution of the working population by sector.
	Employment and labour market	Refer to VET graduates entry and participation in the labour market and the latter's characteristics based on indicators like distribution of working population by level of education, rates of employment and unemployment among VET graduates, etc.
	Social challenges	Refer to factors like social inclusion of vulnerable groups (e.g. foreign nationals and people with disabilities), reducing early leavers from education and training and encouraging lifelong learning among older workingage adults, etc.

Source: Compiled in-house.

2.2   Hypotheses

The starting hypotheses are as follows:

1. In the Spanish context, regional VET systems differ despite existing in the same state and operating under the same VET regulations and teaching model. At the same time, these systems share common elements that allow us to group them into clusters.

2. As VET systems are supposed to encompass internal and external dimensions, a significant correlation is expected to exist between VET supply indicators and more contextual and demand side indicators (general education, labour market, economy, and society).

2.3 Procedure

The methodology of this study is quantitative. On the one hand, it takes as a reference the fieldwork and results of the study 'Observatory on Vocational Education and Training in Spain' (Gamboa-Navarro et al., 2020), which, built upon its comprehensive pillar-based "supply-demand" framework, analyses the total of secondary data sources on Spanish VET, identifying 365 indicators. In this study, after a detailed analysis of the indicators, 54 indicators have been selected (under criteria of synthesis and relevance) to compare 17 Spanish regions within a 5-year time frame (2015-2019). Different sets of indicators (i.e. Cedefop, 2020) were considered when selecting the definitive group of indicators (shown in Table 2).

The indicators selection followed a simple procedure of expert assessment that comprised 3 stages. First, a group of three different experts on Spanish VET systems separately were asked to analyse each indicator of a list of 365 according to some criteria performing an initial selection of the best set of indicators. A first list was obtained when the three experts or two out three experts selected an indicator. Second, the preliminary set was analysed by the three experts together to confirm or modify the list specially in the case that only two experts agreed about an indicator. Third, a final set of 54 indicator was selected after verifying the fulfilment of the required criteria. The main criteria that guided the process were: (1) Content validity, the indicators should be the more accurate measures of each pillar they intended to measure. The better indicators to describe the functioning of the regional VET systems should be chosen (2) parsimony, in order to get the simplest set of indicators. As many indicators were available for some pillars, the shorter the list of indicators selected was the better. As Gauch (2015) points out, parsimonious models, those than require less data can be extremely efficient than more complicated models to achieve similar accuracy (3) variability, the potential indicators should show a minimum variability for discriminating differences among regions.

Once the list of indicators was identified, the first phase of the data generation and analysis consisted of two steps. Firstly, for the data generation, the secondary sources that contribute these data were identified and selected based on their methodological transparency, time span covered and public accessibility. Sources include the Ministry of Education and Vocational Training, the National Statistics Institute, the State Foundation for In-Work Training, the State Public Employment Service and Eurostat. Secondly, the data from these secondary sources were extracted, compiled and processed according to data consolidation, continuity and regional representativeness criteria.

Table 2: Indicators Used to Analyse and Characterise Regional VET Systems

Approach	Pillar	Indicator
Skills, qualifications and VET supply	Education and training system	1. VET students as a proportion of post-compulsory education (2018–2019) 2. Population aged 25–64 with VET qualifications (2020) 3. Population aged 25–64 participating in education and training (2020)
	Initial VET	4. Students enrolled in VET (2018–2019) 5. VET graduates (2018–2019) 6. Gross VET graduation rate (2018–2019) 7. Basic VET students (2018–2019) 8. Basic VET completion rate (2018–2019) 9. Intermediate VET students (2018–2019) 10. Intermediate VET completion rate (2018–2019) 11. Higher VET students (2018–2019) 12. Higher VET completion rate (2018–2019) 13. Female VET students (2018–2019) 14. Students in industrial occupational groups (2018–2019) 15. Students in STEM occupational groups (2018–2019) 16. VET students on distance-learning programmes (2018–2019) 17. VET students in state schools (2018–2019) 18. Erasmus+ mobility (Basic VET + Intermediate VET) (2017) 19. Erasmus+ mobility (Higher VET) (2017) 20. Exclusive VET schools (2020) 21. Integrated VET schools (2020)
	Dual VET	22. Students enrolled in Dual VET (2018–2019) 23. Female students enrolled in Dual VET (2018–2019) 24. Higher VET students enrolled in Dual VET (2018–2019) 25. Schools providing Dual VET (2018–2019)
	Continuous VET	26. Unemployed coverage ratio (2019) 27. Companies with 10 or more employees (2019) 28. Employees participating privately (2019) 29. Training expenditure per employee (2019) 30. Schools providing Dual VET (2018–2019)
VET environment and demand	Regional structural conditions	31. Population aged 15–19 (2020) 32. Average firm size (2018) 33. GDP per capita 34. Population density
	Employment and labour market	35. Working population with VET qualifications (2020) 36. Employment premium for Basic and Intermediate VET vs lower qualifications (2019) 37. Employment premium for Higher VET vs university degree or similar (up to 4 years) (2020) 38. Working population with VET qualifications on temporary contracts (2020) 39. Employment by 4 sectors (agriculture, industry, construction and services) 40. Job offers for Intermediate VET graduates (2019) 41. Job offers for Higher VET graduates (2019) 42. Social Security affiliation rate among Intermediate VET graduates four years after graduating (2019) 43. Social Security affiliation rate among Higher VET graduates four years after graduating (2019) 44. Balance within working population (2020) 45. Balance within working population with Basic and Intermediate VET qualifications (2020) 46. Balance within working population with Higher VET qualifications (2020) 47. Unemployment rate (2020) 48. Unemployed population with VET qualifications (2020)

	Social challenges	49. Female students enrolled in STEM occupational groups (2018–2019) 50. Population aged 50–64 participating in education and training (2020) 51. Foreign students enrolled in VET (2018–2019) 52. VET students with disabilities and severe disorders (2018–2019) 53. Early leavers from education and training (2020) 54. Population aged 15–24 neither in employment nor in education and training (2020)

Source: Compiled in-house.

In the second phase, focused on the data analysis, a statistical cluster analysis (K-means) was carried out through SPSS to target different groups of regions according to their respective characterisations of VET supply and demand, taking into account the panel of 54 indicators as reference (displayed in Table 2). This analysis reveals two statistically distinct clusters of autonomous communities built from 19 variables. The other 35 variables were discarded because they do not contribute significantly to differentiation between the clusters. The means of these clusters are significantly different in each of the 19 variables, with significance levels exceeding 95% (Table 3). Subsequently, based on observation of the *F* statistic, a hierarchical order is established prioritising those variables that make the greatest contribution to the construction of the two groups and that characterise the inter-cluster differences.

Finally, correlation analysis was performed, applying Pearson's statistic to the 19 variables that define the two clusters. The usefulness of this statistic when working with quantitative interval or ratio variables, i.e. with distinct ordered values, is that it measures the strength of the correlation between one variable and another and its direction (either positive or negative). This allows us to determine the correlations that exist between the indicators of VET supply and demand.

3   Findings

The results of K-means clustering distinguish between two groups of autonomous communities with significantly different means in each of the 19 variables, with significance levels exceeding 95% (Table 3). Cluster 1 groups together 9 regions: Andalusia, Asturias, Balearic Islands, Canary Islands, Castile-La Mancha, Valencian Community, Extremadura, Galicia and Murcia. Cluster 2 groups together 8 autonomous communities: Aragon, Cantabria, Castile and Leon, Catalonia, Madrid, Navarre, Basque Country and Rioja.

Based on observation of the *F* statistic (Table 3), it is possible to validate and rank the list of variables, placing at the top those that contribute most to construction of the two clusters. The six variables that make the greatest contribution include GDP per capita, unemployment rate among both the general population and VET graduates, Social Security affiliation among both intermediate and higher VET graduates (taken as an employment rate indicator), and number of students enrolled in VET at stateowned training centres.

Table 3: Mean and Standard Deviation of the Variables by Cluster, and F-test of Independent Samples for Mean Equivalence (Equal Variances not Assumed)

	Sample		Cluster 1		Cluster 2			
Variable	Mean	SD	Mean	SD	Mean	SD	*F*	Signif. (2-tailed)
GDP per capita	25278	5016	21831	2681	29155	4105	19,429	,001**
Unemployment rate among population aged 16–64	13,4	4,3	16,3	3,9	10,2	1,1	18,476	,001**
Unemployment rate among VET graduates aged 16–64	12,2	4,1	15	3,8	9,1	1,2	17,169	,001**
Social Security affiliation rate among Higher VET graduates	69,4	4,4	66,6	3	72,6	3,5	14,429	,002**
Social Security affiliation rate among Intermediate VET graduates	69,6	3,3	67,5	2,6	72	2,3	14,355	,002**
Students enrolled in VET in state-owned schools	75,4	10	81,8	6,9	68,3	8,1	13,632	,003**
Training expenditure per employee across all businesses	65,4	21,6	52,3	11	80,2	21,5	11,796	,008**
% population aged 50–64 participating in learning activities	5,9	1,1	5,2	0,8	6,7	1	11,16	,005**
Population aged 15–24 neither in employment nor in education and training	11,3	2,9	13	2,6	9,4	1,9	10,614	,005**
Erasmus+ mobility (Basic VET + Intermediate VET)	54,9	15,3	63,8	12,6	45	11,9	10,016	,006**
Erasmus+ mobility (Higher VET)	45,1	15,3	36,2	12,6	55	11,9	10,016	,006**
% foreign students enrolled in VET	7,9	3,3	6	3,1	9,9	2,1	9,171	,008**
% women enrolled in Dual VET	33,8	13,6	41,5	10,8	25,3	11,4	9,028	,009**
Mean size of companies with employees	8,5	1,4	7,7	0,9	9,4	1,4	8,747	,014*
Working population aged 16–64, by sector of industry	15,4	6	12,2	4,7	19	5,3	7,864	,015**
% students enrolled, by STEM occupational group	37,1	6	33,9	4,9	40,6	5,3	7,361	,017*
% early leavers from education and training	14,8	4,6	17,1	4,2	12,3	3,7	6,113	,025*
% population aged 25–64 with VET qualifications	22,3	3,9	20,4	2,7	24,4	4,2	5,655	,040*
% Higher VET students enrolled in Dual VET	69,4	16,2	62,3	17	77,5	11,4	4,544	,047*
** p < 0,01 * p < 0,05								

Source: Compiled in-house.

Table 4 shows the distances between each variable and the centroid of each cluster. This is a standardised score (Z) with a value of between 1 and -1. It is the result of iteratively reassigning cases to the respective clusters until the convergence criterion is met.

Table 4: Standardised Score for the Centres of the Final Clusters

Indicators	Cluster 1	Cluster 2
Unemployment rate among population aged 16–64	,67951	-,76445
Unemployment rate among VET graduates aged 16–64	,66821	-,75173
Students enrolled in VET in state-owned schools	,63112	-,71001
Population aged 15–24 neither in employment nor in education and training	,58878	-,66238
Erasmus+ mobility (Basic VET + Intermediate VET)	,57877	-,65111
% women enrolled in Dual VET	,56065	-,63073
% early leavers from education and training early	,49217	-,55370
% higher VET students enrolled in Dual VET	-,44105	,49618
% population aged 25–64 with VET qualifications	-,47860	,53843
% students enrolled, by STEM occupational group	-,52479	,59039
Working population aged 16–64, by sector of industry	-,53643	,60348
Mean size of companies with employees	-,55511	,62450
% foreign students enrolled in VET	-,56340	,63383
Erasmus+ mobility (Higher VET)	-,57877	,65111
% population aged 50–64 participating in learning activities	-,59741	,67208
Training expenditure per employee across all businesses	-,60686	,68272
Social Security affiliation rate among Intermediate VET graduates	-,63961	,71956
Social Security affiliation rate among Higher VET graduates	-,64046	,72051
GDP per capita	-,68710	,77299

Source: Compiled in-house.

The results shown in Table 4 confirm the significant differences between Clusters 1 and 2 in the means of the 19 variables. It reveals that whenever a variable has a positive score in Cluster 1 it will have a negative one in Cluster 2, and vice versa. It can also be appreciated in Figure 1.
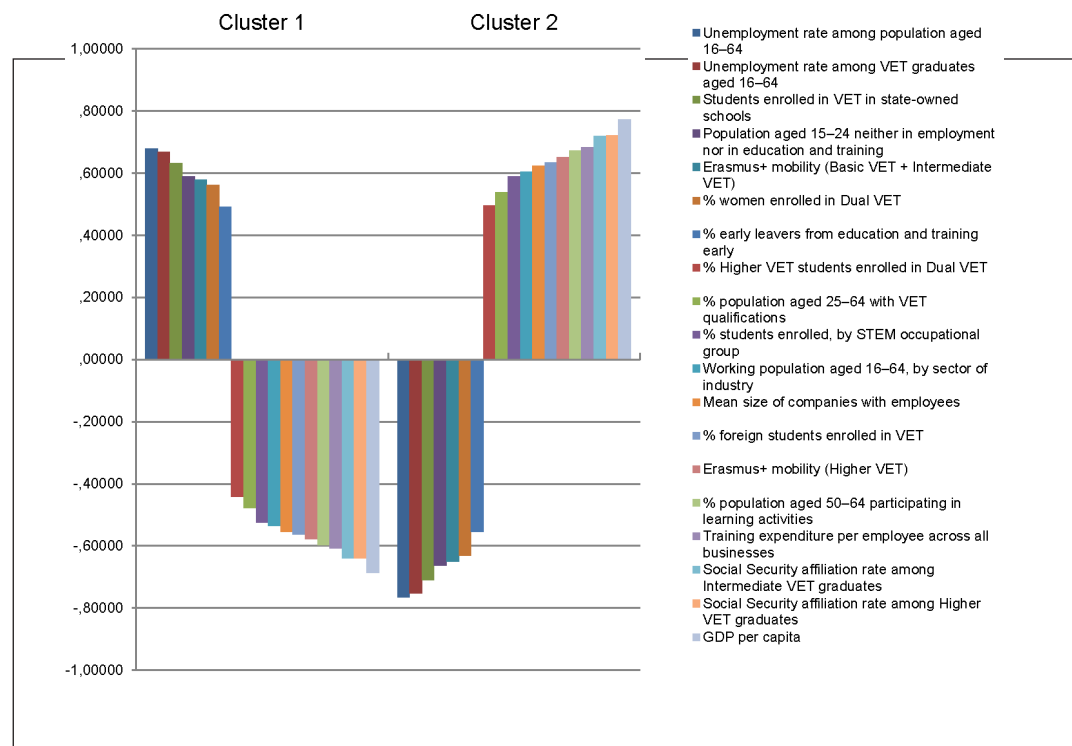
Source: Compiled in-house.

Figure 1: Standardised Score for the Centres of the Final Clusters

Moreover, the results indicate that inter-cluster differences occur in both supply and demand indicators within the VET framework, although they are more accentuated in the latter (as regards both structural and labour market conditions and social challenges). As regards the VET supply, the differences with the IVET indicators stand out, fundamentally with regard to characterisation of students by level of education (in both Dual VET and Erasmus+ mobilities) as well as with regard to ownership of the school, the proportion of STEM students and gender differences in Dual VET. The autonomous communities grouped in Cluster 1 are characterised by having higher percentages of VET students at state-owned schools and of women enrolled in Dual VET. International mobility is likewise higher in Basic and Intermediate VET in Cluster 1 than in Cluster 2. In the employment sphere, unemployment rates are higher in Cluster 1, where early leavers from education and training and the mean number of young people neither in employment nor in education and training (NEET) exceeds the percentage in Cluster 2 (Table 5).

Table 5: Structured Framework for Analysing VET and the Level Shown of Every Indicator in Each Cluster

Approach	Pillar	Indicators	C1	C2
Skills, qualifications and VET supply	Education system	% population aged 25–64 with VET qualifications	-	+
	Initial VET	Students enrolled in VET in state-owned schools	+	-
		Erasmus+ mobility (Basic VET + Intermediate VET)	+	-
		Erasmus+ mobility (Higher VET)	-	+
		% students enrolled, by STEM occupational group	-	+
	Dual VET	% women enrolled in Dual VET	+	-
		% Higher VET students enrolled in Dual VET	-	+
	Continuous VET	Training expenditure per employee across all businesses	-	+
VET environment and demand	Regional structural constraints	GDP per capita	-	+
		Mean size of companies with employees	-	+
		Working population aged 16–64, by sector of industry	-	+
	Employment and labour market	Unemployment rate among population aged 16–64	+	-
		Unemployment rate among VET graduates aged 16–64	+	-
		Social Security affiliation rate among Higher VET graduates	-	+
		Social Security affiliation rate among Intermediate VET graduates	-	+
	Social challenges	Population aged 15–24 neither in employment nor in education and training (NEET)	+	-
		% early leavers from education and training	+	-
		% population aged 50–64 participating in learning activities	-	+
		% foreign students enrolled in VET	-	+
Source: Compiled in-house. (-) Low level (+) High level. (C1 = cluster 1, C2 = cluster 2)				

Meanwhile, characterisation of the autonomous communities in Cluster 2 shows higher proportions of students enrolled in STEM and industrial occupational groups, as well as in Higher Dual VET. The Lifelong Learning indicator is also higher than in Cluster 2. As regards the variables referring to the labour market, Cluster 2 exhibits high levels of Social Security affiliation among VET graduates and a higher percentage of the working population employed in the industrial sector. Mean size of companies is bigger and the amount of money those firms spend on VET for Employment per worker is higher. Finally, the regions in this cluster have a higher GDP per capita than those in the first one.

Summarizing, we observe that the territories grouped in Cluster 2 present a better balance for the development of VET than Cluster 1. In the case of Cluster 2, its greater training offer at different educational levels, its lower rates of early leavers from education and training, the development of an apparently more industrial business fabric that requires STEM

profiles, its lower unemployment and higher transition of VET graduates from education to the work, suggest that these territories are better positioned to push VET and Dual VET towards new horizons. However, characteristics of Cluster 2 also suggest that VET system traits and outcomes could be also contributing to their better performance in socioeconomic indicators.

In this sense, regions in Cluster 1 are also able to achieve the indicators of Cluster 2. However, they should work in parallel on additional fronts to reduce the gaps in early abandonment, the NEET rate and improving the transition to the labour market of their population by improving training with VET qualifications and the amount of the population (all ages) participating in learning activities. These actions could also contribute to a better performance of socioeconomic indicators of regions in Cluster 2 in the long run.

The next step in the analysis is to ascertain the relationship between the 19 variables that determine the differences between the clusters we have just described. This analysis will allow us to identify the variables associated with the VET context that are closely related to VET educational variables. Table 6 presents the correlation of all the variables, following the same order as in the VET system outline presented previously. As a first finding, we ascertained that 16 of the 19 variables are correlated.

Table 6: Pearson Correlation of the Variables That Determine Differentiation Between VET System Clusters in Spain's Regions

Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Population aged 25–64 with VET qualifications (%)																		
2. Students enrolled in VET in state-owned schools	-,294																	
3. Erasmus+ mobility (Basic VET + Intermediate VET)	-,467	,340																
4. Erasmus+ mobility (Higher VET)	,467	-,340	-1,000**															
5. Students enrolled, by STEM occupational group (%)	,761**	-,468	-,331	,331														
6. Females enrolled in Dual VET (%)	-,454	,288	,555*	-,555*	-,606**													
7. Higher VET students enrolled in Dual VET (%)	,427	-,053	-,390	,390	,373	-,369												
8. Training expenditure per employee across all businesses	,358	-,858**	-,226	,226	,552*	-,152	,051											
9. GDP per capita	,349	-,727**	-,204	,204	,484*	-,318	,231	,806**										
10. Mean size of companies with employees	,205	-,710**	-,282	,282	,258	-,011	,029	,787**	,849**									
11. Working population aged 16–64, by sector of industry	,655**	-,289	-,313	,313	,724**	-,665**	,292	,317	,359	,130								
12. Unemployment rate among population aged 16–64	-,641**	,539*	,377	-,377	-,625**	,635**	-,249	-,590*	-,794**	-,590*	-,655**							
13. Unemployment rate among VET graduates aged 16–64	-,669**	,513*	,410	-,410	-,590*	,601*	-,198	-,559*	-,760**	-,578*	-,633**	,982**						
14. Social Security affiliation rate among Higher VET graduates	,527*	-,445	-,358	,358	,518*	-,475	,367	,487*	,811**	,602*	,626**	-,801**	-,785**					
15. Social Security affiliation rate among Intermediate VET graduates	,361	-,334	-,442	,442	,505*	-,736**	,320	,334	,603*	,297	,444	-,680**	-,670**	,640**				
16. Population aged 15–24 neither in employment nor in education and training (NEET)	-,743**	,493*	,358	-,358	-,846**	,683**	-,272	-,568*	-,621**	-,421	-,679**	,863**	,812**	-,584*	-,625**			
17. % Early leavers from education and training (%)	-,767**	,435	,400	-,400	-,779**	,301	-,367	-,674**	-,544*	-,506*	-,457	,628**	,582*	-,493*	-,333	,792**		
18. Population aged 50–64 participating in learning activities (%)	,404	-,669**	-,316	,316	,449	-,351	,280	,611**	,771**	,672**	,414	-,679**	-,633**	,696**	,288	-,569*	-,482	
19. Foreign students enrolled in VET (%)	,176	-,572*	-,437	,437	,216	-,468	,093	,416	,631**	,570*	,456	-,684**	-,657**	,730**	,573*	-,411	-,187	,554*

*Note.** The correlation is significant at level 0.01 (2-tailed). * The correlation is significant at level 0.05 (2-tailed).*
Source: Compiled in-house.

In order to focus the analysis of the relationship between VET supply and demand dimensions, the emphasis will be placed on the correlations between the two dimensions' variables (pillars and subpillars), excluding correlations within the same dimension. Analysis is grouped by the blocks in each dimension presented above. The results show a significant correlation between the VET supply system and its demand environment; in fact, all context-related variables show significant correlations with VET supply variables.

First, it is noteworthy that the 'percentage of students enrolled in STEM occupational groups' variable correlates strongly with almost every dimension of VET demand. In this sense, it correlates significantly with aspects of the environment (structural dimension) like 'GDP per capita' ($r = 0.484$, $p \leq 0.05$) and 'Working population aged 16–64, by sector of industry ($r = 0.724$, $p \leq 0.01$). In turn, on the employment dimension the percentage of students enrolled in STEM occupational groups is negatively related to 'Unemployment rate among population aged 16–64' ($r = -0.625$, $p \leq 0.01$) and 'Unemployment rate among VET graduates aged 16–64' ($r = -0.590$, $p \leq 0.05$) and is positively related to 'Social Security affiliation rate among Higher VET graduates' ($r = 0.518$, $p \leq 0.05$) and 'Social Security affiliation rate among Intermediate VET graduates' ($r = 0.505$, $p \leq 0.05$). Finally, on the social dimension we observe that the percentage of students enrolled in STEM occupational groups is inversely related to 'Population aged 15–24 neither in employment nor in education and training (NEET)' ($r = -0.846$, $p \leq 0.01$) and 'Early leavers from education and training' ($r = -0.779$, $p \leq 0.01$).

Second, we have focused attention on the variable '% of foreign students enrolled in VET' which, although originally included as one of the social challenges (demand), should rather be included as part of the IVET system since it alludes to student enrolment, i.e. to the IVET supply system. We found a close relationship with all dimensions, highlighting as regards the structural and employment dimension the following direct or positive correlations: 'GDP per capita' ($r = 0.631$, $p \leq 0.01$), 'Mean size of companies with employees' ($r = 0.570$, $p \leq 0.05$), 'Social Security affiliation rate among Higher VET graduates' ($r = 0.730$, $p \leq 0.01$) and 'Social Security affiliation rate among Intermediate VET graduates' ($r = 0.573$, $p \leq 0.05$). Conversely, the variable' % foreign students enrolled in VET' correlated negatively with unemployment rates: 'Unemployment rate among population aged 16–64' ($r = -0.684$, $p \leq 0.01$) and 'Unemployment rate among VET graduates aged 16–64' ($r = 0.657$, $p \leq 0.01$).

Third, we note that the variable 'Students enrolled in VET in state-owned schools' relates nega-tively to the structural dimension ('GDP per capita' ($r = -0.727$, $p \leq 0.01$) and 'Mean size of companies with employees' ($r = -0.710$, $p \leq 0.01$)) while relating significantly and positively to the employment dimension ('Unemployment rate among population aged 16–64' ($r = 0.539$, $p \leq 0.05$) and 'Unemployment rate among VET graduates aged 16–64' ($r = 0.513$, $p \leq 0.05$)) and the social dimension (posatively related to 'Population aged 15–24 neither in

employment nor in education and training (NEET)' ($r = 0.493$, $p \leq 0.05$) and negatively to '% population aged 50–64 participating in learning activities' ($r = -0.669$, $p \leq 0.05$)).

Fourth, in the field of CVET, a variable that has a close relationship with the VET demand environment — 'Training expenditure per employee across all businesse' — stands out particularly. It is directly related to the structural dimension ('GDP per capita' ($r = 0.806$, $p \leq 0.01$) and 'Mean size of companies with employees' ($r = 0.787$, $p \leq 0.01$)). As regards the employment dimension, 'Training expenditure per employee across all businesses' correlates positively with 'Social Security affiliation rate among Higher VET graduates' ($r = 0.487$, $p \leq 0.05$) and inversely with 'Unemployment rate among population aged 16–64' ($r = -0,590$, $p \leq 0.05$) and 'Unemployment rate among VET graduates aged 16–64' ($r = -0.559$, $p \leq 0.05$). Finally, it relates positively to the social dimension, specifically to '% population aged 50–64 participating in learning activities' ($r = 0.611$, $p \leq 0.01$).

4 Discussion

Firstly, it can be understood that the clusters of autonomous communities differ according to the indicators that, by adopting a systemic approach that encompasses both the skills, qualifications and VET supply and the VET environment and demand, capture their lifelong learning scores (including IVET and CVET). Cross-regional analysis reveals the existence of two distinct clusters on all the dimensions of the indicators assessed (pillars and subpillars) and demonstrates that the two clusters exhibit highly differentiated quantitative scores in terms of the key indicators of their position on the supply and demand continuum, supporting Hypothesis 1. These results are aligned with studies related to knowledge and territory, which integrates specific dimensions of a demographic, economic, labour and cultural context that need to be addressed when studying the institutionalization of knowledge, in this case, of regional VET systems (Lundvall, 1992; Scott & Storper, 2003).

Secondly, it should be noted that the differences identified, and which affect 35% of the indicators analysed, are significant and influence the systemic functioning of the two clusters identified at regional level. Among all these indicators, differences are observed in two respects; firstly, in the macro dimension that distinguishes between VET supply and VET demand (pillars); and secondly, within each dimension (subpillars). On the one hand, the results show that the indicators related to demand for VET and its environment are the ones that make the most difference, although within this area there is a certain balance between the structural, labour market and social challenge indicators. On the other hand, in the sphere of the education and training supply, the differences lie mainly in two pillars that relate to the Initial VET system (both dual and non-dual), with few differences in VET for Employment and the rest of the education system. Therefore, we can conclude that, in general terms, the indicators that show greatest differentiation between autonomous communities are those

relating to the VET environment and demand for it, followed by those relating to the VET system. This differentiation of clusters by context or environment at the regional level follows the same path as the literature that differentiates VET by country based on their evolution over time and their relationship with the state, the labour market and the productive system (Klaus & Grollmann, 2009; Lauterbach & Mitter, 1998), varying the territorial scale and the political-institutional level. In this sense, the region could become a unit of analysis of VET, achieving greater concreteness and specificity on regional development in terms of VET, while taking into account the intensive deployment of VET schools at the local and regional level (Gamboa-Navarro et al., 2020; 2021).

Thirdly, the inter-cluster differences suggest that Spain's regions are split into two groups that are developing and advancing their respective VET systems at different paths. This is a consequence of the regions' territorial and structural idiosyncrasies, making an understanding of this situation essential to future policy making at national and regional levels. The distribution of autonomous communities at unit level shows that in almost half of them (Cluster 1), the VET environment scores lower on the economic and labour indicators, VET is most frequently provided in state-owned schools and has a higher proportion of Basic and Intermediate VET and a lower proportion of graduates in STEM occupational groups. In contrast, the labour market in Cluster 2 is characterised by higher levels of education and training, greater emphasis on industry and greater employment opportunities. Moreover, differentiation is even greater in Higher VET. All the above depicts a complex reality in which the VET supply is strongly conditioned by the structural and labour market constraints present in the local environment. The implications of that show the importance of adopting a comprehensive and systemic outlook when defining regional VET policies, programmes and initiatives in Spain. It may be concluded that regional and local factors make a significant and relevant difference in Spanish VET. The resulting regional difference is aligned with Spanish studies on the socioeconomic contribution of Spanish universities, which although its scope and geographical atomization is different from that of VET, contrasts influence of the university system on its environment showing impacts on the endowments of available resources, such as employment, human or technological capital, and the indirect impacts derived from this increase in the supply of productive factors on aspects such as economic growth, income or tax revenue (Pastor et al., 2019; Pastor & Peraita, 2011).

Fourthly, the results show a significant correlation between the VET supply system and its demand environment. This close relationship affects a low number of variables, among which the one that stands out most is 'Percentage of students enrolled in STEM occupational groups', which is strongly and directly correlated with almost all the dimensions of VET demand. Therefore, predominantly scientific-technological VET is strongly and directly correlated with its regional context, establishing a virtuous relationship between STEM students and the economic and labour market environment. Other indicators that follow the lead of

the one above alludes to the percentage of foreign students, which although included as one of the social challenges, and originally part of the IVET system in terms of enrolment, has a close relationship with almost every dimension. This shows that the proportion of foreign students in VET is positively related to GDP per capita, the size of companies and higher employment rates among Higher VET graduates and is negatively related to unemployment rates both overall and among VET graduates. This correlation is relevant from the perspective of social inclusion and integration of foreign communities, and if this line of research were to be pursued in greater depth progress could be made in developing levers to support social sustainability. Another IVET system variable that correlates strongly with the environment is 'Students enrolled in VET in state schools', which does so inversely with the structural, labour market and social dimensions, thereby indicating the inclusive nature of the education system in state VET schools in regions where economic indicators are lower. Finally, the only variable in the CVET subpillar that relates to the environment is 'Training expenditure per employee across all businesses', which is significantly and positively related to structural conditions (GDP per capita and company size) and labour market dynamics in terms of lower unemployment rates. Correlation analysis therefore demonstrates that there is a strong correlation between VET supply and demand in areas related to students' scientific-technological specialisation, as well as in areas related to students' origins, the nature of VET schools and company expenditure on employee training, thereby supporting hypothesis 2. These results are aligned with case studies on Spanish regional VET systems (Albizu et al., 2011; Navarro & Retegi, 2018; Olazaran & Brunet, 2013), which posit the sophistication of the systems as a function of the socioeconomic fabric, while feeding back into institutionalized systems of knowledge generation and socialization.

To sum up, both hypotheses are validated by identifying differences and similarities between the regional VET systems (first hypothesis) while identifying intense significant correlations that interrelate the VET environment and demand for it with the VET system, especially VET in the educational sphere (second hypothesis).

Finally, although we did not perform an analysis to test a causal relationship be-tween VET provision and economic development or the other way around, we could guess a bi-directional relationship meaning a mutual influence between VET provision and economic development. Therefore, we could hypothesize, based on our results, on the previous and partial empirical evidence and on specific regional cases in the Spanish context, that higher and better VET provision could contribute to a better socioeconomic performance and, at the same time, a better socioeconomic performance, especially in terms of economic and business performance and a higher enterprise size, could contribute to a better VET provision in terms of a stronger dual VET and a better integration of VET graduates in the labour market because stronger economies could imply a higher demand for them in the market. However, future studies should test these new hypotheses at regional level.

5   Conclusions

Firstly, there are similarities and differences between Spain's regional VET systems, meaning they cannot be considered identical despite sharing the same political, regulatory and institutional framework. Not only are there differences within the VET supply system, but also in terms of structural, labour market and social demand. This has implications for the understanding of Spain's VET system at conceptual, empirical and social level. In this sense, it also affects the design, implementation and evaluation of public VET policy, both in the vertical policy domains (VET education policy, training for employment policy) and the horizontal policy domains, which span competitiveness, lifelong learning, social inclusion, etc., and are framed within other public policy (social, economic, industrial, research and innovation, etc.).

Secondly, on the VET supply side the differences between clusters are particularly concentrated in IVET (including Dual VET), while on the demand side there is a wider spread across the structural, labour market and social dimensions. In part, this is explained by the distribution of powers over VET itself, since the transfer of authority from the state to regional governments has so far been greater in IVET than in CVET. From this, it can be inferred that most room for manoeuvre in defining IVET policies and instruments in Spain is likely to stem from the differentiation that exists between the regions.

Thirdly, the relationship between the VET supply system and its demand environment is determined by a low number of indicators, meaning that while its systemic and multidimensional nature is evident, the scope is narrow. On the one hand, it reflects the VET system's significant interrelationships with the general educational, labour market, economic and social dimensions. On the other, however, it seems premature to definitively characterise the nature, scope or even existence of an intraregional VET typology. Although it can be postulated from a historical and sociological perspective, the data in this study are insufficient to support it. In this sense, it is necessary to highlight the need for more research to deepen understanding of both differentiation between regions and the interrelationship between the VET supply and demand dimensions. This is achieved by changing from a correlational analysis to one of a more predictive nature that determines with greater clarity whether the environment's variables predict those of the IVET system or vice versa. This option is not, however, feasible, given the low number of observations available (maximum 17).

Fourthly, we can conclude that, as a result of this study, comparative research into VET is a scientific field that offers opportunities to analyse VET systems from a systemic regional perspective (multidimensional and intra/inter-territorial). In this context, regionality acquires differentiating value — providing specificity and contextualization — due to its direct connection with the individual details of the economic, social and cultural setting in which each VET system is embedded. This regional approach does not surpass analyses of national

VET systems, but rather offers a complementary view of VET that accentuates the relevance of local context.

Finally, the need is shown for more integrated indicators, accessibility to microdata at regional level and better characterisation of the training systems. Moreover, it is important to emphasise the need for further analysis in the future, given the topic's novelty at both regional level and in Spanish society at large.

Acknowledgement

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Biographical Notes

Dr Monica Moso-Diez is the Head and Principal Investigator of the R&D Centre of a private non-profit foundation (CaixaBank Dualiza), Spain. Her research interests focus on innovation in the VET system at both organisational and contextual (socio-economic and political) levels. Her main research projects are about: (1) Spanish regional VET systems in terms of smart specialization (RIS3), (2) VET system as an innovation ecosystem and sustainability; and (3) VET indicators (Spanish VET Observatory).

MSc Antonio Mondaca-Soto is a Senior Researcher in the R&D unit of a private non-profit foundation, Spain. His research interests focus on quantitative methodologies and statistical analysis in the field of VET. His fields of interest are education, data and indicator visualization. His work currently focuses on Spanish VET Observatory.

Dr Juan P. Gamboa is researcher at Orkestra-Basque Institute of Competitiveness, University of Deusto, Spain. His research focus is on Vocational Education and Training, skills, human capital and employability.

MSc Mikel Albizu-Echevarria is researcher at Orkestra-Basque Institute of Competitiveness, University of Deusto, Spain. His research focus is on employment, knowledge intensive business services and VET and cities development.

Teacher Trainees' Experiences of the Components of ICT Competencies and key Factors in ICT Competence Development in Work-Based Vocational Teacher Training in Finland

Jiri Vilppola[1]*, Joni Lämsä[2], Katja Vähäsantanen[3], Raija Hämäläinen[2]

[1]*School of Professional Teacher Training, Kuntokatu 3, 33520 Tampere, Tampere University of Applied Sciences, Finland*
[2]*Department of Education, Alvar Aallon katu 9, 40014, University of Jyväskylä, Finland*
[3]*Finnish Institute for Educational Research, Department of Education, Alvar Aallon katu 9, 40014, University of Jyväskylä, Finland*

Abstract

Context: This research was conducted in the context of Finnish vocational education and training (VET) teacher training. The teacher training was work-based, meaning that each teacher trainee was already working as an unqualified VET teacher. Workplaces were comprehensively utilised as the learning environment, with teacher training support also being provided in the form of contact days, webinars, and online learning activities.

Approach: We aimed to explore the main components of information and communications technology (ICT) competencies among vocational teacher trainees within work-based training and also to reveal the supportive and challenging factors related to developing ICT competencies within the training. Overall, 44 vocational teacher trainees participated in our study. The data were analysed via qualitative content analysis.

Findings: Six main ICT competence components were identified during the work-based training: (1) The use and creation of digital learning materials, (2) the planning and use of digital learning environments, (3) synchronous digitally enhanced teaching, (4) general

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*Corresponding author: jiri.vilppola@tuni.fi

ICT competencies, (5) digital interaction, and (6) digital assessment. The development of teachers' ICT competencies was supported by their own active use of ICT and by experimenting with the ICT software and ideas presented by the teacher training staff. Challenging factors in ICT development included the continuous feeling of haste and the lack of time in the workplace, as well as the failure to recognise prior ICT competencies within the teacher training. This could limit the development of ICT competencies.

Conclusions: Work-based VET teacher training has the potential to develop teacher trainees' ICT competencies because it allows immediate implementation and experimentation with regard to new ICT ideas and tools. By aligning this research with prior research, it is possible to construct a comprehensive ICT competence framework to support VET teacher training and workplace development.

Keywords: Teacher Training, Work-Based Learning, Technological Change, Teacher ICT Competencies, Vocational Education and Training, VET

1   Introduction

The COVID-19 pandemic has resulted in a sudden burst of school closures at all levels of education and led to a massive demand for online teaching (Aditya, 2021; Carrillo & Flores, 2020; Thomas, 2020). To facilitate learning in digital environments, teachers must develop their own information and communications technology (ICT) competencies, thus preparing their students to cope with a digitalised working life. In addition to the challenges created by the pandemic, teachers face the demands caused by continuous technological, social, economic, and cultural changes in working life (Harteis et al., 2020), particularly those related to ICT. It should be noted that, in the industrial world, work and value chains have been shifting toward digitalisation in a process often referred to as *Industry 4.0* (Billett, 2021; Harteis, 2018). As a consequence of these changes, many jobs will be automated and digitalised. This phenomenon is setting new requirements for ICT competencies, including those within vocational education and training (VET) and its teaching (Teo et al., 2021).

Teachers' ICT competencies and their development have been widely examined (Almerich et al., 2016; Instefjord & Munthe, 2017; Koehler & Mishra, 2009; Roll & Ifenthaler, 2021). However, in-service VET teachers have been somewhat overlooked, despite the fact that this group of teachers plays a crucial role in preparing VET students for increasing digitalisation in working life.

In a meta-analysis, Tapani and Salonen (2019) found that vocational teacher competencies, including ICT competencies related to teaching, may be fragmented. Similarly, having studied vocational college teachers' technology adaptation, Bin et al. (2020) pointed out the need for more research into this complex phenomenon. Sylte (2020) suggested that, by ana-

lyzing VET teachers' work tasks, it will be possible to increase the coherence and relevance of educational programs in such a way as to better develop competencies in working life. All this implies that we must identify the components of VET teachers' main ICT competencies and determine the factors that support or challenge ICT competence development within work-based VET teacher training (Seufert et al., 2018). In this study, the term "components" refers to the single or partial competencies that exist as elements in VET teachers' overall ICT competencies. Our overall aim is to contribute to theory and research on VET teachers' ICT competencies and development, as well as to offer tools for practitioners, such as teacher training institutes and educational workplace developers.

2   Theoretical Framework

In this section, we first elaborate the components of teachers' ICT competencies, especially the technological and pedagogical components, while also taking into account the teaching context, content, and the demands of a changing society. Thereafter, we highlight the factors that support and challenge ICT competence development (both technological and pedagogical).

2.1   The Components of Teachers' ICT Competencies

Teachers' ICT competencies and competence development have been conceptualised in a variety of ways (e.g., Almerich et al., 2016; Ferrari, 2013; Koehler & Mishra, 2009; Roll & Ifenthaler, 2021). These ICT competencies encompass a set of ICT-related skills, knowledge, and attitudes (Hämäläinen et al., 2021). The competencies in question include technological and pedagogical components, with each of them being associated with the teaching context and content, as well as with a changing society (*Industry 4.0*: See also Ferrari, 2013; Koehler & Mishra, 2009; Teo et al., 2021). The *technological* component of the ICT competencies includes the skills needed to use computers, mobile devices, and applications (Almerich et al., 2016; Lindsay, 2016; see also Roll and Ifenthaler's (2021) multidisciplinary competence model for vocational teachers). Along similar lines, Guzman and Nussbaum (2009) highlight an instrumental/technological component within teachers' ICT competencies, arguing that teachers must develop ICT-handling abilities, including both software and hardware use. Lindsay (2016) notes that teachers must also master mobile ICT technologies, given that learning-teaching processes increasingly take place in informal contexts, where learning can happen anywhere and at any time, i.e., outside schools, classrooms, workplaces, and working hours. The technological component also includes the mastery of the technological resources needed for efficient ICT teaching practices and collaborating digitally (see Roll & Ifenthaler, 2021). Roll and Ifenthaler (2021) have further emphasised that vocational students and

teachers require digital problem-solving skills, in addition to the skills needed to adequately access, analyse, and evaluate information (referred to as information literacy). There is also a need for self-reflecting on the digital environment, bearing in mind that, for digital development, one should be able to reflect on and understand one's actions within digital environments (Roll & Ifenthaler, 2021). The self-efficacy associated with these skills also forms part of the technological component of teachers' ICT competencies (Choi et al., 2018; Kreijns et al., 2013).

The *pedagogical* component of the teachers' ICT competencies includes knowledge about how they can implement technological resources in curricular designs, planning teaching-learning processes, and their professional development as teachers (Almerich et al., 2016; Guzman & Nussbaum, 2009; Koehler & Mishra, 2009). Wadmany and Kliachko (2014) noted that ICT could help teachers to create a supportive learning environment, demonstrate phenomena and processes, increase learning possibilities overall, and respond to the needs of a broad range of students. The pedagogical component also encompasses the skills needed to create and use digital learning materials, construct technology-rich learning environments, and use mobile and other technologies in teaching and learning (Almerich et al., 2016; Lindsay, 2016).

Guzman and Nussbaum (2009) have provided an overview of the pedagogical component of teachers' ICT competence. Pedagogical/curricular competence refers to the logic and optimised implementation of technology (in accordance with the teachers' institution, as well as its mission and curriculum), while didactic/methodological competence enriches learning experiences by applying ICT to other educational activities in a motivational manner. There is also an evaluative/investigative dimension to the pedagogical component of ICT competencies, with the focus on feedback and the development of both the students' learning processes and the general functioning of ICT in educational settings.

These different components of the ICT competencies are interrelated, and it may be challenging to distinguish the technological and pedagogical components of ICT-related work. For example, *digital security*, which includes the ethical and legal aspects of ICT use, as well as safely dealing with phenomena such as malware, identity theft, passwords, securing devices, and sharing information, encompasses both technological and pedagogical aspects (Almerich et al., 2016; Roll & Ifenthaler, 2021). Moreover, attitudes toward digitalisation include both technological and pedagogical components, and these attitudes must be positive if one is to work with digital devices. Additionally, there should be positive attitudes toward the idea that ICT can provide added value for teaching, its planning, and its assessment (Guzman & Nussbaum, 2009; Roll & Ifenthaler, 2021).

These interrelations are also visible in the TPACK (technological pedagogical content knowledge) framework of technology integration with teaching (Koehler & Mishra, 2009). The TPACK model builds on the interaction between three forms of teacher knowledge, i.e.,

technological, pedagogical, and content-based. If teachers wish to successfully integrate ICT in their teaching, they must integrate all three forms of knowledge in theory and practice. Koehler and Mishra (2009) also point out that there is no "one-size-fits-all" approach to ICT integration within teaching. They note that teaching with technology is not easy and requires a continuous appreciation of the connections between the *teaching context,* content knowledge, pedagogical approaches, and ICT possibilities. Thus, to support the development of teachers' ICT competencies, special attention should be paid, in teacher training, to the factors that support and challenge teachers in developing their ICT competencies (Rosenberg & Koehler, 2015).

2.2   Development of Teachers' ICT Competencies

Despite the complex nature of teachers' ICT competencies (e.g., Almerich et al., 2016; Ferrari, 2013; Koehler & Mishra, 2009; Roll & Ifenthaler, 2021), it has been pointed out that teachers' ICT competencies, in general, develop within a complex synergy of individual and contextual factors (Guzman & Nussbaum, 2009; Hämäläinen et al., 2019; Kreijns et al., 2013).

Individual factors are important in teachers' ICT competence development. Personal factors, such as age, gender, parental education, and native speaking skills, play a significant part in developing ICT competencies (Almerich et al., 2016; Choi et al., 2018; Hämäläinen et al., 2019; 2021). In addition, other individual factors, such as attitudes toward technology (in general and as a teacher) and ICT self-efficacy, may prompt teachers to develop the pedagogical component of ICT competence (Choi et al., 2018; Kreijns et al., 2013). Islam's (2016) technology adoption and gratification (TAG) model in higher education demonstrates how a set of individual factors may be associated with one another and with the development of teachers' ICT competencies. In this model, the teachers' use of ICT is constructed based on five factors: Computer self-efficacy, gratification, perceived usefulness, intention to use ICT, and perceived ease of use. Nevertheless, the model has been found to work differently in different contexts, such as in different cultural settings (Bin et al., 2020; Islam, 2016).

Recent studies have shown that *contextual factors* (e.g., the school ICT resources and environment, positive collegial pressure, and ICT support) also play a significant role in teachers' ICT development, especially among teachers beginning their careers (Ottenbreit-Leftwich et al., 2018). Hämäläinen and Cattaneo (2015) found that the ICT competencies used outside the workplace contribute to its technological component (i.e., problem-solving skills in technology-rich environments). Choi et al. (2018) refer to teachers as "digital citizens" – persons who must master ICT meta-competencies, such as the ethical and responsible use of the Internet and social media, alongside active and critical Internet practices. This also implies that the use of digital devices and software in everyday life would also support ICT competence development in one's work as a teacher. The contextual factors affecting teachers' ICT

competence development would include the frequency of using a computer at home and in everyday learning – in addition to one's own level of education and the amount of workplace-supported and work-related implementation of ICT (Almerich et al., 2016; Hämäläinen et al., 2019). Along similar lines, Kreijns et al. (2013) noted that positive social or collegial pressure and a shared interest in ICT in teaching encourage teachers to use ICT. Guzman and Nussbaum (2009) concluded that the communicational/relational aspect of teachers' ICT competencies is an essential element, encompassing the educational interaction and collaboration of actors in ICT environments.

It appears that, among teachers, the technological and pedagogical components of ICT competencies are intertwined and that both individual and contextual factors underlie ICT competence development. These considerations allowed us to frame our research questions, as described below.

3 Research Questions

We aimed to explore teacher trainees' ICT competencies and ICT competence development during a work-based VET teacher training program. The research questions were as follows:

1. What are the main components of ICT competencies that were identified by the VET teacher trainees in a work-based training process?

2. What kinds of supportive and challenging factors do the VET teacher trainees experience in their ICT competence development within a work-based training process?

4 Materials and Methods

4.1 Research Context

The context of this research was vocational teacher training in Finland. In Finland, a vocational teaching qualification is defined and required by legislation, and it consists of 60 credits of pedagogical studies. A higher education degree in the craft field (if there is one) and working life experience are also required. After the teacher training, most teachers will work in vocational schools or higher education. The data were gathered from five Finnish vocational teacher training groups from two universities of the applied sciences All the participants in the study were VET teacher trainees ($n = 44$) who were working full time as (non-qualified) vocational teachers. The training processes for all five groups were conducted in the same settings, adopting a work-based (competence-based) and ICT-rich approach. One group ($n = 14$, referred to as the "key" study group) also produced longitudinal data, while all the groups

participated in the graduation questionnaire. In this study, "work-based" means that the VET teacher trainees' workplaces were strongly utilised as a context of learning and assessment. The VET teacher trainees compiled personal plans, touching on how they would pursue new competencies as a VET teacher, including ICT competencies (using a competence framework from the VET teacher training curriculum as a tool for planning and assessing). For this purpose, they would seek to utilise their own work with assistance from their organisation and networks as required. In addition, a workplace mentor (an experienced colleague) was nominated for each participant from their own organisation.

An "ICT-rich" approach means that much use was made of ICT-related methods and content as the mainstay of the training processes. For example, ICT was used as a tool for planning, documenting, collaborating, and participating in the teacher training processes, which involved activities such as contact days, learning tasks, personal online meetings, webinars, online small group activities, and mobile fast messaging. Also, ICT was among the content of the pedagogical studies. Its possibilities were examined during the contact days and webinars, and a spectrum of pedagogical software/applications were demonstrated and tested during the training (notably online digital whiteboard/canvas applications, learning activation and assessment applications, online teaching applications, digital learning material, and video/interactive picture software). There was also a chance to achieve digital online learning badges for ICT-related content.

4.2 Participants

All five VET teacher training groups were multi-professional in nature, representing different fields of work. The strongest representation overall was from the fields of Technical Qualifications and Traffic ($n = 21$); Marketing and Services, including Languages ($n = 8$); and Social-, Healthcare, and Well-being ($n = 5$). Eleven of the participants were women, and 34 were men. They were all adults, with the largest age group ($n = 33$) being spread evenly between the ages of 41 and 55. All the participants had more than one year of teaching experience. One of the five VET teacher trainee groups formed a key group for a study, yielding longitudinal data ($n = 14$). Participation in this study was voluntary, and all participants and their organisations will remain anonymous in this report.

4.3 Data Collection

The data were gathered via three methods. The first author of this article worked as a teacher trainer of the key study group ($n = 14$), i.e., persons who produced deeper qualitative data on a longitudinal basis. In this group, the initial procedure was to collect written stories. Thus, before commencing training, every VET teacher trainee from the key study group

wrote a narrative about their "path to becoming a teacher". Subsequently, on graduation, they wrote a continuation to the earlier narrative. This was based on the initial story, but with the theme "me as a teacher, now and in the future". In these narratives, the participants were not instructed to ponder ICT-related content.

The key study group also compiled learning diaries during the training. There, the participants reflected on their processes of constructing different competencies and identity trajectories during simultaneous work and training. In these learning diaries, there was also no specific ICT-related instruction.

At the end of their training, all the graduating VET teacher trainees (n = 44) answered a qualitative web-based questionnaire. In the questionnaire, we asked participants about their experiences of developing technological and pedagogical ICT competencies during their training (these concepts were explained within the teacher training). We also asked about the factors that supported and challenged ICT development; this was done via open-ended questions. The questions were as follows:

1. How have your ICT competencies (technological and pedagogical) developed during the VET teacher training?

2. What kinds of factors have supported and/or challenged the development of your ICT competence during the VET teacher training, as observed in the workplace and the VET teacher training interventions?

4.4   Data Analysis

To identify the main components of ICT competencies (RQ1), we used all the datasets described above. These included the longitudinal data (learning diaries and written narratives) from the key study group, as well as the cross-sectional questionnaire data from the other groups. We applied qualitative content analysis to the data (Saldaña, 2013; Schreier, 2012), first extracting phrases containing ICT-related content. For example, in the first phase of analysis, the following three extracts were noted as exemplifying ICT-related content (p = participant):

"Started to use Drive-cloud more than before…" (Group 4, p5)

"I've learned to use new tools such as... cloud services more effectively." (Group 5, p5)

"Used OneDrive…" (Group 1, p7)

A minimum of one phrase or sentence was used for this purpose in order to preserve the context (Elo & Kyngäs, 2008; Vaismoradi et al., 2013). There were 127 extracts referring to ICT overall.

In the second phase of analysis, we inductively formed 19 subcategories (see Table 1) from these extracts. Extracts with the same kind of content were merged and given a common label, with each of these forming a subcategory, from which a smaller number of "main" categories could be formed; see Saldaña, 2013; Schreier, 2012). As an illustration, the three extracts presented above were merged and named as a single subcategory, *Use of cloud services*.

Eventually, all 19 subcategories were analysed and placed within a total of six "main" competence components: *The use and creation of digital learning materials, The planning and use of digital learning environments, Synchronous digitally enhanced teaching, General ICT competencies, Digital interaction, and Digital assessment*. For example, the *Use of cloud services* subcategory mentioned above was deemed to be one of four subcategories belonging to the main category *General ICT competencies*. All the subcategories and main categories can be seen in Table 1.

In Tables 1, 2, and 3, the frequency (*f*) is recorded with regard to the main categories and subcategories. This was done for the reader to see, how much each category and subcategory appeared within others and overall data. The frequency refers to the number of overall mentions in the qualitative data, not to the number of individual participants (Vaismoradi et al., 2013). In addition, we present the number of individual persons (*n*) for every main category, i.e., persons who contributed data to this particular main category.

Thereafter (for RQ2), we examined the supportive and challenging factors pertaining to VET teacher trainees' ICT development during the workplace-oriented training process. To answer this question, we used the graduation questionnaire (*n* = 44) data because this contained two open-ended questions specifically concerning the supportive and challenging factors affecting ICT-competence construction. The data thus obtained shed light on the factors present in VET teacher trainees' own work organisation and VET teacher training interventions. In RQ2, the approach was more theory-driven because questionnaire themes were derived from previous theory (e.g., *pedagogical and technological* ICT use; Almerich et al., 2016). The data were analysed via a qualitative content analysis procedure broadly similar to that applied in RQ1 (see above). In the first phase of the analysis, written extracts from the open-ended questions were placed within four main categories (chosen *a priori*, in line with the research question): *(1) Supportive factors in the VET teacher trainees' workplace, (2) Supportive factors in VET teacher training, (3) Challenging factors in the VET teacher trainees' workplace, and (4) Challenging factors in VET teacher training*. In the second phase of the analysis, the data in the four categories were re-analysed, grouping together data that appeared to exhibit common content, thus arriving at the subcategories (either three or four) for each main category. The subcategories within the four main categories can be seen in Tables 2 and 3.

The coding of the data was initially conducted by the first author of this article, and the reliability of the coding was checked by all the authors in common meetings.

5   Results

5.1   Components of ICT Competencies in a Work-Based VET Teacher Training Process

In order to capture and present the main components of ICT competencies identified by the VET teacher trainees in a work-based training process (RQ1), we synthesized six main components of VET teacher trainees' ICT competencies, which are presented in Table 1.

Table 1: Components of ICT Competencies in a Work-Based VET Teacher Training Process

MAIN CATEGORIES (6): Components of ICT Competencies	SUBCATEGORIES (19) forming the Components of ICT Competencies:
DIGITAL LEARNING MATERIALS - Use and creation (f = 41, n = 23)	- Video and other digital learning materials (f = 26) - Open online learning badges (f = 15)
DIGITAL LEARNING ENVIRONMENTS (f = 26, n = 14)	- Planning and using digital learning platform (f = 20) - Simulated teaching (f = 3) - Virtual learning environments (f = 2) - Blogs (f = 1)
SYNCHRONOUS DIGITALLY ENHANCED TEACHING (f = 22, n = 10)	- Digital tools for learning activation (f = 14) - Teaching online and webinars (f = 6) - Digital presentations (f = 2)
GENERAL ICT COMPETENCIES (f = 17, n = 13)	- Mastering holistic ICT-systems, e.g., 0365, Google (f = 7) - Basic handling of hardware and software, including mobile (f = 5) - Use of cloud services (f = 3) - Data protection and privacy (f = 2)
DIGITAL INTERACTION (f = 13, n = 8)	- Online coaching and meetings (f = 5) - Social media and fast messaging (f = 5) - Digital interaction tools (f = 3)
DIGITAL ASSESSMENT (f = 8, n = 6)	- Digital assessment tools and applications (f = 4) - Questionnaire and survey tools (f = 2) - e-Portfolio and digital CV (f = 2)

The most common ICT-related component was the use and creation of *digital learning materials*. As learning gradually shifts from classrooms to digital environments, VET teachers face new competence demands, notably the question of how to create, produce, and use pedagogically relevant digital learning materials (e.g., videos, interactive content) to promote their students' vocational learning. Open online learning badges were also included in this category (as an example of digital learning material) because the participants in this VET teacher training program had the chance to earn online learning badges as part of their teacher trai-

ning. Several participants reflected on current demands (due to digitalisation in general) to produce learning materials in digital form, as can be seen in following extracts. The extracts also reveal the individual needs and attitudes of teacher trainees. The same content can appear as either a challenge or a possibility:

> "Training has forced me to implement new digital methods. My challenge is to produce learning material, [learn] how to construct digital learning material in a new way." (Group 2, p4)

> "Thinglink and screencast-O-matic are new tools for me, which I can utilize in many ways when transforming my learning materials into a digital form." (Group 1, p8)

The teachers' new role in planning and using *digital learning environments* in their work and with their students (e.g., via Moodle and Google Classroom) emerged clearly from the data. It seemed that every degree program or vocational qualification used some kind of digital platform to support students; hence, this had become an everyday activity for VET teachers also. Indeed, many participants reflected on planning, constructing, using, and developing at least one digital learning platform. The participants clearly recognised this competence demand, but they were heterogeneous (ranging from "unsure" to "developer") in terms of their confidence regarding the use of digital platforms for learning and teaching:

> "I haven't previously used different digital learning platforms that much. I would very much like to learn how to create and use these platforms, since this seems to be a weak link in my teaching." (Group 1, p1)

> "I have managed to build my teaching modules into a digital learning platform and also participated in developing digital learning environments in our school community." (Group 1, p2)

The use of different digital tools for learning activation and participation in the classroom was reflected (*f = 23*), as was teaching via online webinars with digital presentations. The amount of teaching online and the number of organised webinars have increased in recent years, and this has placed new competence demands on VET teachers. There is a need for *synchronous digitally enhanced teaching*, meaning that learning activation and teaching (either in the classroom or online) occurs at the same time. Because learning now tends to be viewed as an interactive and participatory process, vocational teachers must also have digital tools for student activation and participation during online/classroom teaching. The participants in the study described how they had enriched their teaching via digital tools. They reflected on the successful implementation of these digital tools, with resulting positive attitudes toward ICT use in learning and teaching:

"It has been great to familiarise myself with different digital learning applications. I have tried to implement these in my teaching in my current courses. I have used Thinglink to teach car parts and also used Flinga and Kahoot in tests and learning tasks." (Group 1, p6)

"I have learned a lot about different digital teaching "toys" that can be found freely online and, of course, also how to use them properly in my teaching." (Group 1, p5)

Within their organisation, teacher trainees also required *general ICT competencies* to master holistic ICT systems (e.g., O365, Google) and thus communicate effectively with their students and professional networks. This category included the basic technological competencies pertaining to teachers' work-related hardware and software (such as adequate technological use of e-mail, calendar, video conferencing, cloud services and mobile devices), as well as data protection and privacy. Some participants ($f = 5$) also included basic knowledge about mobile devices and technologies. This general development can result in positive attitudes toward ICT, encouraging the further development of ICT competencies as a VET teacher:

"My general ICT competencies have developed a lot, since I have used them so actively during this period of time. I have also gained a lot of confidence with regard to my ICT use… my fear of digitalisation has receded." (Group 1, p4)

Digital interaction takes place between VET teachers, students, and workplace networks in groups or individually. In order to carry out online guidance, coaching, and negotiations, a VET teacher must use video-conferencing tools and social media, including rapid messaging applications. Along with workplace network negotiations, digital interaction involves digital spaces and tools organised by the teacher, within which students can discuss ICT topics, ask for help or guidance, and engage in other study-related dialogue with teachers individually or in groups. Within this theme, participants reflected on their developing positive attitudes and also on pedagogical factors, for example, the importance of dialogue in digital interaction:

"I'm glad that I've got past my bad attitudes toward social media in teaching and that I've taken quite a leap toward using these with students." (Group 1, p7)

"In digital learning situations, you have to remember and embrace dialogue…how to involve and listen also to the silent students." (Group 1, p9)

Finally, ICT tools are needed for assessment and evaluation. Assessment processes are shifting to digital form, and VET teachers must have the tools and competencies needed to conduct digital assessment. In addition, assessment materials and concepts such as ePortfolio and digital CV received brief mentions. However, within the current data, participants (f = 8) mainly reflected on assessment in terms of how they analysed and implemented new digital assessment tools and software in their own teaching:

On the contact day, there were good new aspects and implementations of assessment. I also learned some good applications for constructing quizzes and tests in order to assess students. (Group 1, p7)

"I tried out some nice assessment stuff on the contact days. I have already started to use Forms quizzes with my students…" (Group 1, p1)

5.2   ICT Development in Work-Based VET Teacher Training: Supportive and Challenging Factors

In relation to the supportive and challenging factors that VET teacher trainees experience in their ICT competence development within a work-based training process (RQ2), the results of the qualitative content analysis of the graduation questionnaire (*n* = 44) are presented in Tables 2 and 3. In Table 2, we present the *supportive* factors in VET teacher trainees' ICT development from the point of view of (1) the teachers' workplace and (2) their VET teacher training. In Table 3, we present the corresponding *challenging* factors (numbered 3 and 4). The categories show the numbers of overall extracts (*f*) and actual individuals (*n*) exhibiting the relevant content.

Table 2: VET Teacher Trainees' ICT Competence Development – Supportive Factors in the Workplace and Teacher Training

(1) SUPPORTIVE FACTORS IN THE WORKPLACE (f = 28, n = 21)	(2) SUPPORTIVE FACTORS IN TEACHER TRAINING (f = 56, n = 36)
1. Own active and supported use of ICT (f = 14)	1. Active use, trying out, and implementing various ICT tools (f = 29)
2. Organisations' leadership, as well as own ICT training and workshops (f = 8)	2. Teacher trainers' and peers' support for and examples of ICT use (f = 15)
3. Relevant and good ICT equipment and environment in the workplace (f = 6)	3. Open online learning badges (ICT-related content) (f = 12)

The main aspect related to ICT competence development in the workplace involved the teacher trainees' own active actions related to ICT implementation. It appeared that ICT development in the workplace depended mainly on individual efforts, involving a positive and active approach to new technologies in teaching, as seen in the following citation:

"Mostly, my own activity has affected my ICT competencies as a teacher, since I have actively searched for information about different applications and have started to try them out and implement them in my work." (Group 4, p1)

However, it was also important to have ICT support in the workplace. The organisation's own ICT training and workshops, including leadership toward an ICT culture, were also

found to be relevant. The same was true of valid and up-to-date hardware and software in the workplace.

In VET teacher training, by far, the most important factor was presentation, familiarisation, and practice with various teaching-related ICT tools and applications. Many participants reported that they had developed a positive ICT attitude and good competence by trying various tools within their teacher training. According to the participants' experiences, the examples of ICT use in education enhance positive attitudes and encourage individuals to experiment with and implement ICT in their own workplace settings:

> "My development has been remarkable because these ICT learning applications have really been tried out and implemented in various situations. I no longer fear digital teaching tools." (Group 2, p3)

In addition, the supportive and encouraging atmosphere regarding ICT was significant to many participants. The encouragement came from peer teacher trainees and teacher trainers – persons who provided examples of ICT use in teaching. Finally, the chance to earn open online learning badges with ICT content, including social media for teaching and digital assessment, motivated many teacher trainees to develop their ICT competencies and gain the relevant documentation.

Alongside the supportive factors, challenging factors were encountered during the work-based training. However, it is notable that the overall frequencies of challenge-related codes ($f = 29$) were significantly lower than those associated with the supportive factors ($f = 84$).

Table 3: VET Teacher Trainees' ICT Competence Development – Challenging Factors in Workplace and VET Teacher Training

(3) CHALLENGING FACTORS IN THE WORKPLACE *(f = 17, n = 13)*	(4) CHALLENGING FACTORS IN TEACHER TRAINING *(f = 12, n = 10)*
1. Continuous hurry, no time to learn new ICT *(f = 7)*	1. Failure to develop ICT competencies at all *(f = 7)*
2. Disorganized or out-of-date ICT systems in the organisation *(f = 6)*	2. Failure to integrate ICT competencies with one's work as a VET teacher *(f = 3)*
3. Non-participatory and conservative organisational ICT culture *(f = 2)*	3. Teacher trainees' lack of time for or interest in ICT *(f = 2)*
4. Lack of economic and staff resources *(f = 2)*	

In the workplace, the most demanding challenge seemed to be the continuous feeling of haste, which led to shortcomings in learning and implementing new ICT. Some of the student teachers were so tied up with their work that there was no time to develop new digital competencies. There were also some other challenges, mostly related to the organisational level. These involved disorganised or old ICT systems, a conservative ICT organisational culture, and an overall lack of ICT-related resources.

"My ICT competence development in the workplace has been negatively affected, mostly by continuous feelings of rush." (Group 2, p14)

Within the work-based VET teacher training, there were not so many challenges to ICT development (overall *f* =12). The largest challenge concerned the perceived non-development of ICT competencies during the training. Because the student teachers were a highly multiprofessional group, their initial ICT competencies were also heterogeneous. For example, some of the VET teacher trainees were aiming to be ICT teachers, and they already had a deep understanding of ICT and extensive practical competence in the field.

"I didn't learn many ICT competencies during this training, because I'd had a lot of previous studies on ICT." (Group 3, p1)

Some teacher trainees had difficulties transferring their ICT competencies from VET teacher training to actual workplace learning situations. In addition, a small number of challenges (*f* = 2) were reported concerning a lack of time for or interest in ICT in teaching.

6   Summary of the Results

The main results of our study are shown in Figure 1. We found six main components of ICT competencies among VET teachers, as experienced by teacher trainees who were already working as vocational teachers. In our study, the ICT competencies involved (1) *the use and creation of digital learning materials*, (2) *the planning and use of digital learning environments*, (3) *synchronous digitally enhanced teaching*, (4) *general ICT competencies*, (5) *digital interaction*, and (6) *digital assessment*.

During the work-based training process, both workplace and teacher training can support or challenge the ICT development of the trainee. The workplace offers potential affordances to the development of ICT competencies, including direct possibilities to explore and implement ICT-related teaching practices. There are also supportive resources in the workplace (e.g., ICT training and staff, relevant hardware and software, and leadership) that can support the ICT competence development of a VET teacher. However, the continuous feeling of rush and a heavy workload represent major challenges to ICT competence development. In Figure 1, we highlight the most relevant themes (regarding *f* within this data) of the supportive and challenging factors.
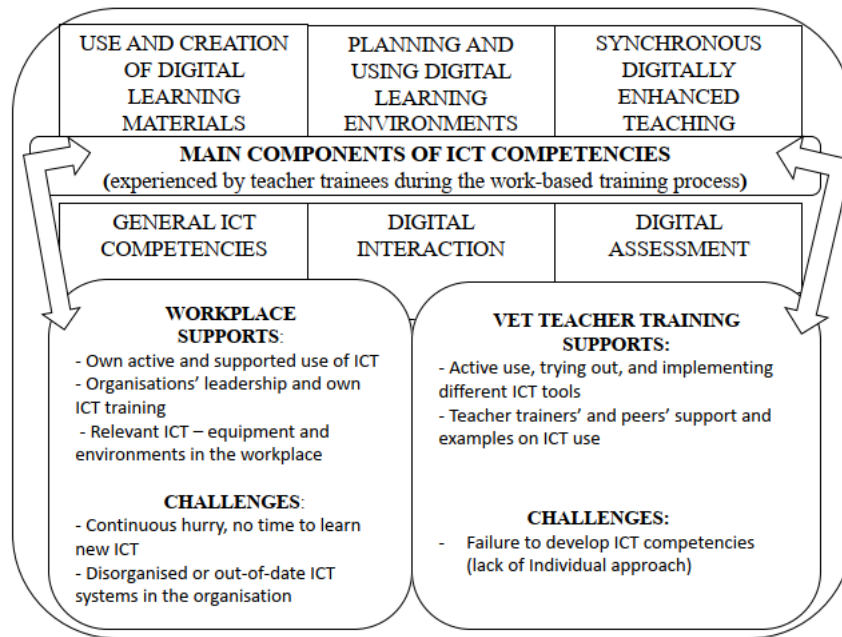
Figure 1: The Main Components of ICT Competencies and Supportive/Challenging Factors for ICT Development Within Work-Based VET Teacher Training

7   Discussion and Conclusions

The study explored the components of ICT competencies as experienced by VET teacher trainees in a work-based training process. It also explored the factors supporting and challenging ICT competence development in the work-based training (see Figure 1).

Both *technological* and *pedagogical* components (Almerich et al., 2016; Koehler & Mishra, 2009) were strongly present because almost all the main ICT-related components of our findings included both these aspects. For example, the use and creation of digital learning materials clearly involves technological components (e.g., using cameras, video software, and editing /publishing tools) and also a pedagogical component because one must consider what makes good video material and also how it contributes to student learning. Moreover, the participants placed greater emphasis on the technological and pedagogical components of ICT competencies specific to the teaching profession than on general ICT competencies, such as *information literacy, digital problem-solving, and digital self-reflecting* (see Table 1; Roll & Ifenthaler, 2021). This finding may relate to our work-based approach, which was oriented toward the hands-on aspects of a vocational teacher's work. In sum, our results

may help in developing an ICT competence framework for VET teachers in the future. The framework should include general ICT competencies, such as information literacy, digital problem-solving, and self-reflecting, along with the components specific to the teaching profession, such as synchronous digitally enhanced teaching, as presented in Figure 1.

In fact, ICT competence development can be seen partly as an individual process that includes ICT self-efficacy and the intention to use ICT as a teacher (e.g., Bin et al., 2020). On an individual level, a positive and active experimental attitude, as well as a willingness to implement it, seemed to serve ICT competence development. Also, in our findings, teacher trainees' own active experimenting with ICT tools was the most important supportive factor for ICT competence development. On the other hand, competence development also occurs as a member of an organization (i.e., within a given context). This has been found to have a strong impact on teachers' ICT competencies, especially at the start of a teaching career (Ottenbreit-Leftwich et al., 2018). Quite similarly, our participants reported that contextual factors (e.g., ICT support staff, peer support, and organisations leadership) play a significant role in supporting their ICT competence development.

Overall, according to our results, the VET teacher trainees perceived the work-based training process to be beneficial in developing their ICT competencies. Individual and contextual factors seemed to intertwine within the process of work-based training; hence, contextual support encouraged individual ICT implementation in teaching, leading to positive attitudes toward ICT use. This, in turn, reflected upon attitudes toward the development of an ICT-enhanced teaching culture, and so forth. In our study, the supportive and challenging factors in the teacher trainees' ICT competence development related both to the trainees' workplace training and their VET teacher training. Our results suggest that organisations should support teachers' active experimentation with adequate resources, including time, ICT support personnel, ICT training, and relevant hardware and software. In addition, VET teacher training was seen both as an example of and inspiration regarding ICT use. It also provided an encouraging source of new ideas, with possibilities of using ICT in teaching and learning.

Several practical implications emerged from our findings. The work-based training process seemed to be a practical way to develop the ICT competencies of a VET teacher. The developed framework (Figure 1) can be used in planning and executing pre-service and in-service VET teacher training. In addition, vocational schools could benefit from this framework when seeking to assess their ICT-related culture, infrastructure, and other contextual factors that are associated with the development of teachers' ICT competence, in addition to individual factors. The framework also offers suggestions that can aid various organisations' own ICT training and workshops. Because all VET teachers may not be interested in ICT implementation in their teaching, well-structured, individualised and supportive ICT training could also motivate them to develop as a VET teacher in today's digitalised environments.

In terms of credibility and generalisation, this study has certain potential limitations: (i) The first author worked closely with the participants as a group teacher (in the key study group) during the training process. This could represent a benefit, leading to a deeper understanding in the research (Denzin & Lincoln 1994), but it could also lead to subjectivity bias. This was addressed by working closely with other authors, i.e., persons who did not work with the student teacher groups or in these teacher training organisations. (ii) Using our questionnaire, we also gathered data from four (non-key) teacher training groups. These had different trainers and were in different organisations. The training processes of the five participant groups were not identical; nevertheless, there was a common pedagogical curriculum, one involving a work-based, personalised, and competence-based approach. Furthermore, collaborative planning and follow-ups took place during the process among the group teachers. (iii) The sample size was small, and the qualitative and inductive data analysis (with an emphasis on participants' experiences) set limits to the transferability of the findings. In the future, it would be beneficial to study VET teachers' ICT competencies in different contexts, using larger samples, and with quantitative approaches. (iv) In our study, we obtained results by analysing the experiences of individual teacher trainees. It has been pointed out that personal experiences may not serve as a reliable measure in comparison with large-scale external evaluations (Hämäläinen et al., 2021). The method in the present study was chosen to focus closely on our research questions and capture the grassroots level of the VET teachers' work and workplace.

Research on teachers' ICT competencies has seemed to emphasise 'horizontal' aspects. This is also the case in the present study, in which we focused on a broad range of components pertaining to teachers' ICT competencies (Figure 1). In the future, "vertical" approaches could be adopted, in line with Mulder (2017), who emphasises the need to pursue depth in competence-related discussion. We must thus ask questions such as: *How profound are the ICT competencies that one must possess as a teacher? How can we identify and address the different levels and components of teachers' ICT competencies?* In the future, there will also be a need to better recognise the individual nature of the VET teachers' ICT competence development. One size does not fit all; hence, we should seek the kinds of theory and practice that will support the development of every VET teacher's ICT competencies at the deepest possible level, even among those who have already mastered the basics. Furthermore, it will be necessary to explore ICT competencies applicable to the teaching contexts surrounding specific VET craft fields, such as construction technology, logistics, and hairdressing.

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Biographical Notes

Jiri Vilppola, M.Ed., is a teacher trainer and senior lecturer at Tampere University of Applied Sciences, School of Professional Teacher Training. He is a doctoral student at the University of Jyväskylä, Finland. His research focuses on VET teacher competence and identity construction within workplace-oriented teacher education. His most recent publication addresses competence construction in workplace-oriented and competence-based VET teacher education.

Joni Lämsä, PhD, is a Postdoctoral researcher and works in the Department of Education at the University of Jyväskylä, Finland. Lämsä's research interests include learning, teaching, and interaction in various technology-enhanced contexts. He has focused particularly on computer-supported collaborative learning, and on how to analyze and understand its temporal aspects, applying novel methodological approaches.

Katja Vähäsantanen, PhD, is a university researcher at the Finnish Institute for Educational Research (University of Jyväskylä, Finland). She is an Adjunct Professor in the field of working life research and development. Her current research interests include lifelong guidance as well as learning, identity, agency, and emotions at work and in education. Her recent publications include articles in Vocations and Learning, Teaching and Teacher Education, Frontline Learning Research, and Studies in Continuing Education.

Professor Raija Hämäläinen, PhD, has contributed to top-level international research, and is an expert in mixed-methods research. Hämäläinen and her research group have developed new methodologies, applying data from the Programme for the International Assessment of Adult Competencies (PIAAC) to shed light on the problem-solving skills of VET adults within TRE. She has conducted extensive, research on vocational learning and professional development. Her research received an "outstanding paper" award in 2018. Hämäläinen was recently invited to give a keynote lecture in the EARLI 2021 conference. Hämäläinen is an associate editor of *Educational Research Review*.

Collective Skill Formation Regimes in Times of Covid-19: A Governance-Focused Analysis of the German Dual Training System

Uwe Fassbender*

*Chair of Economics and Business Education, University of Cologne,
Herbert-Lewin-Str. 2, 50931 Cologne, Germany*

Abstract

Context: Covid-19 poses major challenges for vocational education and training (VET), as VET—in contrast to general education—is closely linked to the economic system and cannot escape the impact of current economic restrictions. Additionally, strict infection control regulations, as well as temporary school and company closures, inhibit the teaching of practical skills at the workplace. Rapid action by the responsible actors is essential to ensure that VET can take place even under these difficult conditions. It can be assumed that both the complex decision-making processes and the multiplicity of actors involved in collective training systems complicate or delay the reaction to this exogenous shock. Using the example of the German dual training system, this explorative article aims to examine the ability of collective training systems to deal with the challenges posed by the pandemic.

Methods: Based on a document analysis, various publications (e.g., press releases, reports) by central actors of the German dual system were reviewed, which provided information about the provision of training activities as well as the measures taken or required to counteract the pandemic-related consequences for dual apprenticeships. This corpus of literature was expanded by scientific studies and publications from national or international institutions related to VET. Following a governance-analytical and actor-centred perspective, the

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*Corresponding author: uwe.fassbender@uni-koeln.de

documents were analysed with regard to the indications they provide about the realised coordination of action between the actors, the realised processes and outcomes, as well as the levels affected within the VET system.

Findings: The way of dealing with the crisis demonstrates that the German dual system is influenced by the actions of various actors at multiple levels. Actors who are involved in the decision-making processes share common interests, resulting in a strategically bound cooperation among them. However, influence or power from bottom-up seems to be rather limited, as not all of the actors considered in this study are included in essential governance processes. Despite the comprehensive reactions to the pandemic, problems and optimisation needs are also apparent, e.g. with regard to vocational orientation or the support of vocational schools.

Conclusion: Despite its complexity, the dual system as a collective training model is capable of acting and adapting to face the challenges posed by the pandemic. This may also be due to the historically entrenched corporatist structures within the dual system: Even in times of crisis, the trust in this historically evolved institutional framework leads to a high degree of accountability and cooperation among the decisive actors.

Keywords: Collective Skill Formation Systems, Dual Training System, Germany, Educational Governance, Covid-19, Vocational Education and Training, VET

1   Introduction

As an exogenous shock, Covid-19 affects almost all areas of life. Significant income and job losses have been recorded (International Labour Organization [ILO], 2021a; Organisation for Economic Co-operation and Development [OECD], 2021a), resulting in severe social consequences, especially for already disadvantaged population groups (e.g., Committee for the Coordination of Statistical Activities, 2021). In addition, the pandemic has a significant impact on education and training (Avis et al., 2021; Azevedo et al., 2021; German Office for International Cooperation in Vocational Education and Training, 2022; OECD, 2021b; United Nations, 2020) and threatens to negatively affect the educational and employment opportunities of the younger generation (ILO, 2020a, 2020b, 2021b). Moreover, the teaching of practical learning content and the realisation of work based learning have been severely restricted by both infection protection regulations as well as temporary school and company closures (ILO & World Bank, 2021; OECD, 2021c). Already in spring 2020, in her scrutiny of dual apprenticeships at the international level, the OECD (2020) was warning of possible influences on training activities (for the European Union: See Cedefop, 2020b). The

relationship between knowledge capital and economic growth (Hanushek & Woessmann, 2020) means that economic losses can be expected in the medium to long term.

Since VET is typically organised in a strongly national-specific way (Bosch, 2017; Lewis, 2007) and also closely linked to the economy (Bosch & Charest, 2008; Hall & Soskice, 2001), the question arises of how VET systems in the respective countries deal with the challenges posed by the pandemic. In this context, different starting points of VET systems can be identified, which are often discussed in relation to typologies (Pilz, 2016, 2021). Busemeyer and Trampusch (2012) distinguish between four different skill formation systems (liberal, segmentalist, collective and statist). It seems reasonable to assume that these skill formation systems each have a different scope of action due to their respective underlying characteristics. Since training activities in statist systems predominantly take place at state-run schools and training centres, the state should be able to implement corresponding measures quickly. Meanwhile, in the segmentalist model, training companies must implement their training activities individually, in compliance with the hygiene and protection guidelines laid down by law. In liberal VET systems, however, many of the individuals who usually demand VET could increasingly opt for general education courses or not seek any (vocational) qualification at all, due to the already low level of company and public commitment to VET.

Finally, in collective training systems, the planning and provision of VET involves several actors. In general, decision-making processes in collective systems are highly complex (Aerne & Bonoli, 2021; Emmenegger & Seitzl, 2020; Oliver, 2010). This raises the question of the extent to which such a complex system can react quickly while taking into account the interests of all actors involved. Or, in other words: Whether the structural—and in the context of their dual apprenticeship programmes often positively connoted—characteristics of collective systems (Busemeyer & Trampusch, 2012; Culpepper, 1999; Hoeckel, 2012) tend to become an obstacle in times of crisis, as they prevent flexible and quick action.

Using the German dual training system as an example of a collective training model (Busemeyer & Trampusch, 2012), this paper attempts to examine how collective training systems deal with the challenges posed by the pandemic from a governance-theoretical point of view. For this purpose, central structural features of the dual system as well as the pandemic-related developments on the German training market are presented, in order to firstly illustrate the initial situation. Afterwards, the theoretical lens of this study is explained. Based on a document analysis and with a particular focus on the first year of the pandemic, both the measures taken by the actors as well as their positions and demands are described and interpreted. Finally, this paper discusses to what extent the actors in the dual system coordinate their actions and the extent to which the dual system as a collective training model has the capacity to react quickly and flexibly to the challenges posed by the pandemic, despite its structural complexity.

2   The German Dual Training System During the Pandemic

The following section briefly outlines the German dual system with the key features of a collective training model (detailed in Busemeyer & Trampusch, 2012; Cedefop, 2020c; Deissinger & Gonon, 2021; Fürstenau et al., 2014; Pilz & Fürstenau, 2019) as well as the developments on the German training market.

The primary learning venues in the dual system, are the vocational school and the training company. The theoretical content relevant to the specific occupation is mainly taught in blocks or part-time at the vocational schools. The practical learning part of the apprenticeship takes place in the training company and covers about two thirds of the total training period. The state and its subordinate ministries at national and federated state level, the Bundesinstitut für Berufsbildung (*Federal Institute for Vocational Education and Training* [BIBB]), the employers' associations as well as the trade unions, are involved in the development of school and company curricula. The underlying consensus principle leads to a high level of acceptance of the standards among all stakeholders involved. Admission to dual apprenticeship is linked to a training contract with the training company.

A look at the German training market in 2020 shows that the close link between the training and employment systems can also be quite problematic for both young people and companies (see also Luethi & Wolter, 2020; Maier, 2020; Muehlemann et al., 2020). Oeynhausen et al. (2020) estimate that there were pandemic-related declines in apprenticeship supply (-41,500; -7.3 per cent), apprenticeship demand (-39,200; -6.7 per cent) and training contracts (-47,400; -9.2 per cent) up to the reporting date (31.09.2020).[1] In addition, matching problems[2] on the training market became apparent, as its indicator reached a peak in 2020 (Oeynhausen et al., 2020; for 2021, see Schuß et al., 2021). Nevertheless, a European comparison shows that Germany's youth unemployment rate is still at a relatively low level (Eurostat, 2022). This could be a first indication of the ability of the actors in the dual system to react appropriately and quickly to the pandemic-related restrictions for VET, in spite of the complex decision-making processes.

3   Theoretical Lens of the Study

This paper refers to issues of educational policy steering, which are often discussed in the context of educational governance (Altrichter, 2010; Oliver, 2010). In particular, this research perspective includes several reference disciplines, and attempts to understand *"how regulation and performance of school systems is achieved, sustained and transformed under the*

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1   Even though there was a slight improvement compared to the previous year, the declining trend at the training market continued in 2021 (Schuß et al., 2021).

2   Matching problems occur in particular when both the numbers of vacant apprenticeship places and unplaced applicants are high.

perspective of coordination of action between various social actors in complex multilevel systems" (Altrichter, 2010, p. 148; emphasis in the original). Accordingly of particular interest, is the coordination of action or cooperation between different actors, realised in a VET system, the extent of which can range from a pure "information exchange" through "coordination" to "collaboration" (Emmenegger et al., 2019, p. 32). As central governance processes, Oliver (2010, p. 263) names "goal-setting", "decision-making", "resource mobilisation", "instruments & implementation" as well as "feedback". "Coherence", "inclusiveness", "adaptability" and "accountability" are the outcomes of these processes, which emerge from the specific action of the relevant actors (Oliver, 2010, pp. 262f).

Viewing VET systems from an institutional theory perspective, a dynamic understanding of institutions suggests that they are "continuously created and recreated by a great number of actors with divergent interests, varying normative commitments, different powers, and limited cognition" (Streeck & Thelen, 2005, p. 16). The state, or its subordinate ministries and institutions, the employers and business associations, as well as the trade unions are the central actors in a VET system (Busemeyer & Trampusch, 2012; Hall & Soskice, 2001): They interact with each other and influence the design of a VET system on the macro, meso or micro level (Bürgi & Gonon, 2021; Pilz, 2016). Nevertheless, the different interests of the actors involved may also lead to conflicts in cooperation (Emmenegger et al., 2019).

In addition, VET systems are subject to a permanent process of change in the short, medium or even long term (Cedefop, 2018). In political science, this is also known as institutional change, whose specific design is subject to certain limitations against the background of path dependency (Mahoney & Thelen, 2010; Streeck & Thelen, 2005). Regarding the structure of the German dual system as the path, a link to the concept of collective skill formation (Busemeyer & Trampusch, 2012) emerges. In the sense of path dependency, the inclusion of diverse actors often results in a high level of coherence and inclusiveness, but the complex processes of decision-making may limit its adaptability (Oliver, 2010; Rauner, 2008).

4   The Reactions of the Actors in Response to the Pandemic

Since this paper follows an actor-centred approach, the reactions to the pandemic will first be described from the perspective of the principal actors in the dual system (see above). The focus here is on the national level in order to draw both a holistic and coherent picture of the situation. Afterwards, the measures taken or demanded by the actors will be discussed in terms of their underlying coordination of action, the realised processes and outcomes, as well as the levels affected within the dual system (see Chapter 5).

Similar to Busemeyer (2009), since no empirical evidence is available in this regard yet, various artefacts of the central actors were evaluated within the framework of a document analysis. In particular, German press releases, position papers, regulations, guidelines and

reports of the respective actors were included in the document analysis. In accordance with the focus on the national level, primarily those publications were taken into account that originate from the national umbrella organisations of the various actors and can thus be regarded as representative for Germany in general. This corpus of literature was expanded by relevant empirical studies, as well as other relevant publications from national and international institutions related to VET (e.g., BIBB, Cedefop).

Out of the document analysis it became apparent that the reactions of the individual actors often address similar issues. This includes in particular the financing of training, the realisation of training activities, the promotion of digitisation and the need for support in vocational orientation. Hence, at the end of the following subchapters, the actions of the respective actors are also set in relation to these issues. In addition, the usual differentiation of actors into state, trade unions and companies as well as business associations (Busemeyer & Trampusch, 2012; Hall & Soskice, 2001) was too restrictive here. This is primarily due to the fact that the pandemic also has a significant impact on the learning activities in schools: Since teachers are also organised into trade unions, the teachers' associations were identified as another group within the trade unions. Furthermore, both student and parent associations actively participated in the pandemic-related discourse: Even if they are typically neither involved in concrete decision-making processes nor seriously discussed in the literature on VET governance (see also Pilz, 2021), this group of actors was included in this study, as they also have an impact on the dual system as potential apprenticeship applicants (e.g., Fürstenau et al., 2014). Along with a deeper insight into the training activities and the resultant coordination of action, the inclusion of this actors' perspective also provides the opportunity to produce a critical analysis of the efficacy of the measures adopted.

4.1   The State's Reactions to the Pandemic

In Germany, as educational policy is made at the level of the federated states it is not consistent across the country. In this paper only those measures are presented that have been implemented at the national level and thus are mandatory or at least serve as a guideline for all federated states. For this purpose, regulations, guidelines, reports and press releases of national institutions were primarily taken into account. These include the Kultusministerkonferenz (*Standing Conference of the Ministers of Education and Cultural Affairs* [KMK]), the Bundesministerium für Bildung und Forschung (*Federal Ministry for Education and Research* [BMBF]), the Bundesministerium für Arbeit und Soziales (*Federal Ministry of Labour and Social Affairs* [BMAS]), the Bundesagentur für Arbeit (*Federal Employment Agency*), and the Bundesinstitut für Berufsbildung (*Federal Institute for Vocational Education and Training* [BIBB]).

With the outbreak of the pandemic in Germany, there were nationwide temporary closures of all schools in March 2020, accompanied by a sudden switch to digital distance learning. The gradual resumption of face-to-face teaching took place at different times and to a varying extent (Anders & Kuhn, 2020). In order to avoid crowded school buildings, most federated states gave priority to graduation classes, to ensure their participation in the final examinations (Cedefop, 2020a). To reduce the risk of infection for both learners and teachers, hygiene guidelines were developed which, among other things, intended to enable alternating teaching of learning groups in face-to-face and distance modes (KMK, 2020a, 2020b). Until today, the responsibility for implementing the hygiene guidelines is still up to the schools (KMK, 2020a, 2021). However, on the basis of federated state-specific infection protection regulations and occupational health and safety standards (e.g., BMAS, 2021a), training companies as well as other educational institutions (e.g., inter-company vocational training centres) are responsible for the implementation of hygiene guidelines.

At the beginning of the new school year in summer 2020, all federated states returned to regular classroom teaching, adapted to the infection situation. In the case of emerging Corona outbreaks with a justified risk of infection, school closures should be avoided, and instead individual classes or cohorts should be sent into quarantine (KMK, 2020b). Wearing mouth-nose protection in class was initially recommended (BMBF, 2020a). Due to rising infections, the schools were closed again at the end of 2020 and, with the use of testings, gradually reopened in spring 2021.[3]

The national programme "Ausbildungsplätze sichern"[4] (*Securing training places*) was initiated to enable young people to "start, continue and also successfully complete vocational training in the new training year 2020/2021" (BMBF, 2020b; translation by the author). In particular, the programme aims to motivate small and medium-sized enterprises (SME) affected by the pandemic to continue or even expand their training activities, with the help of financial incentives, such as "training bonus", "training bonus plus", "training salary subsidy" and "takeover bonus" (BMBF, 2020b; translation by the author). In addition, the temporary takeover of training by other training providers or training companies within the framework of contractual or collaborative training, can be funded (BMBF, 2020d). In order to avoid a further decline in the training market in 2021, an extension and expansion of the programme (e.g., higher bonus payments and an extension of eligibility to companies with up to 499 employees) was announced in March 2021 (BMBF, 2021a). In addition, training companies also have the option of declaring short-time work[5] for their trainees.

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3 At the beginning of the school year 2020/2021, the high importance of delivering face-to-face teaching was once again emphasised (KMK, 2021). The hygiene guidelines at the schools are continuously adapted to the current infection situation and the vaccination progress in the society (see also Kuhn, 2022).

4 For a detailed explanation of the different bonuses as well as the conditions and criteria for eligibility in all funding guidelines, see the announcements of the Bundesministerium für Bildung und Forschung (BMBF, 2020b, 2020d, 2021a).

5 Short-time work is intended to reduce companies' personnel costs in times of significant work shortages and thus to preserve jobs and training places (Bundesagentur für Arbeit, 2020). The use of short-time work for apprentices is recommended as a last resort (Cedefop, 2020a). According to the studies by Ebbinghaus (2021) as well as Biebeler and Schreiber (2020), only a small proportion of trainees were on short-time work by the end of 2020, except in those sectors that were severely affected by the pandemic (in particular: Hospitality).

The expansion of the digital infrastructure in the education sector is another part of the German government's strategy. In addition to the *DigitalPakt Schule*[6], the "Sofortausstattungsprogramm" (*Programme to facilitate the immediate equipping of schools*) was launched in July 2020 for the school-bound acquisition of digital devices via schools. In particular, these should be made available to socially and economically disadvantaged learners, to ensure their participation in distance learning (BMBF, 2020c). In the course of the ongoing pandemic, further supplementary agreements were made, namely the "Supplementary agreement on the financing of IT administration at the schools" as of November 2020 (BMBF, 2020e; translation by the author), and the "Supplementary agreement on the acquisition of digital devices on loan for teachers" as of January 2021 (BMBF, 2021b; translation by the author).[7]

The ongoing revisions of training regulations (see also BIBB, 2014) for 2020 were continued, despite the pandemic (BIBB, n.d.). The Bundesinstitut für Berufsbildung also reported that the BIBB Board is still working on the revision of training regulations. Apart from the predominantly digital cooperation between the involved actors, no pandemic-related influences on decision-making at the curricular level can be identified.

Typically for collective systems, the state tries to bring the interests of the various actors together and implements various measures, especially financial ones, to enable or support the implementation of dual apprenticeships in both school and company contexts—whether by promoting digitisation in schools or by setting framework conditions and hygiene guidelines, which, as a consequence, have to be implemented at federated state or local level. The example of the national programme *Ausbildungsplätze sichern*, co-developed by the Allianz für Aus- und Weiterbildung (*Alliance for Initial and Further Training* [AAW]) (AAW, 2020, 2021), shows that the actions of the state are not exclusively characterised by top-down processes. Moreover, the financial support for training companies in the form of bonus payments is a novelty, as the state has so far largely refused to finance in-company training (Busemeyer, 2009). Thus, in the course of the pandemic, there are also indications of tendencies towards a centralised or statist VET system. In particular, these are indicated in the partial financing of both learning venues as well as the setting of framework conditions, but are probably primarily due to the urgent need for action caused by the pandemic.

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6 The DigitalPakt Schule 2019–2024, which was already adopted before the pandemic, is a national funding programme for the promotion of the digital infrastructure in schools (see also KMK, 2019).

7 The three supplementary programmes are each budgeted at 500 million Euro. According to a press release by the Bundesministerium für Bildung und Forschung (BMBF, 2022), the following funds had already been called up by the end of December 2021: 495 million Euro (Programme to facilitate the immediate equipping of schools), 11 million Euro (Supplementary agreement on the financing of IT administration at the schools) and 300 million Euro (Supplementary agreement on the acquisition of digital devices on loan for teachers).

4.2　The Employers' and Business Associations' Reactions to the Pandemic

For this group of actors, the focus of the analysis was on press releases, websites and statements that are related to the company-based element of dual apprenticeships. In addition to the Deutscher Industrie- und Handelskammertag (*German Chamber of Industry and Commerce* [DIHK]) and the Zentralverband des Deutschen Handwerks (*German Confederation of Skilled Crafts* [ZDH]) as central umbrella organisations of the business associations or Chambers, the Bundesvereinigung der Deutschen Arbeitgeberverbände (*Confederation of German Employers' Associations* [BDA]), as the umbrella organisation of employers, was also taken into account.[8] The findings of studies which provide an insight into in-company training activities were also included.

Due to the loss of important communication channels between training companies and potential applicants (e.g., training fairs), some of the companies surveyed in June 2020 feared problems in recruiting new trainees (ZDH, 2020). The Bundesvereinigung der Deutschen Arbeitgeberverbände emphasised the need for vocational orientation to continue, for instance through career guidance via schools and digital offerings, as well as providing insights into company practice (BDA, n.d.-b). Furthermore, the Bundesvereinigung der Deutschen Arbeitgeberverbände also appealed to companies not to stop their training activities and instead to adhere to vocational training in their "very own interest" (BDA, n.d.-a; translation by the author). Regarding vacant apprenticeship places in December 2020 as well as the coming training year 2021, the Bundesvereinigung der Deutschen Arbeitgeberverbände and the Deutscher Gewerkschaftsbund (*German Trade Union Confederation* [DGB])[9] jointly repeated this appeal in December 2020 and also encouraged students applying for training places (BDA, 2020). While these actors are usually seen as opposition (e.g., Emmenegger & Seitzl, 2020; Hall & Soskice, 2001), the common interest in the dual system seems to intensify their cooperation during the pandemic.

On their websites, the Zentralverband des Deutschen Handwerks and the Deutscher Industrie- und Handelskammertag provide companies with extensive information on how to deal with the crisis, including how to organise training. Furthermore, the Chambers operate digital apprenticeship portals to provide support in both vocational orientation and apprenticeship placement. This also highlights the importance of the Chambers in the dual system, whose influence can also be seen in the organisation and implementation of final examinations (Cedefop, 2020a).

The companies surveyed in a study by Burdack (2020), were looking for flexible and company-specific solutions to continue practical training, while complying with infection protection regulations. For this purpose, the companies surveyed implemented training procedures

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8　The DIHK, the ZDH and the BDA are also partners in the Allianz für Aus- und Weiterbildung.

9　The DGB is an umbrella organisation of eight individual trade unions, which are covering all branches and economic sectors in Germany.

that were called "rolling procedure", "block procedure" or "shift training" (Burdack, 2020, p. 2; translation by the author). These procedures have in common that trainees are alternately trained face-to-face in fixed small groups as well as at fixed times, to meet the requirements of infection protection by separating them in time and space. In addition, home schooling with the help of video tools, was used to enable a close exchange between trainees and trainers. The necessary digital devices were provided by the companies for both trainers and trainees; however, since the digital teaching of training contents takes longer than face-to-face training, special challenges were anticipated with regard to the quality of training and examinations. However, even though many training companies continued their training activities (e.g., DIHK, 2020; Jobstarter, 2020), sector-specific and firm-specific conditions (e.g., with regard to work processes or company size) could lead to different training practices. In the context of in-company training, this relates, for example, to the use of digital devices and media, which have been used much less frequently in the crafts and hospitality sectors than in the areas of industry and commerce as well as in the public service (Biebeler & Schreiber, 2020). In addition, the study by Biebeler and Schreiber (2020) shows that the pandemic-related shift of training activities into home office has been carried out in particular by larger companies and those training companies that concentrate on knowledge- and computer-based activities in the fields of "public service" and "industry and commerce" (see also Ebbinghaus, 2021). For smaller companies as well as training companies in the hospitality and craft sectors, where the focus is on customer or service-oriented and practical activities, the use of home office in contrast seems to be an exception.

As far as the digitisation of in-company teaching-learning processes is concerned, this does not seem to be feasible in the same way for all companies. Despite both the resulting and the generally existing restrictions (e.g., due to company closures), the difficult economic situation and the developments on the training market during the crisis, many companies were maintaining their training activities. Besides the possibility to receive bonus payments as part of the programme *Ausbildungsplätze sichern*[10], for some companies this is probably due to the necessity of covering their demand for skilled workers, which also in non-crisis times encourages companies to invest in dual apprenticeships. Cooperation with other stakeholders is particularly evident in the context of the measure *Ausbildungsplätze sichern*, the joint effort to conclude training contracts with the help of broad (digital) offers in the context of vocational orientation[11] and the completion of final examinations (for more details, see also AAW, 2021).

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10 Recently published figures by the Bundesagentur für Arbeit (2022) show that by 23th March 2022 a total of 75.373 applications for bonus payments (training bonus: 25.556, training bonus plus: 49.453, takeover bonus: 364) and 23.557 applications for training salary subsidy (from August 2020 to December 2021) had been positively decided. At the same time, most of the payments were directed to companies with up to 249 employees—larger companies tend to be the exception.

11 As an example, reference can be made to the "Summer of Vocational Training" in 2021, where the partners of the Allianz für Aus- und Weiterbildung have initiated several promotional days to inform parents and young people about dual apprenticeships, to offer them advice and to bring training companies and potential applicants together (e.g., BMAS, 2021b; see also AAW, 2021).

In addition to shared interests and goals with the other partners in the Allianz für Aus- und Weiterbildung, this also indicates that employers and business associations are adapting their activities to the government's guidelines, but at the same time they are involved in shaping them.

4.3   The Trade Unions' Reactions to the Pandemic

Among this group of actors, in the main it was press releases as well as statements by the Deutscher Gewerkschaftsbund (DGB), the Gewerkschaft Erziehung und Wissenschaft (*Trade Union Education and Science* [GEW]), the Bundesverband der Lehrkräfte für Berufsbildung (Federal Association of VET Teachers [BvLB]) and the Deutscher Lehrerverband (*German Teachers Association* [DL]) that were utilised.[12]

In April 2020, the Deutscher Gewerkschaftsbund published a position paper addressed to the German government (DGB, 2020a), which put forward various proposals for securing apprenticeship places, some of which were also included in the programme *Ausbildungs-plätze sichern*. According to the Deutscher Gewerkschaftsbund, this programme sends an important signal for the training market, and also shows that "social partnership in training works" (DGB, 2020b; translation by the author). In response to the continuing difficulties in the training market, in August 2020 an appeal was made to companies to invest more in training, despite the pandemic, particularly to ensure that young people with lower secondary school leaving certificates were still being offered opportunities (DGB, 2020d). Furthermore, a warning was issued that the quality of training in schools or in training companies, should not be allowed to suffer because of the crisis (DGB, 2020d, 2021). Due to the decline in newly concluded training contracts, in October 2020 it was also emphasised that besides short-term financial support for companies, structural changes such as a training guarantee based on the Austrian model[13] are needed (DGB, 2020c; see also GEW, 2020c).

In a survey conducted before the summer holidays 2020 (Bödeker & John, 2020), the state associations of the Bundesverband der Lehrkräfte für Berufsbildung stated that the transition to digital teaching was more successful than originally expected. However, various problem areas became apparent; manifested, among other things, in the lack of digital equipment for schools, teachers and learners. Furthermore, the extreme variation in digital competence of teachers and learners, reveals the necessity for further training and instruction in digital learning. In addition, the significantly higher workload for teachers in connection with the rapid transition to digital teaching, as well as legal issues (e.g., data protection on digital learning platforms) were identified as problematic (see also BvLB, 2020b; GEW, 2020a). There

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12 The DGB and the GEW are also partners in the Allianz für Aus- und Weiterbildung.

13 Within the framework of the Austrian training guarantee, young people who have not found a training place can instead complete their first year of practical training in a training centre. In case the trainees still do not find a training place after one year, the practical training can in principle also be completed in the training centre (see also Wieland, 2020).

were oft-repeated demands for a short-term improvement of the conditions for teachers and students at schools (e.g., health protection, further training on digital teaching, and the management of the IT area) as well as reliable and long-term solutions for digitally supported face-to-face, distance or hybrid teaching in times of the pandemic (BvLB, 2020b; DL, 2020c; GEW, 2020b). These demands were also reflected in the "10-point plan for teaching with (and after) Corona" (DL, 2020a; translation by the author). Among other things, as early as July 2020 this plan called for the weekly testing of teachers and students. However, the testing was not implemented until the cautious return to face-to-face teaching in March 2021.

The demands for "more autonomy" as well as a "reduction of bureaucracy" (BvLB, 2020a; translation by the author) attest to structural problems that limit the (short-term) ability of individual vocational schools to act. In this context, it should be mentioned that the schools generally have very little freedom and scope for action, which is mainly due to their financial dependence on the local school authorities. One example in the context of the pandemic is the much-discussed purchase of air filter systems for schools, which usually cannot be afforded from the schools' own budgets, thus severely restricting the schools' ability to act on their own responsibility in matters of infection protection. Consequently, the rejection of a nationwide purchase of air filter systems for schools in September 2020 by the Kultusministerkonferenz was also met with criticism.[14] From the perspective of the teachers' associations, this would have been a necessary purchase to fulfil the duty of care towards employees and learners (DL, 2020b). Mindful of the upcoming final examinations, in January 2021 the Bundesverband der Lehrkräfte für Berufsbildung was already warning that the restrictions on training activities resulting from the long school closures must be taken into account in both the school-based and the Chambers' final examinations (BvLB, 2021).[15]

In particular, this group of actors aims to ensure and optimise the (digital) provision of VET both in school and company contexts. Their demands relate to structural aspects of the dual system, the actual design of training activities, as well as the financing of better framework conditions for schools, learners and teachers. At the same time, the demands made by the trade unions also illustrate that the measures taken by the state (see above) were not sufficient (e.g., with regard to the demands for air filter systems) or that their implementation on the meso and micro level had reached its limits in some cases (e.g., due to data protection regulations).

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14 This example also demonstrates the central role that state institutions at the national level (here: KMK) play in the context of the pandemic, and which actually stands in contrast to the educational federalism that is usually pursued.

15 This once again highlights the special position of VET, since here, unlike in general education, the Chambers as another actor besides the state are also involved in conducting the final examinations.

4.4   The Reactions to the Pandemic by Those Requiring Training

In addition to relevant studies, press releases by the umbrella organisations of potential trainees and their parents were included. Specifically, these umbrella organisations are the Bundesschülerkonferenz (*National Student Conference* [BSK]) and the Bundeselternrat (*National Parents Council* [BER]).[16] More VET specific, the Jugendorganisation des Deutschen Gewerkschaftsbundes (*Youth Organisation of the German Trade Union Confederation* [DGB-Jugend]) can be identified as another actor within this group, as it represents the interests of trainees.[17] Keeping in mind the implemented measures (see above), most demands referred to political decisions or developments during the pandemic and emphasised the need for further action. However, similar to the demands of the teachers' associations, their implementation was lacking.

In the context of the gradual resumption of face-to-face teaching at schools after the initial lockdown in spring 2020, clear and long-term concepts were requested that included teacher, parent and student representation in the decision-making processes (BSK, 2020a). Besides a rapid and non-bureaucratic expansion of the digital infrastructure at schools as well as the assurance of protection against infection, further needs for action were also identified: These included instigating flexible arrangements for dividing up learning groups, ensuring inclusion for young people with special needs, and avoiding further school closures (BER, 2020a; BSK, 2020b, 2020d). In addition, the Bundesschülerkonferenz called for sustainable and mandatory "media education and media literacy" (BSK, 2020c; translation by the author) to be included in both the curricula and the competency profile of teachers. This assessment was also shared by the Bundeselternrat, which made additional demands, including regulations on the digital accessibility of teachers, the implementation and expansion of digital learning environments and forms of licensing, as well as their legal anchoring in school laws (BER, 2020b). In course of the publication of the "Corona training study" by the DGB-Jugend and the identified problems (e.g., the lack of preparation for exams or the gaps in teaching), both the DGB and the DGB-Jugend warned that the quality of training in schools or in training companies, should not be allowed to suffer because of the crisis (DGB, 2021; DGB-Jugend, 2021a). To this end, the DGB-Jugend urged the chambers to regularly monitor companies' compliance with legal standards (e.g., the obligation to release trainees from work for attending lessons at the vocational school) (DGB-Jugend, 2021a). Furthermore, the DGB-Jugend advocated for a higher commitment of companies in vocational training (DGB-Jugend, 2020,

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16 The inclusion of parents (by proxy through the BER) is also due to the fact that apprentices are legally represented by their parents until they reach the age of 18.

17 The DGB-Jugend is an independent youth association and represents the interests of all trade union members up to the age of 27 (DGB, n.d.). However, as the umbrella organisation of all youth trade unions, the DGB-Jugend is at the same time affiliated to the DGB and its department "Jugend und Jugendpolitik" (*Youth and Youth Policy*) (DGB, 2018). The Bundesjugendausschuss (*Federal Youth Committee*), whose representatives, according to the DGB constitution, participate in the DGB-Bundeskongress (*DGB-National Congress*) in an advisory capacity, is the most important body of the DGB-Jugend and decides on the operational guidelines of its affiliated youth trade unions (DGB, n.d., 2018).

2021b) as well as a legally fixed training guarantee, the unlimited employment of trainees after successful completion of their apprenticeship, and a comprehensive "digitisation and financing offensive" (DGB-Jugend 2021a; translation by the author).[18]

In their search for an apprenticeship, young people encountered a variety of obstacles, such as cancelled interviews or internships (Eberhard et al., 2021). The results of Barlovic et al. (2020, 2021) show that many young people are still interested in taking up an apprenticeship even in times of crisis, but they also wished for more support, for example, with regard to vocational orientation in schools, contact persons and job applications. In addition, more than half of the respondents thought that there were not enough training places available, which ultimately led to a less optimistic assessment about their chances of finding a training place (Barlovic et al., 2020, 2021). This underlines that, in addition to the quantitative provision of training places, it is at least as important to provide young people with comprehensive information and guidance in the context of vocational orientation (see also BSK, 2020d).

In conclusion, neither trainees and students nor their parents, were sufficiently included in decision-making processes (see also BSK, 2020e). Even though this becomes particularly obvious in the context of the pandemic, this represents a general phenomenon in the governance of the dual system (e.g., Emmenegger et al., 2019; Pilz, 2021). At the same time, this could indicate a structural weakness of collective training systems, as urgent needs for reform and action resulting from experiences at the micro level barely find their way into educational decision-making. Nevertheless, the active participation of students, trainees and parents in the pandemic-related discourse as well as their demands offer important feedback and highlight ongoing problems, especially with regard to the quality of training activities at both learning venues, the digitisation of teaching-learning processes and its implications (e.g., data protection issues, teacher training), the offers of vocational orientation as well as financial aspects (e.g., training salary, necessary investments in digitisation). Thus, in principle, there are also linkages to the measures, positions and demands of the other actors. However, it is noticeable that the demands voiced by those requiring training in particular share similarities with those voiced by the teachers' associations. Regarding the coordination with other stakeholders, the dialogue between the Kultusministerkonferenz, the teachers' organisations, the Bundesschülerkonferenz, and the Bundeselternrat in November 2020 (GEW, 2020d) also indicates that at least there was an information exchange with further actors. However, on the basis of the measures that were taken, their impact appears to be relatively slight, which could also indicate existing shortages with regard to the joint representation of interests by this group of actors.

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18 Although the DGB-Jugend is an independent youth organisation, it can be assumed that its direct influence on education policy issues and decision-making processes is rather limited. It is also unclear to what extent the influence of the DGB-Jugend reaches within the DGB and to what extent it is perceived as an independent association by other actors. In the context of the Allianz für Aus- und Weiterbildung, the DGB-Jugend appears to be at least primarily represented by the DGB and is thus not directly involved as an independent partner in the steering committee of the Allianz für Aus- und Weiterbildung (for a listing of the AAW-Partners, see for example AAW, 2020).

5   Discussion

In the following, the reactions of the various actors, described above, will be examined from a governance-analytical perspective, with specific regard to the coordination of actions between the actors, the realised processes and outcomes, as well as the levels affected within the VET system.

A localisation of the actors' actions on a specific impact level is only possible to a limited extent. Instead, interdependencies are indicated here insofar as many of the measures adopted at the macro level (e.g., *Sofortausstattungsprogramm*) have a direct influence on the individual educational institutions (meso level) and thus also on the level of teaching-learning processes (micro level). On the basis of the experience gathered at the micro level, specific demands were also addressed to actors on the macro level. These concerned, for example, the digital equipment of educational institutions, but also structural aspects such as a higher level of autonomy for vocational schools. Although the measures and demands of the individual actors may differ in their concrete design (see Chapter 4), they still refer to similar problem areas and areas of action (in particular the promotion of digitisation, as well as the financing and implementation of training activities and vocational orientation). This could also be due to the fact that these are central issues that concern both access to dual apprenticeships and the implementation of training activities. At the same time, they are severely affected by the pandemic and highlight a need for optimisation that is perceived by all actors—albeit with different emphases. However, regarding the inadequate and belated fulfilment of many of the demands expressed by teachers', parents' and students' associations in particular, influence or power from bottom-up seems to be rather limited. Nevertheless, even in times of crisis, it became apparent that the dual system is influenced by the actions of various actors at multiple levels. Although all of these levels are based on specific constellations of actors and logics of action, they are strongly interlinked in the sense of "*cross border coordination*" (Altrichter, 2010, p. 150; emphasis in the original).

In the sense of inclusiveness and coherence (Oliver, 2010), the recognition and approval of all actors involved in the dual system are essential conditions for the success of initiated reforms (see also Busemeyer, 2009; Fürstenau et al., 2014). The need for cooperation between the various actors is particularly evident in the context of the Allianz für Aus- und Weiterbildung as well as the measure *Ausbildungsplätze sichern*. As a "Corona-Taskforce" (AAW, 2020, p. 2), the partners of the Allianz für Aus- und Weiterbildung, pursued the common goal of stabilising both the training and the labour market, despite pandemic-related restrictions (see also AAW, 2021). This example clearly indicates overlaps between the individual actors' interests, which ultimately precipitate a strategically conditioned collaboration between them. However, the demands of the teachers' associations and those requiring training show that collaboration was not always achieved, and that essential governance processes (e.g., decision-making, resource mobilisation; see Oliver, 2010) did not include all actors.

Depending on the actors' perspective, the form of cooperation may be primarily an information exchange or maximally a coordination—this becomes particularly clear with regard to the demands from the teachers' unions as well as from the Bundesschülerkonferenz and the Bundeselternrat, who primarily reacted to the measures taken, as well as to the infection levels.

Despite the far-reaching interventions of the state and although the bonus payments have already created incentives to increase company engagement in training, the problem of matching training place applicants to training places, together with the decline in the apprenticeship market in 2020 and 2021 also show that the dual system cannot be fully steered and may find itself at the mercy of its own momentum (see also Bosch & Charest, 2008; Busemeyer, 2009). There are also indications that the restrictions in information exchange between employers and those requiring apprenticeships create difficulties in vocational orientation and recruitment. These also affect the apprenticeship market and testify to a limited coherence within the dual system and this seems also to have been recognised by the Allianz für Aus- und Weiterbildung, whose partners in March 2021 have agreed to expand (digital) opportunities for vocational orientation and recruitment for the new training year 2021, for example by expanding digital information, counselling and placement services for prospective trainees and companies (AAW, 2021).

Despite all the existing problems and optimisation needs, the continued training activities and final examinations under pandemic conditions, the continued revision of training regulations, the program *Ausbildungsplätze sichern* and the existing (albeit declining) supply of training places, indicate a short-term adaptability of the dual system. In this context, reference can also be made to the funding of contractual and collaborative training, which is part of the programme *Ausbildungsplätze sichern* (BMBF, 2020d) and provides temporary flexibility in continuation of training for companies in precarious situations.[19] Thinking about path dependency, this short-term adaptability may also be due to the historically entrenched corporatist structures within the dual system and the trust that actors have in this institution (Lange, 2012). Accordingly, even in times of crisis, the dual system as a collective training model appears to be a resilient and historically evolved institutional framework that encourages actors to cooperate and to fulfil their joint responsibility in the dual system, thus leading to a high degree of accountability and responsiveness (see also Aerne & Bonoli, 2021; Fürstenau et al., 2014; Lange, 2012). This is interesting insofar as this path dependency usually implies that processes of reform, and thus also adaptability, may be perceived as being difficult and time consuming to achieve (see also Busemeyer, 2009). Furthermore, the pandemic has led to a break in the previous structures of the dual system: Contrary to the state's usual restraint from financing the company-based part of apprenticeships (see also Busemeyer,

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19 However, a statistic published in April 2022 shows that only 42 applications for funding of contract and collaborative training have been approved so far (Knappschaft Bahn See, 2022).

2009; Cedefop, 2020c), the state explicitly provided monetary support for training companies as part of the programme *Ausbildungsplätze sichern* and has even expanded this support in 2021 (BMBF, 2021a). Whereas in the past there was discussion about the introduction of a training place levy, financed by companies that do not provide training (Busemeyer, 2009), this time the state itself is providing financial incentives and is thus actively trying to influence what happens on the training market.

Simultaneously, the financial subsidies to training companies decided at the national level as well as the various supplementary agreements to finance the digital infrastructure at schools also show that the state has a central steering function in times of the pandemic, which—at least in times of crisis and primarily due to the urgency of action—forces its actions and indeed shows characteristics of a statist system. Nevertheless, within the dual system, the state still depends on the engagement of companies, as they ultimately provide the training places and thus also make an important contribution to the integration of young people into the labour market. Consequently, even in times of the pandemic, the state is obliged to take into account and to combine two fundamentally different institutional logics (Labour Market Logic vs. Educational System Logic) (e.g., Bonoli & Emmenegger, 2020).

However, there is usually no short-term or radical change within this institution (see also Streeck & Thelen, 2005). Against this background, a certain institutional inertia becomes particularly clear in the context of demands for more school autonomy, the implementation of a training guarantee, as well as greater participation of student and parent representatives in decision-making processes. To what extent these demands will lead to a gradual transformation of the dual system (Mahoney & Thelen, 2010; Streeck & Thelen, 2005) is still to be seen.

6 Conclusion and Future Research

The pandemic had a significant impact on the training market, which is reflected on both the supply and demand sides. However, current forecasts indicate that the situation on the training market could improve from 2027 onwards (Dohmen, 2020; Maier, 2021). Regarding the realised coordination of action, not all actors are involved in the decision-making processes; however, the measures taken show that those actors involved in decision-making do cooperate. In the context of the pandemic, it is also evident that the dual system as a collective training model is capable of acting and adapting in the short term to face emerging challenges, despite its complexity. Regarding the adaptability (Oliver, 2010) of the dual system in the context of the digitisation of VET and the world of work, it is to be hoped that the digitisation processes accelerated by the pandemic (e.g., the use of digital devices and learning platforms, but also further training and instruction in digital learning for trainees, students, teachers and trainers) will find sustainable entry into company and school training

practices. With regard to the temporary school and company closures, the problems with distance learning and the possible impacts on the quality of training, the question arises, particularly in the contexts of block teaching and final examinations, to what extent the key objective of "vocational action skills" (Pilz & Fürstenau, 2019, p. 315) can be achieved under these difficult conditions. In particular, this affects apprentices in sectors that have been hit hard by the crisis (e.g., tourism or gastronomy), as due to the long-lasting company closures in these sectors, the teaching of practical learning content (e.g., customer dialogue) has been very limited or not possible at all. At the same time, this also raises the question of whether certain practical learning contents may be integrated into the school-based element of dual apprenticeships (e.g., OECD, 2021d). For vocational schools in technical fields, this could be realised, for example, through the acquisition of technical learning systems, as these enable a high degree of practical and experience-based learning (see also Faßbender & Pilz, 2020).

The aim of this paper was to provide an insight into the dual system and the way in which, as a collective training model, it has dealt with the pandemic so far. This was achieved by evaluating various documents. At the same time, this is to be seen as a limitation of this study, because these artefacts primarily represent the results of negotiation processes and cannot provide insight into the preceding decision-making processes and discussions between the actors. To gain deeper insights in this regard, further studies could, for example, conduct expert interviews with representatives of the respective actors. This might also help to further investigate the influence of the DGB-Jugend, the Bundesschülerkonferenz, and the Bundeselternrat. Nevertheless, the approach adopted in this paper has facilitated an analysis of the governance structures underlying the dual system, as it provides an indirect insight into the measures taken or demanded, the implementation of training activities, as well as the coordination of action between the central actors. The focus at the national level, which does not include individual, sector- and regional-specifics, opens up a starting point for further research projects to examine the coordination of activities between actors at a decentralised level (see also Emmenegger et al., 2019). Moreover, this study exclusively referred to the German dual system. Thus, full-time school-based VET programs as well as continuing education, as other important areas of the German VET system (Fürstenau et al., 2014), were not considered here. This reveals another research gap, which is also quite relevant with regard to the German educational federalism as well as the central role of the state in times of crisis. In addition, further international comparative studies could also examine and compare how other collective, statist, liberal or segmentalist training systems are dealing with the emerging challenges to VET posed by Covid-19.

Acknowledgement

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Biographical Note

Uwe Fassbender is a research assistant and PhD student at the Chair of Economics and Business Education at the University of Cologne in Germany. His research interests include international comparative research in VET as well as teaching and learning both in vocational and higher education.

The Work of Programme Managers in State-Funded Employer-Driven Swedish Higher VET

Johanna Köpsén*

*Linköping University, Department of Behavioural Sciences and Learning,
S-581 83 Linköping, Sweden*

Abstract

Context: Swedish Higher Vocational Education (HVE) is organised as state-funded programmes provisioned by both public and private education providers in close relation to employers. In HVE programme managers have responsibilities like those that often are vested in vocational teachers. They are responsible both for the day-to-day work of provision and the continuous development of the programme and its syllabi. This article presents a study investigating the work of programme managers, focusing on their work with creating and updating syllabi and on their work organising the students' training.

Methods: Five programme managers responsible for five diverse HVE programmes have been interviewed and the syllabi of these programmes have been examined. The analysis is based on a Bernsteinian theoretical perspective focusing on recontextualisation of knowledge for pedagogic discourse by different stakeholders as agents who have different basis for their actions. The study first establishes what knowledge make up the programmes to inform the understanding of what training the programme managers are tasked with organising, then examines how the programme managers take part in selecting knowledge for course syllabi, and how they organise the teaching of these syllabi in in their programmes.

Findings: The knowledge that has been recontextualised for pedagogic discourse in the studied programmes is most often vocationally specific or context bound in relation to a particular occupational field. The syllabi are related to clearly defined jobs. The findings highlight how practice thus in several ways may be difficult for programme managers without work

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*Corresponding author: johanna.kopsen@liu.se

experience in the relevant occupational field or knowledge in relation to it. Not only in the work of forming and updating curricula, but also as they must be able to navigate the relevant sector of business and industry to engage appropriate employers for collaborations and to hire teaching staff.

Conclusion: The findings presented in this article show that local autonomy allows for major differences regarding knowledge in syllabi and the organisation of learning between programmes within the same nationally organised VET system. This is salient even with a small number of programmes having been studied. This strongly support the importance of examining what happens in autonomous local contexts of VET provision and asking who has influence over publicly funded education in this sort of contexts, and on what these stakeholders base their actions.

Keywords: VET, Vocational Education and Training, Continuing Vocational Education and Training, Planning of Education and Training, Vocational Teachers, Education Industry Relationship

1   Introduction

The prevailing trend in contemporary VET policy and VET system reformation is strong market orientation and governments shaping systems with significant roles for employers (Avis, 2012). Also, there are more vocational pathways in higher education; two-year short-cycle higher education provisioned by universities, applied baccalaureates at community colleges, higher level and degree apprenticeships, or hybrid programmes combining vocational and academic education (e.g., Bathmaker, 2017; Bathmaker et al., 2018). International comparative analyses show that the trend is the same in higher VET as in VET in general (Bathmaker et al., 2018).

One extreme example of market orientation in higher VET is the Swedish system known as Higher Vocational Education (HVE) (Köpsén, 2020a, 2020b). HVE was implemented in 2009 and is organised as state-funded programmes provisioned by both public and private education providers in close relation to employers. In collaboration these actors conceptualise programmes and create local course syllabi. There is also no national regulation for qualifications of personnel in HVE. Common curricula and formal requirements of qualifications for teachers can offer insights into how training is realised in different educational systems. However, what make up syllabi and who works in the programmes are factors unknown in HVE, as it is not nationally regulated, and the previous research is very limited. Thus, we know little of the practices in provision of these state-funded employer-driven programmes.

However, in every HVE programme, one person according to national regulations (SFS 2009:130) has responsibilities like those that often are vested in vocational teachers. This person is responsible for the day-to-day work of programme provision with tasks such as planning and organising teaching, interacting with and supporting students, and collaborating with employers. They are also responsible for the continuous development of the programme and its syllabi. Thus, they are key figures in HVE. These persons are usually called programme manager. Their duties, and whether their positions as programme managers are full-time or part-time, however differ depending on the education provider they work for. There is also no regulation on the qualifications required of a programme manager, neither pedagogical nor vocational, leaving it up to the different education providers to judge what they deem as important competencies to carry these responsibilities.

This study investigates the work of programme managers, focusing on their work with creating and updating syllabi, and organising the students' training. In the study, programme managers have been interviewed and course syllabi of their programmes have been analysed. Three distinct research questions are posed; (1) What knowledge make up course syllabi for the HVE programmes? (2) How do the programme managers take part in selecting knowledge for course syllabi? and (3) How do the programme managers organise the realisation of course syllabi in their programmes?

The first question is posed as its answer guides the understanding of what the training in the studied programmes entail. To establish this is of significance because what make up VET syllabi is of importance to what the assignments of VET educators are. Whether the training in a VET programme is more general and aimed at a field of work or if its syllabi is specific for a certain and clearly defined job, or whether a programme is introductory or aim to give the students a complete training making them independently proficient in their trade, make for different tasks for the involved teachers and trainers (Grollmann, 2008). Policy have defined what knowledge is desirable in the Swedish system for higher VET – knowledge generated in the production of goods and services that is selected for syllabi by employers (Köpsén, 2020a) – but policy has also given the local contexts of programme provision great autonomy with much of the power allocated to the involved employers (Köpsén, 2020b). Thus, we do not know what knowledge make up the local syllabi of HVE programmes since there are no previous studies of this, and thus also not what training the programme managers in HVE are tasked with organising. Knowing this is central for the analysis of and discussion on their work and their roles in relation to other stakeholders. Hence the first research question of this study aims to establish an understanding of the knowledge in syllabi for the studied programmes.

2   Swedish Higher Vocational Education

HVE is strongly influenced by ideas of market relevance and employer influence (Köpsén, 2020a, 2020b). It is separate from academic and professional higher education and the creation of programmes are to be initiated locally by employers to meet their needs. Both public and private organisations provide HVE programmes, and they compete for the public funding. The limited number of programmes that receive funding are those where the provider demonstrates the highest level of hiring needs pledged by employers and the highest level of co-founding by locally involved businesses and industry (Köpsén, 2020b). Education providers are only granted funding for and permission to enrol the number of students that the pledged hiring needs indicate are necessary. This leads to a fast turnover in the programmes that are offered and short-term conditions for education providers to arrange provision of their programmes. The programmes vary in length from one semester to three years. They may be offered full-time or part-time, in a school or as distance learning and may include work-based learning in placements. Employers offer placements and supervisors for work-based learning and contribute through financial donations or by reducing the consulting fees charged by representatives of working life who take part in the programme as educators. The programmes offered in HVE are at levels 5 and 6 in the European Qualifications Framework. Programmes at level 6 must be at least two years and include at least 25% work-based learning. Around 70% of students finish their education and receive diplomas. A year after, over 90% of the graduating students are employed, circa 50% with an organisation where they undertook work-based learning as part of their programme.

A management board directs every HVE programme, and the education providers run their programmes according to instructions from the board. By regulation, employer representatives must constitute the majority on these boards (SFS 2009:130) and the National Agency for Higher Vocational Education advocates that the chair of the board is an employer representative (National Agency for Higher Vocational Education, 2011). Other members of the board are the programme manager, student representatives, a representative from the public school system and, where the programme provides an advanced diploma, a representative from a university.

The unique course syllabi defining the content and learning outcomes of each programme are initially conceptualised and outlined by locally involved employers and each education provider, and, if funding is granted, they are completed and established by the management board. The established syllabi are only submitted to the responsible national agency in the event of an audit, and they may be altered during the provision of a programme if the management board wish, and the student representatives approve.

3 Vocational Teachers and Vocational Knowledge

In HVE, the programme managers are the only personnel defined in legislation. The way regulation defines their role, they carry responsibilities like those of many vocational teachers in organising the day-to-day work in programme provision, collaborating with employers regarding for instance work-based learning but also by having responsibility for the continuous development of the programme and keeping its syllabi up to date and relevant to employers.

Vocational teacher training and requirements of vocational teachers are internationally divergent and differ between national systems (e.g., Misra, 2011; Papier, 2010). The differences may depend on the educational context or level, and they may be aligned with the type of responsibilities placed on the teachers (Grollmann, 2008; Tapani & Salonen, 2019; Wheelahan & Moodie, 2012). But also, discursive ideas of the teacher role play into how requirements are defined and regulated. The prevailing discourse on the role of vocational teachers in different contexts may have a determining influence (Isopahkala-Bouret, 2010). For instance, if it is believed that useful vocational learning can only happen in an authentic workplace, the role of teachers in school is different than if it is thought that vocational learning is also possible in an educational setting. And in the cases where integration of (theoretical) subjects into authentic practical work is a way of ensuring curriculum relevance (Hiim, 2017) didactical teaching competencies that focus on job-related education also in school-based training become important (Sylte, 2020). Not all VET is based on the same idea of what vocational knowledge is or of what is important to include in VET curricula. Systems may focus on practical skills of specific occupations or support a more holistic, knowledge-based idea of what vocational knowledge is (Brockmann et al., 2008).

However, there is broad consensus that what is specific about VET and thus the work of vocational teachers, in contrast to general or academic subjects and their teachers, is the relationship with work (e.g., Andersson et al., 2018; Fejes & Köpsén, 2014; Isopahkala-Bouret, 2010; Wheelahan & Moodie, 2012). This significant aspect of VET suggests that vocational teachers need up-to-date knowledge of practices in the field and that teachers and others involved in VET provision need networks with employers to facilitate training with high relevance to work. In a context where teachers had autonomy to create and realise work-related programmes, the teachers' selection of knowledge, and choices of teaching practices were found to vary relative to their own experience in the occupational field (Farnsworth & Higham, 2012). The selection of knowledge and organisation of training were aligned closely with work by those teachers who had previous experience. This was explained as them having accountability to a vocational community of practice to which they belonged. Research on vocational teachers in the Swedish context, in initial VET, describes their work as practices of boundary-work and the fostering of sociocultural identities for entry into vocational communities of practice (Andersson et al., 2018; Berner, 2010; Fejes & Köpsén, 2014; Köpsén, 2014). This is expressed as teachers translating the demands of occupations into

the training and aligning school and work practices by situating the school-based training within an imagined workplace and its social context (Berner, 2010), and as teachers conveying norms and traditions from a community of practice to students by figuratively bringing the world of work into school by telling stories and providing examples (Köpsén, 2014). The teachers' positions in relation to the field of work and their possibilities to exert agency have been put forward as significant specifically for work with curricular formation (Farnsworth & Higham, 2012; Priestley et al., 2012). It has also been argued that vocational teachers with responsibilities for curricular adaptation and development, like the responsibilities of HVE programme managers, need more holistic teacher training if they are to be well-equipped stakeholders in such processes (Grollmann, 2008; Wheelahan & Moodie, 2012).

Regarding HVE there is little research and the programme managers have not been its object. However, from a longitudinal study focusing on a group of Swedish higher VET students training for, and entering, emerging occupations in digital work it is possible to acquire a picture of how learning is organised in the programme that the students attend (Ye, 2018). Here, the school has made "efforts to move away from teacher-centric, test-based education" (p. 82) and the programme is realised in the form of real-life projects and the school organises "interactive sessions and workshops" (p. 82).

4   Theoretical and Analytical Concepts

The *what* and *how* of education are in the Bernsteinian theoretical framework defined as pedagogic discourses (Bernstein, 1990, 2000). The baseline of this study is that Swedish HVE is considered as a pedagogic device in which knowledge is recontextualised by agents into pedagogic discourse. The usefulness of this theoretical conceptualisation of education have been argued for both in general (e.g., Singh, 2002; Singh et al., 2013) and specifically related to VET (Wheelahan, 2005, 2015). Pedagogic discourses are defined by recontextualising agents in what are known as recontextualising fields of a pedagogic device (Bernstein, 1990, 2000). There are two types of fields where this occurs, i.e., where knowledge for curricula is selected by stakeholders. One is the official recontextualising field, which is regulated by the state through legislation and policy. But there are also pedagogic recontextualising fields, which are found in proximity to the provision of education. In the local pedagogic recontextualising fields of HVE programmes, the members of the management boards, including the programme managers, may be understood as recontextualising agents (Köpsén, 2020a). Recontextualising agents act based on their social positions, power, interests, traditions and history as well as on the basis of their knowledge (Bernstein, 2000). Considering programme managers as agents, this concept thus enables the analysis of programme managers basis for actions in recontextualisation and their position in relation to other stakeholders acting as agents in the pedagogic recontextualising fields of HVE. Rules of the pedagogic device, which

are ideological and reflect social order, regulate the processes of recontextualisation and the relationships of power and control in and between recontextualising fields, for instance the autonomy of pedagogic recontextualising fields but also the struggles over knowledge selection between agents in these fields. This theoretical framework, viewing HVE as a pedagogic device, enables the programme managers work focused on in this study to be understood as a specific part of a bigger picture. The model of the device positions the local dimension of work in programme provision in an analytical relation to the greater struggles of power in the official recontextualising fields in national policy.

To investigate the first research question of this study, i.e., what knowledge is selected for pedagogic discourse in pedagogic recontextualising fields of the investigated HVE programmes, the conceptualisation of knowledge realised as either horizontal or vertical discourse was used (Bernstein, 2000). These concepts enable interpretations of the knowledge in VET curricula as shown in previous studies of both initial and higher VET (e.g., Gamble, 2014, 2016; Nylund & Rosvall, 2016). Knowledge realised in horizontal discourse is segmented and context bound. It can be described as contextually specific sets of strategies or as a segmented repertoire of competences for different contexts and their practices. Vertical discourse, however, is characterised by its systemic organisation of coherent structures of symbolic meaning or by its specialised languages. It is the discourse of science and disciplines in which knowledge is organised as meanings that are hierarchically linked to one another. The meanings are neither segmented nor context-dependent, and this indirect relationship between meaning and the material base creates a (discursive) gap. This gap is what enables alternative relationships between the immaterial and the material, and it enables the potential of the unthinkable or the "yet to be thought" (Bernstein, 2000, p. 30). In contrast, the meanings of context-bound horizontal discourse are directly related to the material base and "have no reference outside that context" (Bernstein, 2000, p. 30).

A Bernsteinian analysis of the curriculum for Swedish initial VET shows that it is made up by knowledge that is segmented and strongly context bound with a focus on practical skills (Nylund & Rosvall, 2016). In the case of Australian VET, Wheelahan (2007, 2009) found the mandated model of curriculum – competency-based training – to result in "an impoverished education that disenfranchises students from access to the knowledge they need to participate in 'society's conversation' and in debates within their occupational field of practice" (2009, p. 227). In the South African case of TVET, Gamble (2014, 2016) use the framework to question "pedagogic presuppositions that directionality from sensory experience to abstraction posits the everyday life of the student as the foundation for the acquisition of complex, systematic knowledge" (2014, p. 56).

5   Method

In this study, five programme managers each responsible for one HVE programme were interviewed and course syllabi documents from these five programmes were examined. The data was analysed in a theoretical thematic analysis guided by the concepts presented in the previous section.

5.1   Data Selection

In total, 70 course syllabi have been studied. The syllabi cover both school-based and work-based learning and are established by the respective management board for each of the five programmes. The documents are all one or two pages each and formatted into sections of lists stating the main course content, learning outcomes, and grading criteria. The programme managers were interviewed in qualitative semi-structured interviews based on a thematically organised interview guide (Brinkmann & Kvale, 2014). The interviews varied in length from 40 to 75 minutes. They were audio-recorded and pertinent parts transcribed. As mentioned, programme managers have significant positions in the practice of HVE programmes and can make meaningful contributions as they run the day-to-day work of the programme. All interviewees have been given written information and have been informed verbally of the purpose of the interview and of the voluntariness of their participation. All have given written consent.

The selection of programmes was done purposively to find programmes that could provide broad input through breadth in the range of studied contexts. In line with a multisite qualitative research approach these five programmes vary in key characteristics, described below. These characteristics are relevant to the theoretical framework but are also significant attributes of educational contexts in a broader sense. The selection of breadth in the range of studied contexts and the theoretical relevance of selection criteria aimed to enable both analytical extrapolation and recognition of patterns for readers, scientists as well as practitioners within (higher) VET provision (Firestone, 1993; Larsson, 2009).

One characteristic of theoretical relevance that was used to create diversity is field of study. Fields of study have different traditions and norms regarding e.g., how education is carried out, how its goals are formulated and what type of knowledge outcomes make up the curricula (Bernstein, 1990, 2000; Young, 2006). The programmes are classified as health and social work, as finance, administration, and sales, and as construction – fields with different traditions for knowledge transfer/education. Another characteristic which was considered is type of education provider. What type of organisation provide a programme impacts what agents are involved and on what bases they act in the pedagogic recontextualising fields. A public provider situated within a politically governed municipal organisation has considerations to make that are different than those of for instance a for-profit corporation where there

are other interests at play. The five investigated programmes are provisioned by three diffe-rent types of education provider. The providers may be classified either as a private education corporation, a public adult education provider, or an organisation situated within Sweden's relatively extensive system of non-formal adult education. Yet another criterion was geogra-phical. The programmes are in different regions of Sweden, and they are found in what can be described as different types of labour market contexts dependent on the size and location of the town/city they are in. The different labour market context situates the pedagogic recon-textualising fields of the programmes in relation to different types of surrounding contexts. For instance, in a rural municipality it would not be surprising if the actors involved in a pro-gramme know each other well or have cooperation outside of the programme influencing their relations in the pedagogic recontextualising field. And in a larger city the supply of employers with whom a provider may cooperate is perhaps greater which also influence the power rela-tions between actors. Two of the programmes in this study are aimed at the same occupation but provisioned by different types of education provider and are in different parts of Sweden.

In this article the programmes are labelled A-E. They are presented in the table below. Due to all programmes in HVE being unique, giving more details such as their names, the occupations they train for or the number of students, would disclose what programmes and programme managers are included in the study.

Table 1: The Programmes

	Field of Study	Length of Pro-gramme	Diploma Offe-red to Graduates	Work-based Learning	Type of Provider	Labour Market Context
A	Civil engineering and construction	400 credits 2 years	Advanced diploma	100 credits 20 weeks	Public adult education provider	Medium-sized town - at least 50 000 inhabitants
B	Finance, administration, and sales	400 credits 2 years	Advanced diploma	100 credits 20 weeks	Public adult education provider	Medium-sized town - at least 50 000 inhabitants
C	Finance, administration, and sales	400 credits 2 years	Diploma	120 credits 24 weeks	Private education corporation	Large city - at least 200 000 inhabitants
D	Healthcare and social work	400 credits 2 years	Advanced diploma/ Diploma*	115 credits 23 weeks	Public adult education provider	Medium-sized town - at least 50 000 inhabitants
E	Healthcare and social work	400 credits 2 years	Advanced diploma	120 credits 24 weeks	Non-formal adult education organisation	Rural munici-pality - less than 15 000 inhabitants

*Curriculum for one of two enrolled cohorts gives the students an Advanced Diploma whilst curriculum for the other cohort gives the students the lower-level degree, a Diploma in Higher Vocational Education

5.2   Data Analysis

Transcripts of the interviews with the programme managers and the course syllabi documents of their five HVE programmes were analysed in a theoretical thematic analysis (Braun & Clarke, 2006) guided by the concepts of the applied theoretical framework.

In a first analysis, analysis A, aiming to answer the first research question about what knowledge make up the programmes, initial coding (Braun & Clarke, 2006) of course syllabi and articulations in the interviews regarding knowledge were categorised according to the types of outcome to which the knowledge was linked. This resulted in codes called; have knowledge about, have theoretical understanding of, and be able to. While keeping the tags of their initial codes, the excerpts were then also even more explicitly thematically coded in relation to the conceptualisation of knowledge realised as either horizontal or vertical discourse. This resulted in four themes that were given the names; knowledge as abilities to 'do' and 'act', vocationally-specific factual knowledge, disciplinary and academic knowledge, and reflection and analytical thinking.

In a second analysis, analysis B, aiming to answer the two latter research questions the transcripts of the interviews were also coded to categorise the programme managers' relationships to the knowledge in their programmes. These codes where called; I can stand for them and ways of compensating. Themes were then created to recognise these codes theoretically as programme managers' positions and basis for action as agents in a pedagogic recontextualising field. These themes were named; acting on one owns experience and lacking experience but solving the task.

6   Findings

In the following I will first report on analysis A by presenting what knowledge have been selected for the programmes, i.e., what knowledge the interviewed programme managers are tasked with making sure their students will learn in their programmes. I will then present findings from analysis B. This will be done firstly in a presentation of programme managers work with the creation of course syllabi and secondly by a description of how the programme managers organise the realisation of syllabi in the school-based parts of the programmes.

6.1   Knowledge in the Programmes

The programmes include a broad variety of knowledge of how to 'do' and 'act' in specific occupational contexts, vocationally-specific factual knowledge, academic disciplinary knowledge and knowledge to analyse and reflect. Though, overall, the knowledge that has been recontextualised for pedagogic discourse is most often vocationally specific or context bound

in relation to a particular occupational field. Overall, the syllabi of the studied HVE programmes are specific and related to clearly defined jobs and not general in the sense of preparing students for work through generic or transferable skills. Thus, the task of programme managers is to organise training for these specific jobs by realising syllabi that are mostly vocationally specific and context bound.

6.1.1 Knowledge as Abilities to 'Do' and 'Act'

Learning outcomes are commonly stated as knowledge of how to 'do' and 'act' in specific practices and under given circumstances:

> Be able to do transmission calculations for different types of building structures such as windows, walls and ceilings with different U-values. (Syllabus, programme A)

> Encode main diagnoses and possible side diagnoses correctly from journal text. (Syllabus, programme B)

> Form written and oral information from a clear message with a client focus for co-workers, bosses and the organisation. (Syllabus, programme C)

The above examples from course syllabi are clear instances of knowledge realised as horizontal discourse. These learning outcomes are contextually bound strategies or competences for specific contexts and their practices. This type of learning outcome does not infer knowledge that the students are meant to transfer from one task to another or into another occupational field. The outcomes are formulated in relation to specific tasks in the line of work that the students are training for. This type of knowledge is part of the knowledge in all the programmes examined, although to differing extents.

6.1.2 Vocationally-Specific Factual Knowledge

In all the programmes examined, there is also vocationally-specific factual knowledge. Course content and learning outcomes intended to build the students' knowledge of the context they are to work within and of the products or services they are to work with:

> Know about the organisation of health care and how decisions are made and implemented,

> has a general knowledge of the current pharmaceutical legislation and drug classification, and prescription management (Syllabus, programme B)

> know of the various social actors/institutions involved around people with neuropsychiatric disabilities (Syllabus, programme D)

One part of the vocationally-specific factual knowledge, which is included in all of the programmes examined, is legislation and regulations in the occupational field. Knowledge of how to 'do' and 'act' and vocationally-specific factual knowledge make up the core of three of the five programmes examined. These programmes are in the fields of finance, administration and sales, and construction.

6.1.3 Disciplinary and Academic Knowledge

In two of the programmes investigated, the core is distinctly academic knowledge from different scientific disciplines. These are the two programmes that are targeted at the same occupation in the field of health and social work.

Much of the knowledge in these two programmes is knowledge that is not bound to a specific context or practice:

> Sociology and social psychology are revisited, the more knowledge they have gained previously, the more there is to build on. (Programme manager E)

The excerpt above is a clear example of what can be characterised as vertical discourse. It is a clear example, not only because the programme manager uses the names of disciplines in social science, but also because they describe the knowledge as meanings that are hierarchically linked to one another, where students' acquisition builds on their previous knowledge and learning.

These two programmes, and one of the other programmes that also includes elements of disciplinary knowledge, have fewer stated learning outcomes relating to how to 'do' and 'act' than the other programmes examined. However, all programmes include disciplinary knowledge organised as vertical discourse to some extent, indicating that agents in the pedagogic recontextualising fields of all programmes investigated value this type of knowledge and deem it important to the vocational practices in their fields. Examples of this are courses named just like subjects in academic higher education, with titles such as Behavioural Science or Business Studies and learning outcomes formulated as knowledge and understanding of disciplinary frameworks and concepts:

> After completing the course, the student must have knowledge of: Business studies concepts and its context. (Syllabus, programme C)

Vertical discourse of disciplinary knowledge such as an understanding of economic structures and theory enables students to question positions in their occupational field as it enables new perspectives and positions, the yet to be thought. In one case, the course syllabi even include declarations that the vertical discourse/disciplinary knowledge is intended to empower the students in their forthcoming work:

The aim of the course is to provide an understanding of the financial demands that is increasingly affecting [the occupational field], but also to give the power to change things through access to the language of economics. (Syllabus, programme B)

6.1.4 Reflection and Analytical Thinking

The programme managers of the two programmes with disciplinary knowledge as their core both emphasise that abilities such as analysing, reflecting, and drawing your own conclusions are important learning outcomes. In the other programmes, however, this type of knowledge is included only as grading criteria for the higher of the two passing grades. Having grading criteria for two passing grades is mandatory in HVE course syllabi and, students do not need to achieve learning outcomes in grading criteria for the higher grade to pass a course and receive their diploma at the end of the programme. This suggests that agents in the pedagogic recontextualising fields do not consider analysing, reflecting, and drawing your own conclusions to be necessary for practicing the occupation for which the training prepares.

However, reflective abilities may be interpreted as forming part of some learning outcomes formulated in terms of knowledge of how to 'do' and 'act', indicating that they are in fact necessary but are not articulated. In several instances in courses in all the programmes investigated, abilities to 'do' and 'act' indicate that the students would need to be able to make independent judgments. Many examples of these unarticulated abilities are related to selecting materials or methodologies in practice.

6.2 Programme Managers and the Creation of Course Syllabi

Creating and updating course syllabi is a task that all interviewed programme managers talk about as part of their professional role. However, how they describe their roles in this, indicate that it may be problematised how programme managers act in the processes of creating and updating course syllabi in HVE programmes. In the programmes examined, this study has shown that their actions in these processes differ in relation to their own experience in, and knowledge of, the occupational field. That is, their positions as agents in recontextualising processes differ depending on the knowledge relevant to their programme that they themselves have or do not have.

One of the interviewees has professional qualifications for the occupation that their programme prepares students for, over 30 years of experience in the field, and was involved in the creation of course syllabi for the programme they now manage. This programme manager articulates a conviction in the course syllabi as they harmonise with the programme manager's own practice-based ideas of what the students need to learn:

> Yes, I feel I can stand for them [the syllabi]. If there's anything I question, I only have myself to blame. [programme manager laughs] In such a case it's just to get the management board to agree to a change. [...] But it is just that, that I, [...] that my programme is what I know. It makes me feel that I can argue my case from pretty firm foundations. Not many people say – "No you're wrong there!". I can argue my corner. (Programme manager D)

However, when someone does not have work experience from the field of practice, or knowledge relating to it, their part in creating course syllabi may not be based directly on such knowledge. Their work cannot be based on their own recognition of what is important in practice:

> I can tell you, it was worse when I was going to start up [another programme] and write those course syllabi [...] I didn't know the field so I remember using Google. If there was a topic, I googled course literature with titles including that topic. And then I sat and I looked at the table of contents, "Okay, this stuff should probably be part of the course", but I really had no idea. I wrote it in the syllabus, I made it up, cut and pasted. (Programme manager B)

In this case, the programme manager is describing their part in the creation of course syllabi, for a new programme about to start shortly thereafter, as based on an ad hoc method. Not having relevant knowledge and experience as a basis for their actions, as in this case, does not relieve the programme managers of their roles as agents in recontextualisation. However, they base their actions on something different than the programme managers who have relevant knowledge and experience. In this case the programme manager acted on the basis of a focus on solving the task at hand. They continue:

> And I had the management board. They had to adopt a course each; "Mike, this is your subject now! Here you go!" [programme manager showing how they handed out papers to several people] and they sort of said "What do we do now?". They had to help me to articulate it so that it looked a little bit better. (Programme manager B)

This process shows one way in which the members of a management board may be given great power and control over the formation of syllabi, i.e., over recontextualisation of knowledge for pedagogic discourse. In this case, the members are given great power in recontextualisation because of their own knowledge and the programme manager's lack thereof.

Another example that highlights an imbalance in power between the programme manager and members of the management board as agents in a recontextualising field is when one programme manager tells of an instance when a Europass Diploma Supplement document is to be created. This is a document written in English (a foreign language) based on the course syllabi of the programme and it describes the knowledge and skills acquired by holders of higher education degrees. In this case, the programme manager had to involve the management board in preparing the document as the manager themself lacked sufficient

understanding of the knowledge in the programme to be able to extract information from syllabi to put such a document together:

> For instance, we are going to work on the Europass at the management board meeting. I find it really hard to know what's relevant. (Programme manager A)

Work experience in, and knowledge of, the occupational field and its practices differ, and thus the bases on which the programme managers act as agents in the recontextualisation of knowledge in their programmes differ. Lack of prior experience in the field may be viewed as problematic regarding the power relations between stakeholders in recontextualisation, i.e., when creating syllabi, or when organising for teaching as will be presented in the next section. A programme manager's basis for acting is limited if they have no practical experience and connection to the field thus giving other stakeholders than the providers greater relative power in the context of HVE programmes.

6.3   Programme Managers' Strategies in Realising the Course Syllabi

All interviewees explicitly describe their role as being responsible for delivering training in accordance with the course syllabi established by the management boards of their programmes. However, the way in which they organise the school-based parts of their programmes to achieve this differs. The programme managers use one of two main strategies; they either hire others to work as teachers and take responsibility for the courses, or they themselves teach and are responsible for some courses while also hiring others as teachers and experts to give lectures.

Everyone who have work experience in the field of practice to which their programme relates uses the latter strategy and teach on their programmes. One of them expressed that their background in the same sector of business and industry that the training prepared students to work in was a crucial element in the realisation of the programme:

> I run around and know a little bit of everything, and I join it all up, and I tie up all the loose ends. But for the cutting-edge courses we have really competent teachers! [...] The more I work on the courses, the more I can understand and interpret. (Programme manager B)

This excerpt highlights how the programme manager uses their own knowledge and experience for teaching on the programme alongside others working as teachers and expert lecturers. The programme manager is organising a cohesive programme, i.e., recontextualising knowledge for pedagogic discourse, using their own possibilities to teach. The programme manager's own work experience in the occupational field enables them to be the one who, through their organising and teaching, make the contributions of for instance expert lecturers' part of a cohesive course and programme. Expert lecturers are often people coming direct

from the field of practice working for an organisation that is represented on the management board.

Another programme manager with experience also emphasises the cohesiveness – they articulate this, for instance, regarding the development of students as professionals:

> "Who am I as a professional in this occupation?" - That's what I'm trying to keep an eye on. I try to make sure that they get to know... that they get to work to develop themselves in a reasonable way [...] and that they can use it in their future work, that's my job to make sure. (Programme manager D)

This programme manager views it as their job to develop the students as professionals throughout the training. And in that, the programme manager articulates, they are very much reliant on their own vast experience from practice. They however also emphasise their responsibility to hire others to teach:

> […] to make sure that we get people to come here who can offer them growth and development in this respect. That's my job. (Programme manager D)

In this, the two strategies overlap. All interviewees hire or contract others to teach in their programmes to some extent, and as there are no regulations stipulating who is qualified to teach in HVE, the programme managers' own ideas of the right background and qualifications for a teacher on their programme may determine who they choose to hire:

> When I started this job, I thought: "I'm going to have the best experts on everything, the sharpest in each profession", none of these, you know, professors who have no connection to reality. [...] But it didn't always turn out very well. (Programme manager C)

This programme manager favoured teachers coming directly from production in business and industry but had come to recognise the difficulty for these teachers of adapting their teaching and training to the level of knowledge of the students.

7   Discussion

This study has investigated the work of programme managers, focusing on their work with creating and updating syllabi and on their work organising the students' training. Syllabi for the studied programmes entail knowledge that is vocationally specific, and context bound thus giving programme managers the task to organise training for specific jobs. In line with the idea in policy (Köpsén, 2020b), the studied HVE programmes aim at providing a complete training making students independently proficient in their trade. The findings from this study highlight how practice in several ways may be difficult for programme managers without work experience in the relevant occupational field or knowledge in relation to it. Not

only in the work of forming and updating curricula, but also as they must be able to navigate the relevant sector of business and industry to engage appropriate employers for collaborations and to hire teaching staff. With no institutional regulations on teacher qualifications to fall back on, responsibility for evaluating what knowledge is needed to be hired as a teacher and assessing teachers' competences instead falls within the responsibilities of these programme managers.

In the contexts of HVE provision, teachers are considered legitimate if coming directly from the context of work. None of the programme managers talk about formal teaching qualifications as important if it's even mentioned. This conception of teachers in HVE could likely be explained as a discourse on HVE teachers formed in relation to policy defining knowledge for HVE as being legitimate only if coming directly from the production of goods and services (Köpsén, 2020a) and not requiring teachers to have teaching qualifications. However, ranking other aspects higher than teaching qualifications is not unique to the context of this study. Relevant and up to date vocational skills or role modelling are commonly valued (Fejes & Köpsén, 2014; Grollmann, 2008; Köpsén, 2014; Misra, 2011). Relevant vocational knowledge and relationships with the field are significant in teaching vocationally-specific knowledge, as in the case of HVE. And teaching qualifications are also important as they may strengthen the quality of training (Andersson et al., 2018; Fejes & Köpsén, 2014; Grollmann, 2008; Isopahkala-Bouret, 2010; Wheelahan & Moodie, 2012). Both vocational knowledge and teaching competencies in HVE programme managers and teaching staff would benefit HVE students' learning. Not only the learning of knowledge specifically stated in syllabi but also their overall development of vocational identities (Köpsén, 2014). Teachers with double competences as both workers and teachers can teach up-to-date practices, guide students in relation to normative roles in the occupational fields and serve as role models (Andersson et al., 2018; Fejes & Köpsén, 2014). Programme managers with these profiles would support HVE as cohesive programmes that achieve their purpose – to provide employers with work-ready students (Köpsén, 2020b). In HVE neither of these competences are guaranteed. Also, programme managers and teaching staff having teaching competencies and vocational knowledge could safeguard the presence, and relative power, of recontextualising agents in HVE with different vantage points than the employers. Having a multitude of stakeholders with power in recontextualisation could give space for a more pluralistic view on the purpose of education.

Looking at the Swedish system of vocational higher education as an example of the many internationally emerging VET systems with strong employer influence, and lesser public or national control, one important observation in this study is that the choice of teachers and the type of knowledge that is recontextualised for pedagogic discourse differ greatly between the locally conceptualised and managed programmes. Also, Ye's (2018) study set within an HVE context indicates yet another way of organising teaching. The differences

between programmes are important as they show that the pedagogic recontextualising fields of Swedish HVE enjoy great autonomy from the official recontextualising field. In the official recontextualising field, the knowledge to be selected for curricula in HVE programmes has been defined as knowledge generated in the production of goods and services (Köpsén, 2020a), yet the programmes studied show instances of knowledge varying between both production-based knowledge and disciplinary academic knowledge. Within the variations, the autonomous pedagogic recontextualising fields are thus both parallel and in opposition with the official recontextualising field (Bernstein, 2000). They are parallel when selecting knowledge for the programmes that has been generated in the production of goods and services – context-dependent knowledge in horizontal discourse – and in opposition when selecting knowledge based on science and research – vertical discourse of disciplines. In line with the trend of market relevance and employer influence in VET the local contexts of HVE programmes were given autonomy to ensure that the Swedish higher VET system delivers what employers need to be competitive (Köpsén, 2020a, 2020b). As shown by the findings presented in this article, the local autonomy of skill formation systems based on this logic, allows for major differences regarding knowledge in syllabi and the organisation of learning between programmes within the same national higher VET system. This is salient even with a small number of programmes having been studied. I suggest that these differences strongly support the importance of examining what happens in more autonomous local contexts of VET provision, especially those which are state funded. Who has influence over publicly funded education in these contexts, and on what do these stakeholders base their actions? This is crucial as stakeholders' actions and relative power have great significance on the training of students and the outcomes of taking part in a VET programme, both the vocational proficiency or employability outcomes and those outcomes which are more of societal positioning aspects linked to education.

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Biographical Notes

Johanna Köpsén, PhD in Educational Research: Adult Learning, works at the Department of Behavioural Sciences and Learning, Linköping University, Sweden. Her research interests focus on how curricula and course syllabi are created, interpreted, and applied in VET and education for adults and on the work of teachers in VET and adult education.

A Processual Perspective on Whole-Class-Scaffolding in Business Education

Rico Hermkes*, Gerhard Minnameier, Manon Heuer-Kinscher

*Faculty of Economics and Business, Department of Business Ethics and Business Education,
Goethe University Frankfurt am Main, Theodor-W.-Adorno-Platz 4,
60629 Frankfurt am Main, Germany*

Abstract

Context: Scaffolding is a form of process-adaptive learning support that is relevant in numerous contexts, including informal learning, workplace learning as well as school teaching. While scaffolding can be well conceptualised for individual learning situations (especially for tutoring situations), there is a difficulty in measuring process adaptivity in heterogeneous learning groups, such as school classes.

Approach: In this paper, we develop a measurement method that targets the deep structure of teaching and learning in whole class settings. Processes of shared knowledge constructions are taken into account, since whole-class-scaffolding (WCS) means to shape and develop common or joint knowledge spaces rather than to scaffold a multitude of individual construction processes at the same time. To achieve a coding procedure for WCS interactions, we integrate scaffolding principles and principles of dialogic teaching and explicated a set of rules that can be correlated to the quality of WCS-episodes rated on distinct Likert scales.

Results: The measurement method developed in the paper provides a solution to the problem of how to measure process-adaptive learning support that is not only related to individual learners, but is directed at a heterogeneous group of learners in which different support needs may be present simultaneously. The coding procedure systematically links scaffolding principles and principles of dialogic teaching and enables us to capture the dynamics of teaching and learning processes in larger group settings. In this respect, concepts such as joint- and common space, representing entities to which WCS refers, are operationalised.

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*Corresponding author: hermkes@econ.uni-frankfurt.de

Conclusions: When methods for measuring the dynamics of teaching and learning processes are available, research on instructional support is no longer limited to global ratings of whole learning units. Furthermore, the codings allow for a more fine-grained analysis of trajectories of scaffolding interactions. Such an analysis reveals information about local specifics of WCS that can explain further learning differences between students and that can be used to derive implications for effective instructional techniques.

Keywords: Scaffolding, Dialogic Teaching, Shared Knowledge Construction, Adaptivity, VET, Vocational Education and Training

1 Introduction: Scaffolding

Effective support of learning processes is a major remit of educational practice. On the one hand, learning should be active, open and self-directed. On the other hand, learners should not be left alone with learning difficulties, ambiguities or misconceptions. Finding an appropriate level of support therefore involves not only supporting students individually according to their abilities, but also being adaptive with respect to the course of learning itself. Such a tailor-made support is referred to as "scaffolding".

Scaffolding is investigated in numerous contexts, including informal and workplace learning (Dobricki et al., 2020; Greenfield & Lave, 1982; Khaled et al., 2014; Schwendimann et al., 2015), self-directed learning (Azevedo et al., 2011; Beckers et al., 2019; Kicken et al., 2008) and second language learning (Gibbons, 2015; Heatley et al., 2011). It is of particular importance in complex learning settings with many degrees of freedom and when situation-specific individual learner needs are to be taken into account. On the one hand, scaffolds can be implemented in the learning environment (macro-scaffolding). This includes the development of learning materials and the design of learning opportunities and tasks (e.g., worked out examples, Boldrini & Cattaneo, 2013). On the other hand, scaffolds can be built up successively by teachers, tutors or trainers in the course of the learning process to support individual knowledge construction or the co-construction of shared knowledge spaces (micro-scaffolding).

In the field of business education, scaffolding is studied in vocational educational settings, in higher education and in business contexts. Results show that scaffolding leads to a more positive classroom experience (students' overall satisfaction, motivation) and has a positive effect on achievement variables (knowledge acquisition, examination scores) (Yang & Liu, 2021). In higher education, scaffolding plays a role especially in promoting procedural learning (Cowen et al., 2011), deep learning (Green et al., 2015), critical thinking (Chandler et al., 2015) and in technology-mediated learning (Janson et al., 2020). It can be stated that scaffolding always plays an important role, when learners are engaged in authentic procedural

tasks (such as constructing a personal finance plan; Cowen et al. 2011) and in linking algorithmic procedures or process outcomes (e.g., statistical data) with "real-world-meaning" (Green et al., 2015, p. 325) in the context of economic problem solving or decision making. In addition, the scaffolding of social skills and the development of a corporate culture are focused on in business contexts and vocational training programs. For example, Remidez Jr. et al. (2010) show that scaffolding of the communication process in virtual teams supports the formation of trust between team members in a significant way.

Therefore, we may conclude that the function of scaffolding in the field of business education is no longer limited to the individual support of knowledge construction processes among learners. Rather, scaffolding techniques are systematically linked to (virtual) conversational discourses in order to promote collaborative real-world decision making in vocational and business contexts and to foster the corresponding skills among learners.

The problem, however, is that process adaptivity, which underlies the scaffolding concept (see Wood et al., 1976), is directed toward a single learner (or a homogeneous group of learners) and does not apply to heterogeneous learning groups or teams. Therefore, either normative assumptions must be made about which scaffolding techniques are adaptive to learning, or learning settings with only one or a few learners can be addressed (see Hermkes et al., 2018; van de Pol et al., 2017; Wischgoll et al., 2019). Against this backdrop it seems worth our while, or even necessary, to think about how to scaffold large heterogeneous groups, in particular entire school classes or groups of trainees. In other words, what we lack so far is a conception of adaptive whole-class scaffolding (WCS).

A promising way of conceptualising WCS is to incorporate principles of dialogic teaching and to use these principles when determining adaptivity of scaffolding interactions (Bakker et al., 2015; van de Pol et al., 2017). However, there are at least two aspects to consider. First, focusing on classroom communication would not be sufficient. Rather, the deep structures of teaching and learning would have to be captured. This means that knowledge construction processes and learning difficulties that arise among students have to be identified and understood. Second, we would have to get a handle on shared knowledge spaces constructed through collective activity, since whole-class-scaffolding means to shape and develop such dynamic spaces rather than to scaffold a multitude of individual construction processes at the same time. In this respect, different kinds of knowledge spaces have to be differentiated and a distinction has to be made between student solutions that are introduced into the classroom discourse for a critical discussion, on the one hand, and jointly constructed knowledge that all learners should possess in order to successfully complete subsequent learning steps, on the other hand.

The aim of this paper is to develop a method for measuring WCS based on the coding of shared knowledge space constructions taking place during classroom talk. In Section 2, we give a short overview of forms and principles of dialogic teaching. In Section 3, we introduce

the concepts of shared knowledge spaces needed for coding WCS. Based on these concepts, we develop the conception of WCS in Section 4 and explicate the coding procedure. Section 5 provides a conclusion and an outlook on the next research steps.

2   Classroom Discourse and Principles of Dialogic Teaching

As has been shown in numerous studies, the default pattern of classroom discourse is IRE, which stands for "initiation", "response", and "evaluation" (Atwood et al., 2010; Cazden, 1988; Greeno, 2015; Mehan, 1979; Wells, 1999). This tripartite form of classroom talk conventionally consists of teacher initiation, student response, and teacher evaluation (Cazden, 1988). Despite its frequent use, IRE is often negatively associated with superficial displays of previously learned knowledge (Newmann, 1990). It was found that questions initiated by the teacher during recitations tended to be asking for already-known answers and to involve lower-order thinking (Nystrand et al., 2003). IRE is often referred to as *recitation* (O'Connor & Michaels, 2007) and is identified as being monologic (Alexander, 2006) or authoritarian – in contrast to the approach where open dialogue and the exchange of students' ideas are involved (Nystrand et al., 2003). Moreover, students who have internalized the IRE-pattern tend to maintain their predominantly passive role in classroom talk. As Greeno (2015) puts it: "An individual learns to activate cognitive resources that prepare him or her to take turns that are likely to happen later in the sequence" (p. 257). In the case of the IRE scheme, this leads to students preparing for the 'response'-term but expecting that evaluation, feedback, clarification, correction, etc. will be provided by the teacher.

Bakhtin's concept of dialogical meaning-making entails that the learners play an active role in developing a personally constructed understanding of the curriculum through a process of dialogic interchange (Bakhtin, 1981). In this respect, dialogic forms of classroom talk such as exploratory talk or accountable talk also aim at "joint construction of knowledge in classrooms" (Mercer et al., 2019, p. 188). Exploratory talk enables the students to try out ideas and to see what others make of them (Barnes, 1976) whereas accountable talk involves students not only presenting their ideas or understandings but also explaining them to classmates (Resnick et al., 2018). The principle of dialogic teaching entails that *all* students are involved in the classroom discourse, which shifts the focus to participation. In this sense, students are encouraged to take responsibility for their statements and thus their own learning process. Ultimately, this results in the co-construction of knowledge. In contrast to IRE, expressing different views is encouraged – and needed in order to create a joint knowledge space.

3　Dialogic Teaching and Shared Knowledge Construction

Dialogic teaching aims to promote students' learning processes in phases of classroom talk. In this section, we focus on such classroom conversations in terms of co-construction of shared knowledge spaces. We differentiate systematically forms of knowledge spaces and reconstruct co-construction processes as inferential processes.

3.1　Co-Construction of Knowledge Spaces in Classroom Talk

The concept of knowledge spaces is well known in educational research (see Falmagne et al., 1990, 2013). However, depending on the domain and the research interest, knowledge spaces are defined in different ways. One such distinction concerns joint spaces and common spaces. Joint space refers to the set of all non-redundant contributions (propositions) in classroom talk up to the present time. The joint space constructed by the contributions grows accordingly with the duration of the class discussion. The concept of joint space has to be distinguished from the concept of common space. Common space refers to the knowledge shared (or to be shared) by all interactants and accordingly serves as the basis for subsequent learning phases. Therefore, one also speaks of common ground (Reusser, 2001).

A key difference between joint space and common space is that a joint space does not have to satisfy the property of consistency. Different mutually incompatible pieces of content can constitute it, e.g. when learners introduce fundamentally different solutions to a task or differ in their conceptual understanding of a certain issue (see, for example, the concept of sustainability in economic contexts; Vidal et al., 2015). In contrast, both consistency and coherence are required, or at least aimed at, for common space, since this kind of knowledge space is supposed to be structurally equivalent to cognitive structures of an individual. In other words, common space denotes the common understanding shared by a group of people, whereas joint space denotes the set of views or understandings shared by a group. Joint space requires that every member of the group understands the views expressed by other members of the group, but not that they endorse each other's views. Moreover, depending on the research focus, we can relate to the notion of common space in different ways (see Table 1).

Table 1: Definition of the Common Space-Concepts

Common space concept	Definition
Intended common space (CS_{int})	Common space as the educational objective the teacher plans to achieve for all students in a particular lesson, which can be reconstructed from the teacher's lesson plan
Potential common space (CS_{pot})	Common space that comprises all spaces that are compatible with CS_{int}; in this respect, it concerns the content of the overall domain beyond the selected CS_{int}.
Effective common space (CS_{eff})	Common space co-constructed in the course of a lesson; unlike CS_{int} and CS_{pot}, CS_{eff} is dynamic

The differentiation of the three types of common space makes it possible to precisely measure spontaneously occurring deviations in the course of the lesson. One type of deviations from the lesson plan concerns amendments, which occur when CS_{eff} contains elements that belong to CS_{pot} but not to CS_{int}. The respective contributions may be either made by the teacher (teacher's constructive activity) or permitted (learners' constructive activity) by them. The second type of deviations concerns digressions from the subject matter, which occur when CS_{eff} contains elements that do not belong to CS_{pot}.

An example from the lesson will illustrate the role that the relationship between spaces plays in coding decisions. In the subject matter of "procurement processes", the quantitative and qualitative criteria for the comparison of offers are an essential part of CS_{int}. This means that no (reasonable) lesson plan is conceivable without a well-defined set of quantitative criteria including delivery costs and discounts as well as a set of additional (qualitative) criteria that go beyond the calculated price (like sustainability, maintenance and durability of products). It is worth noting that the question of which of the qualitative criteria to include and how to weigh them depends on the type of product to be procured. If, for example, offers for office computers are compared, the teacher could spontaneously go into more detail about qualitative criteria like sustainability and durability and add some new aspects that were not included in the lesson plan. Thus, the teacher's remarks do not belong to CS_{int} reconstructed from the lesson plan. However, they are included in the reconstruction of CS_{eff} because they are part of CS_{pot} for this learning unit. If, on the other hand, the teacher explains hardware features or technical details and how they work, then such explanations would belong neither to CS_{int} nor to CS_{pot}. As a consequence, these explanations would be excluded from empirical reconstruction of CS_{eff}.

It should be emphasised that the common space does not only concern the learning objectives, but also the understanding of the learning problems. Therefore, the common space (CS_{eff}) also indicates whether the learners have a shared problem, they are working on (see section 3.2.1).

Albeit implicit, the concept of a shared knowledge space is also contained in the concept of the "collective student". As Bromme and Steinbring (1994) put it, the collective student "is constituted from the contributions of the various individual students" (p. 243f). From a cognitive point of view, this just corresponds to the joint space: "The classroom dialogue between the students and the teacher then results in the joint representation of the subject matter" (p. 244). Moreover, as Bromme and Steinbring point out, this kind of instructional dialogue occurs mainly with experienced teachers, while novices tend to treat "the contributions of individual students as statements of individual learners. Hence, the discourse of the lesson is fragmented into the subtopics of individual students or student groups, and has no consistent dialogue referring to connected topics" (p. 244). In order to reconstruct co-construction processes and the emergence of knowledge spaces, the inferential conception can be employed, as will be shown in the next section.

3.2   Cognitive Modeling of Co-Constructive Processes

In the following section, we introduce the inferential approach. This approach enables a cognitive modeling of classroom conversations and allows us to differentiate co-constructive processes of different knowledge spaces. Moreover, the inferences can be considered as specific steps in problem-based learning cycles.

3.2.1 Inferential Approach to Knowledge Construction

Successful collective co-construction of knowledge requires that the teacher and the students create a common space with respect to the task and the goal of the respective lesson, that learning unfolds from there in a joint space, so that each individual is able to follow the discourse and participate in it, and that finally the teacher and the students end in a common space of knowledge, as far as the educational goals are concerned. How can we describe the states (especially initial and final common space) and the processes from a cognitive point of view?

We suggest an inferential approach to knowledge construction, in which the whole course or lesson, but also specific learning tasks can be reconstructed as a sequence of (i) stating premises (which may include, for example, prior knowledge or the task at hand), (ii) deriving results and (iii) drawing conclusions. Any reasoning starts from premises, produces results, some of which are dismissed and some retained, based on final conclusions.

This is not restricted to deductive inferences. Modern logic is much broader and covers also inductive and abductive inferences. With this move, logicians aim at naturalising logic in the sense of developing formal models that allow us to reconstruct (all) the ways in which real people think – whether they think correctly or whether they make mistakes (Woods, 2013, 2017).

Thus, analysing scaffolding from a logical point of view means that we have to understand the specific inferences learners are involved in, how they form premises, come up with results and evaluate them, so that teachers can join them in their inferential states and processes and guide them along by, e.g., hinting at neglected aspects, false premises or conclusions and so forth. Not only deduction, but also all other inferences we are going to distinguish, run from premises to conclusions. In particular, making an inference can be described as a cognitive process including three characteristic sub-processes, i.e. (1) gathering the premises from which to infer something, (2) observing to premises in order to discover some result, (3) establishing whether the result actually follows from the premises.

Based on Peirce's original approach (see Minnameier, 2004, 2010, 2017), we differentiate between three basic types of inferences, which are abduction, deduction, and induction. And

we call the three subprocesses that apply to any inference "colligation", "observation" and "judgement" (according to Peirce, 1893/1932 [CP 2.442-444][1]; see also Minnameier, 2017).

In the following subsections we introduce the inferences, then discuss how they are combined in problem-based reasoning. Finally, we add a brief account on what we call "inverse inferences".

3.2.2 Abduction, Deduction and Induction

Abduction is the inference that starts from a puzzling situation, e.g. consisting of incoherent explanation-seeking phenomena, with the aim to explain them, i.e. to derive a coherent account of those phenomena. For instance, in business education students might be confronted with the situation where a company manufactures a product that yields losses rather than profits, and continues production rather than stopping it. Assuming that the management is not irrational or ill-motivated, how could this be explained?

This is a typical abductive question. As an inference it starts by colligating the relevant premises as described, which are then observed in order to find a coherent account. Ideas in this respect will spring to the mind spontaneously in the phase of observation. However, not all these ideas necessarily fit. Therefore, the final judgmental part consists in evaluating whether the generated ideas really remove the problem. If they do, the abduction is valid. For instance, differentiating between fixed and variable costs allows us to solve the above-mentioned problem, because selling at a loss is rational as long as it yields positive contribution margins (that cover the variable and at least part of the fixed costs, which the firm incurs anyway). Grasping the very idea pertains to observation, accepting it to judgment.

Note that abductive validity does not imply or entail that the account be "true". This is why there can even be a number of accounts that are all abductively valid at the same time, although they might exclude each other. In science, this denotes the all too familiar case, in which theories compete with each other. They are all explanatory valid, although only one can actually be true (if they are not false altogether, which is also possible).

Deduction starts from such theoretical accounts and allows us to infer consequences of them, based on additional premises from our background knowledge. In particular, we can deduce what we would expect under certain experimental conditions (or what we could rule out based on those premises). Again, it starts with colligating premises, leads to observations of results which are finally analysed to make sure that the consequences really follow *necessarily* from the premises. Since deduction essentially means that the conclusions are already implied by the premises, this is the essential criterion for deductive validity.

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1 Instead of page numbers we refer to the standardised reference to Peirce which indicates the work (CP as in "Collected Papers", followed by the numbers of the volume and the paragraph).

Deducing what would have to happen, based on a theory and suitable situational conditions, is one thing. Observing and evaluating what happens in reality is something else. Hence, deduction pertains to deriving empirical hypotheses, while *induction* pertains to testing them. The colligated premise of induction consists of those empirical hypotheses and the experimental result as it has occurred. This is then observed with respect to the question, whether it confirms the theory or not (or maybe even disconfirms it).The final judgement can be that the theory is confirmed (so far)[2] or disconfirmed, or that the matter is unresolved as yet and requires further probing.

3.2.3 Problem-Based Reasoning, Inferentially Reconstructed

Problem-based learning is currently something like the gold standard in modern didactics. Therefore, we reconstruct in inferential processes that characterise problem-based reasoning in its entirety. Abduction is often regarded as the starting point. However, since it presupposes a problem, a natural process of inquiry does not actually start with abduction but with the *induction* of a (new) problem.

Cognising and actually seeing a new problem can be understood as an inductive process. For instance, if an experiment does not yield the expected results or if a medical treatment fails, we might first explain this (away) by drawing to additional and hidden causes and retain the underlying theory. However, if such anomalies persist and if no good explanations for them are available, our belief in the theory might not only be reduced in degrees, but collapse altogether. This discontinuity indicates an inductive inference, in which the previous positive judgment is overridden by a negative one, i.e. the agent gives up a previously held belief, which raises the (new) problem of what to think and believe instead. This is a *negative* induction in that it does not lead to establishing the truth of a theory but its falsity, and therefore has the function of cognitive disequilibration. Hence, first a problem must be induced, before it can be solved across the triad of abductive, deductive and inductive reasoning, i.e. searching for possible explanation, deriving consequences and test hypotheses so as to determine which candidates for a solution should be chosen in the end.

The standard case for problem induction is that certain phenomena disconfirm established theories or other kinds of prior knowledge, which are revealed by a suitable experiment. However, problem induction could also refer to demonstrating that certain common strategies in one's occupation fail to work, e.g. craftsmen who realise that the tools and techniques they commonly use are inapplicable or inappropriate for a certain task.

This takes us to a second important point to notice with respect to problems. Abduction is mostly discussed in the context of explanatory problems, based on the observation of surprising phenomena. However, the inferential approach lends itself also to problems of strategic or technological reasoning, which do not aim at truth or falsity but at effectiveness

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2 It is one of the main tenets of pragmatism that nothing can be ultimately confirmed. Rather, any confirmation can only relate to the current state of affairs and past experiences, while any new knowledge or experience might either reconfirm theories but also call them into question. Hence, any future application of knowledge implies (implicit) retesting.

or ineffectiveness of certain courses of action in relation to the goals agents pursue. Moral or ethical problems constitute yet another domain, where the aim is to determine what is just or unjust. Thus, there are at least three fundamentally different domains of reasoning, and all the cognitive processes of seeing and solving the respective problems can be precisely understood, and scaffolded, based on the inferential learning theory (see Minnameier, 2017, 2019).

3.2.4 Inverse Inferences

So far, we have explained reasoning processes in (ordinary) feed-forward loops. However, inverse inferences, which proceed in the opposite direction, are possible as well. Peirce himself coined the idea of "theorematic deduction" as opposed to "corollarial deduction", which we interpret in this very sense of an inverse inference and extend it to abduction and deduction (see Minnameier, 2017, for a detailed account). Mathematical proofs are the paradigmatic example for inverse (or theorematic) deduction, which run from the theorem to be proved to the premises from which it can be derived deductively. Therefore, the theorem is the result, the conclusion, of an ordinary deduction.

As for abduction, the inverse inference starts from some theory and asks for concrete examples of it. For instance, a teacher might explain the concepts of fixed and variable costs and ask for examples in the car manufacturing industry.

Inverse induction starts from the result of ordinary induction, i.e. the confirmation or disconfirmation of some theory and ask what kind of experiment – or empirical research setting in general – would confirm or disconfirm the theory. A paradigmatic example is the crucial experiment based on the original Einstein-Podolsky-Rosen paradox (Einstein et al., 1935) that was carried out by Aspect et al. (1982). Only one experiment was sufficient, because it was clear from the outset that the outcome would immediately (dis)confirm quantum nonlocality (which Einstein considered an absurd idea but which was actually confirmed).

In everyday life, inverse induction is relevant when it comes to convincing others of a certain strategy or a belief, which we think is correct. Here, we reason backwards form our own conviction to derive a certain experience or thought experiment (based on previous knowledge) that should immediately convince our counterpart or disconfirm their beliefs or reservations.

4   Whole-Class-Scaffolding: A Conceptual Approach

In the following, we develop a conceptual approach for whole-class-scaffolding, based on the inferential reconstruction of student learning processes, and present a coding procedure for measuring such scaffolding processes.

4.1 Dynamics of Whole-Class-Scaffolding

Scaffolding interventions start when learning difficulties arise. On the one hand, learning difficulties can be hurdles that the learners face and cannot overcome without teacher support. In classroom talk, this is the case when grounding does not succeed and, accordingly, not all learners reach common ground. On the other hand, learning difficulties may be misconceptions that have been formed along the learning path and are now being carried along. The presence of such misconceptions may not necessarily have been noticed by the learners until then. In student group discussions this occurs when a wrong solution is agreed upon (common space). Accordingly, common space and CS_{eff} are disjunct sets.

WCS aims to achieve CS_{int}. CS_{int} can be reconstructed from the lesson plan by including the explicated learning objectives. We have reconstructed CSpot for the teaching unit (cf. 4.2). That is, CS_{int} can be obtained as a subset from CS_{pot}.

To identify learning difficulties, we use videotaped tablet streams to code the current *student level of attainment* at the beginning of a classroom discussion period (see Hermkes et al., 2018). If the discussion takes place right at the beginning of a lesson, then a default value is assumed and this default value is corrected if learning difficulties become apparent in the course of the conversation (e.g., learners make erroneous contributions to the conversation, ask questions, or are unable to give answers when asked by the teacher to contribute).

Process adaptivity of WCS is represented by the variable *teacher strength of intervention* (TSI; Hermkes et al., 2018).[3] The variable is ordinally scaled. Table 2 shows the six values of this variable. Note that "revealing the solution" (TSI = 4) in problem induction tasks can also mean that the teacher explains the problem, thus establishing common ground regarding the task.

Table 2: Teacher Variable "Strength of Intervention"

Teacher Strength of Intervention	
0	Diagnostic utterance/ mere confirmation
1	Indexing an element of the knowledge space constructed by the students
2	Explicit judgment of falsity (or correctness) of an element of the knowledge space
3	Introducing a new element in knowledge space
4	Revealing the solution (intended knowledge space)
5	Explaining the revealed solution

The higher TSI, the more constructive activity is taken over by the teacher (input into CS_{eff}, transformation of CS_{eff}) and the lower is the learners' activity. Conversely, low TSI values

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3 Note that only micro-scaffolding is considered here. Macro-scaffolding in structuring the learning content and sequencing the lesson etc. is not included.

mean that the teacher encourages the learners' own constructive activity. This can be done by directing the learners' attention to certain facts (indexing; TSI = 1) or by giving feedback as to whether a contribution is correct or incorrect without already correcting errors that have occurred (TSI = 2).

4.2 Reconstruction of Potential CS for the Teaching Unit

The lessons analysed in the study are located in the learning field "procurement processes" and include the quantitative and qualitative comparison of offers. Carrying out a quantitative comparison of offers requires the development of a calculation scheme that includes all relevant cost factors. Qualitative comparison of offers involves conducting a utility analysis that includes, for example, social and ecological aspects. In order to decide on the ultimately best offer, it is necessary to integrate both procedures. This can be done in various ways. For example, cost factors can be included as one aspect in the utility analysis. In any case, integration leads to a higher level of abstraction where quantitative and qualitative factors can be assessed within a unified concept of "value creation". Figure 1 shows the inferential architecture of the learning unit in which each lesson can be placed.
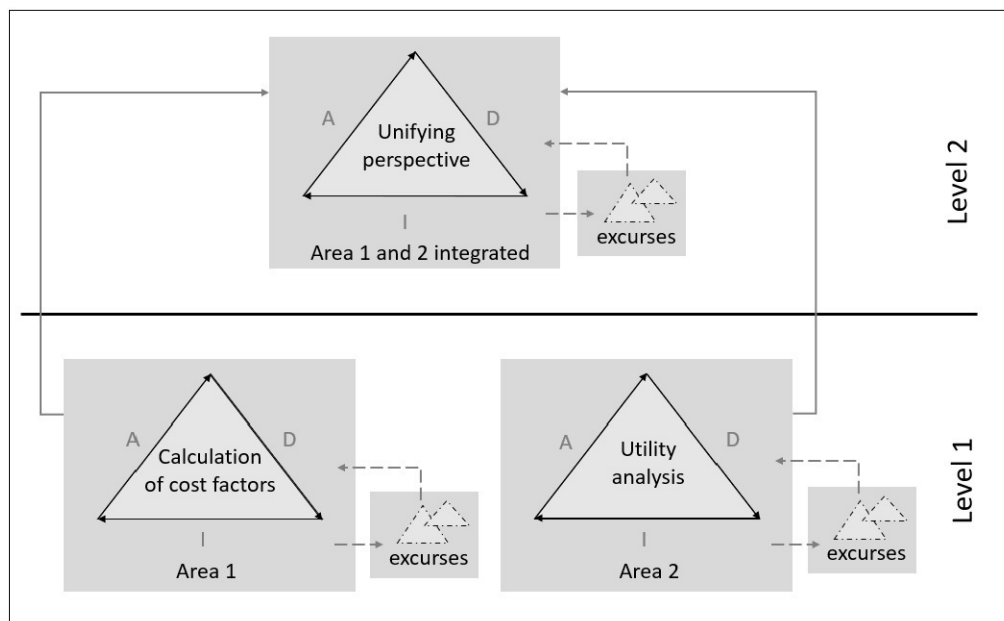
Figure 1: Inferential Architecture of the Learning Unit;
A = Abduction, D = Deduction, I = Induction.

The architecture comprises two levels. The lower level is divided into two areas. The area on the left concerns cost factors (quantitative comparison of offers), the area on the right concerns qualitative criteria (utility analysis). A conclusion for the best offer can be drawn separately in both areas. The two areas are integrated at the upper level. Integration can also take place in iterative steps. For example, in the area of qualitative criteria, social aspects can be first integrated to decide on a best offer. In subsequent steps, further aspects like sustainability can be added so that a complete integration can be achieved iteratively.

The characteristics of learning processes (knowledge co-construction) are represented by the triangle. Each triangle indicates an inferential cycle consisting of abduction, deduction and induction (as explained in section 3.2). Moreover, classroom talk can go beyond the predefined areas. Such additional elements, which are part of the CS_{pot} (see 3.1), can themselves have an inferential structure. In Figure 1, this is represented by the fields labelled "excurses". As the arrows indicate, excurses should be inferentially linked to the respective content areas.

4.3 Coding Procedure

Against the background of the learning goals and content explicated in the previous section, the coding procedure for whole-class-scaffolding can now be introduced. The procedure includes the sequencing of the lesson and the corresponding learning steps, the coding students' knowledge construction processes that take place within each sequence and the assessment of the adaptivity of the resulting scaffolding-interactions.

4.3.1 Sequencing of the Lessons and Identification of Student's Learning States

The course of a lesson can be modelled as a series of sequences, each of which involves a specific process, such as working on learning tasks, shared knowledge construction in classroom discussions practice, consolidation, or performance assessment. The basis for sequencing is the lesson plan developed by the teacher. For the measurement of scaffolding, learning tasks and co-construction processes in class discussions are of particular importance. When focusing on WCS in classroom discussions, one problem is that heterogeneous learning states may exist among students to which scaffolding must be adapted. Some students may have successfully completed the previous learning task or step, others are slower and still in the middle of the process. Yet others are stuck at a certain point and cannot move on or may not even have understood the task.

The state vector of the variable *student level of attainment* reflects the students' capabilities and predicts the quality that a classroom discussion can have on shared knowledge construction. If the students are completely ignorant, then there is an increased likelihood that teachers will be misled into taking on too much of the constructive activity themselves and the students are only left to comprehend the explanations. The problem for the students

then is not only to understand the teacher's contributions, but also to systematically integrate them into existing knowledge structures. The challenge in operationalising the construct of WCS, then, is to relate adaptivity in scaffolding not just to particular students or an imagined "average student" but to the heterogeneity of the class.

4.3.2 Shared Knowledge Construction Processes and Adaptive Scaffolding

Sequences involving knowledge co-construction processes can be reconstructed as single inferences or inferential cycles. Joint space and common space have different relevance at different points of a cycle. Common space is most relevant in problem induction at the beginning of a cycle, because the teacher has to make sure that all students understand the basic problem, as well as in the final (confirmatory) induction. In contrast, between these two fixed points in the process, alternative routes of inquiry and construction are possible, if not desirable – in particular if students are meant to be creative in solving problems. In this respect, joint space becomes relevant, because students ought to be able to partake in and benefit from each other's ideas and thoughts. Joint space in whole-class interaction means that students can learn from each other and engage in fruitful classroom discourse (leaving no one behind). Accordingly, WCS would basically have to scaffold joint space, i.e. teacher interventions would have to aim at upholding joint space and instigate inferential moves within it.

Depending on where the classroom discussion starts, co-construction processes are related to either joint space or common space (or both). If learners are first allowed to present their abductive thoughts and ideas (or even complete inferential cycles including deduction and induction), their aim is to create and uphold joint space, in which the different approaches are evaluated for their own sake and in comparison to competing approaches. Ultimately, the comparative analysis should converge to a common space brought about by eliminative induction.

Figure 2 shows how the co-construction of knowledge spaces occurs through inputs from learners and teachers. Adaptive scaffolding implies that the teacher does not take over any constructive activity that the learners are capable of doing.
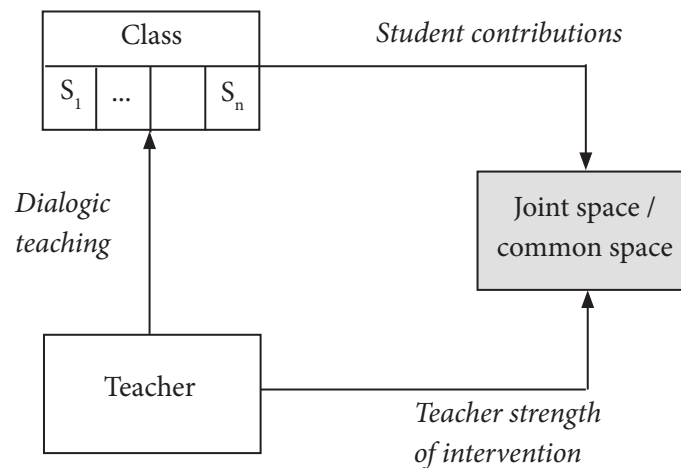
Figure 2: Joint/Common Space Construction by Students si and Teacher.

The constructional activity of the teacher is represented by TSI. In addition, the teacher initiates classroom talk and establishes discourse rules (arrow from teacher to class/students), also in order to let students provide the necessary support and engage them in mutual support. Student contributions can be ordinary questions, answers or comments, which can include misconceptions inferential mistakes.

To capture adaptivity, Wood et al. (1976) formulated the *contingent-shift-principle* (CSP). "Contingent shift" refers to the trajectory of teacher interventions over the course of learning, given a student's learning state (for details see Hermkes et al., 2018). Such a trajectory should develop as follows:

(1) At the beginning, students' solutions and ideas should be debated discursively in class. In establishing such a discourse, the principles of dialogic teaching play a role (accountable talk, exploratory talk; cf. Section 2). Learners should do the main part of the co-constructive activity, not the teacher. Initial teacher activities concern TSI of value 0, which codes for (merely) *diagnosing* students' level of attainment or confirming their contributions and encouraging them (a purely communicative function, not to be understood as a judgment of correctness or incorrectness of students' contributions). Since it is a true zero of the TSI scale, such activities do not constitute interventions in students' knowledge construction processes. (2) When a learning difficulty (misconception, inferential mistake) occurs, the teacher intervenes and actively participates in students' knowledge construction processes. The contingent-shift principle applies here: Starting low and if it does not help learners to progress, then successively increasing the strength of intervention.

(3) When the learning difficulty is overcome, the teacher should start fading, i.e. the students get back the responsibility for the construction of the joint or common space.

A critical issue is how to deal with heterogeneity that exists among students. This problem involves two aspects. One is the question of how the teacher should deal with overt heterogeneity. The other is the question of which coding rules to apply when heterogeneity and students' need for support are unknown?

A promising solution strategy is to combine the rules of adaptive scaffolding with the principles of dialogic teaching and social learning (see Fernández et al., 2001; Ramstead et al., 2016). In dialogic teaching, all students are involved in the classroom talk, so that the likelihood that learning difficulties will be revealed is increased. Moreover, students are encouraged to take responsibility for their learning process and to carry out the main part of the constructive activity. In this respect, dialogic teaching is in accordance with the contingent-shift principle. However, the general principles of dialogic teaching have to be translated into a set of coding rules. The rules must ensure that a reliable and sufficiently fine-grained measurement of specific teaching and learning processes can be carried out.

We start by introducing rules that map the principles of dialogic teaching (first and second rule) and combine them with CSP (third and fourth rule) to operationalise contingent WCS:

(1) Participation and joint progress: The teacher involves all students in the classroom talk. Since the discussion is conducted in the spirit of a generative co-construction of knowledge, the reaction to the students' contributions does not have to come from the teacher (as in the IRE-scheme). Rather, other students have the opportunity to express their views on the contributions of their classmates. So, the teacher would pass the ball on to other students rather than playing it back to the student directly.

(2) Engaging differences: Different solutions and ways of solving problems are allowed. The students can bring their ideas, strategies and points of view into the discussion, but are also required to justify them and relate them to other viewpoints. This holds in particular when the aim is to create joint space.

(3) Corrective intervention: Once false statements or judgements are contributed, which are not corrected by the students themselves, the teacher has to intervene (albeit according to the rules of contingent support).

(4) Remedial support: If contributions by other students are non-contingent and cannot be understood properly by those with the learning difficulties, the teacher would either have to engage other students to close the gap or intervene in order to provide contingent support to meet the learning difficulties.

These rules function as guiding principles for contingent WCS. Teachers may follow them only implicitly, and they may not meet them in every respect all the time, because they lack information about each student's state, because they may not be able to engage every student,

and because they cannot determine the students' contributions in dialogic sequences. They can only call up students wisely (so that they might deliver contingent support) and react to their statements. However, based on these combined principles, we aim at rating WCS-episodes with respect to their adaptivity.

4.3.3 Rating and Coding Whole Class Scaffolding

To analyse WCS, we suggest a combination of (more coarse-grained) ratings and fine-grained codings of specific scaffolding episodes. A prerequisite for both is the sequencing of the lesson to determine the units to be rated and coded. This leads to the following steps:

1. Sequencing the lesson: Using the inferential approach, the sequences (problem induction, abduction, and so forth) are identified. If available, teachers' lesson plans can be used as basis. However, since teachers might deviate from their plan, we have to reconstruct the actually implemented lesson based on the videos. With respect to WCS such sequences may be further divided, where necessary, into subsequences in which first joint space is created and a subsequent one in which common space is created. Moreover, a WCS phase may relate to different learning problems, so that a sequence could be subdivided accordingly. Overall, this procedure yields a set of separate and thematically distinct episodes that are the units to be rated and (later) coded.

2. For the rating of the co-construction processes with respect to their adaptivity, we use three analytically distinct three-point Likert scales (0 = not applicable, 1 = partly applicable, 2 = fully applicable). The first scale concerns the students' attentiveness, i.e. whether they are on task or not. The second measures the extent to which the teacher engages students in the co-construction process, i.e. passes the ball on them or back to them and keep a constructive whole-class dialogue going. The third relates to the logicality of this whole-class conversation, in particular whether and how the teacher monitors and moderates the logicality of this dialogue. These three scores are finally added to yield an overall seven-point Likert scale (0 to 6) for the adaptivity of WCS.

The coding of scaffolding episodes within the sequences is carried out in two steps:

3. Identifying students' learning states (including learning difficulties): This can be done based on (video) data, which show the students' learning status at the beginning of a class discussion. In both cases, students' learning states can be determined on the basis of the inferential taxonomy and thus assigned to the knowledge construction processes according to their inferential reconstruction.

4. Coding of shared knowledge construction: This includes the variable *teacher strength of intervention* for teacher contributions as well as students' contributions to the creation of a common or a joint space (see Fig. 1 above). Rules derived from the CSP are used to assess the contingency of the coded scaffolds (see Hermkes et al., 2018).

The rating and coding measures can be triangulated, since high scores in the more intuitive global rating should be correlated positively with highly-adaptive scaffolding interactions in terms of the rule-based codings.

5   Conclusion

In our paper, we developed a scaffolding conception that not only concerns the communication structure of classroom interactions, but also targets the deep structure of teaching and learning. Processes of shared knowledge constructions are taken into account, since WCS means to shape and develop common or joint knowledge spaces rather than to scaffold a multitude of individual construction processes at the same time.

It should be noted, that the focus on processes of shared knowledge construction is also associated with an important limitation concerning coding step 4: It requires a minimum level of subject knowledge on the part of the coder. The coding of shared knowledge spaces is based on correct contributions articulated in classroom conversations. Erroneous contributions should be identified so that they do not enter the constructed knowledge space. This also applies to cases where false contributions are simply ignored and not corrected by the teacher. To ensure the necessary expertise among coders, a more detailed coder training would be required.

Nevertheless, by focussing on processes of shared knowledge construction and integrating scaffolding principles and principles of dialogic teaching we have achieved a valid procedure for coding scaffolding interactions (WCS) and explicated a set of rules that can be correlated to the quality of WCS-episodes rated on distinct Likert scales. These results enable the creation of research variables that can be empirically studied as predictors of student learning outcomes. Furthermore, the codings allow a more fine-grained analysis of trajectories of scaffolding interactions that occur, for example, in the context of collaborative decision-making- or problem-solving processes in (heterogeneous) groups, or in the development of group-level variables such as trust in teams and working groups. Such an analysis reveals information about local specifics of WCS that can explain further learning differences between students or group members, as well as differences in the developmental dynamics of group-level variables between different groups.

Acknowledgement

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Biographical Notes

Rico Hermkes, Dr rer. pol., works as a researcher at the Chair of Business Ethics and Business Education at Goethe University Frankfurt am Main. His research is focused on teaching quality, tacit knowledge, intuition and embodiment, interaction dynamics.

Gerhard Minnameier, Dr rer. pol., is full professor of Business Ethics and Business Education at Goethe University Frankfurt am Main. His main research focus is on the inferential theory of reasoning and learning, moral development and agency, ethics and economics.

Manon Heuer-Kinscher, M.A., works as a doctoral student at the Chair of Business Ethics and Business Education at Goethe University Frankfurt am Main. Her research is focused on teacher education and teaching quality.

Input From the Grassroots Level — Reflecting Challenges and Problems for VET Professionals in Germany

Sebastian Anselmann[1][*], Stefan Harm[2], Uwe Faßhauer[1]

[1]*University of Education, Oberbettringerstraße 200, 73525 Schwäbisch Gmünd, Germany*

[2]*University of Rostock, Ulmenstraße 69, 18057 Rostock, Germany*

Abstract

Context: Often, vocational education and training (VET) professionals are not systematically prepared for their demanding, mostly diverse and complex tasks. Professional development can be understood as an enlargement of competencies that arise as opportunities in daily work. This study, embedded in a funded research project, focuses on VET professionals and their professional development. The research question is as follows: What challenges and problems regarding their professional development, as well as possible solutions, are described by training professionals in VET in Germany?

Approach: The goal of this study is to discover what challenges VET professionals face and how they cope with them. Accordingly, this research was formalised with the following components: (A) An explorative study with group discussions (*N* = 53 participants in six groups) and (B) result validation with German VET experts (*N* = 10). The data were recorded, transcribed and analysed using qualitative content analysis.

Results: Using a theory-based category system, the group discussion results were summarised in 12 systematic, organisational- and individual-level statements. The statements indicated that despite the necessity of formal professional development in the area of further training, most VET professionals must still be able to profit from offers at or below the German Qualification Framework (DQR) level 5. Many VET professionals ultimately sought

*Corresponding author: sebastian.anselmann@ph-gmuend.de

visible recognition of their activities or personal commitment with regard to pedagogical and company-economic functions. The 10 VET experts also evaluated the 12 statements as important.

Conclusion: The results of this study show that there is a huge need for qualification and learning opportunities for VET professionals. The demand is mostly for modern, tried-and-tested concepts and central themes, such as action and competency orientation, practice and transfer orientation, individual and structural reflection, media competency and learning support in all formats and at all levels.

Keywords: Continuing Vocational Education and Training, VET, Critical Analysis, Education and Training Opportunity, Qualitative Research, Relevance of Education and Training

1 Introduction

Recent research approaches consider the importance of teaching and educational professionals as key figures in successful learning (e.g., DiBenedetto, 2019; Fernández, 2013; Hattie & Yates, 2013; Winch, 2020). This also applies to vocational education and training (VET): In-company and external personnel for continuing education and training are central to successful formal learning, education and training processes, and thus, they are a decisive factor in the success of the German VET system. VET trainers, coaches and teachers also shape the VET framework conditions and dual courses of study, and as innovators in learning venues, contribute to preparing (future) employees for changes in the working world, such as digitalisation (Barabasch & Keller, 2021) or internationalisation (Li & Pilz, 2021). In addition, they actively participate in shaping personnel and organisational development processes in companies. In times of skilled worker shortages and changes in young people's educational choices, they can make important contributions to the quality development of a VET system.

It is known that the VET system in Germany is different from VET systems in other European countries (e.g., Renold et al., 2017). These differences can be found, for example, in the dual system and separation of training and practical school phases, VET professionals' qualifications and the responsibility of enterprises to organise training phases (Sloane et al., 2018). The presented study is embedded in a funded project aiming to discover new ways to foster and establish professionalism in the German VET system. This study focuses specifically on VET professionals, such as trainers, coaches and teachers. In the past, VET professionals in Germany were not systematically prepared for their demanding, mostly diverse and complex tasks (e.g., training dropout, heterogeneity, inclusion, new methods of training and employment and use of digital media for education and training; Clarke et al., 2021; Deißinger, 2019; Gázquez et al., 2021). There is no uniform education or standardized training for them to achieve a specific qualification level. What is necessary and not offered by others until now

is a qualitive approach to identifying the needs, challenges and potential of the VET sector, starting with the people involved in the daily process. According to Harm (2021) there is a wide range of tasks to be fulfilled by VET trainers, coaches and teachers. Depending on the deployment and on the level of hierarchy this could be on the level of training (Bahl, 2018; Brünner, 2014; Clark et al., 2021; Harm & Neumann, 2020; Klein et al., 2020):

– Creating and further developing of training concepts, methods and documents.

– Conducting regular seminars, courses or trainings.

– Supporting trainees in preparing for final examinations.

– Developing and maintaining of the training equipment (platforms, documents, etc.).

– Evaluating and assessing training activities that have taken place or are planned.

– Ensuring and further developing the internal knowledge level in close cooperation with product managers, marketing and sales.

Depending on the deployment and on the level of hierarchy this could be on the organizational level (Brünner, 2014; Clark et al., 2021; Di Maio, 2021; Elbers et al., 2021; Rintala & Nokelainen, 2020):

– Strategic further development of structures and processes in the area of vocational training.

– Central contact for all those responsible for training in the departments and ensuring high-quality support for trainees and interns.

– Maintaining contacts with business partners, cooperation partners from other enterprises and the vocational schools.

– Ensuring that all relevant core and specialist skills are taught in accordance with training regulations.

– Concepting and implementing of qualification offers for trainees and training managers as well as ensuring individual support for trainees.

– Implementing of the recruiting process and joint management of an attractive trainee marketing program.

– Planning, organizing and supporting training projects.

Apart from regional or political characteristics these tasks are universal applicable throughout countries and companies.

The goal of this study is thus to discover what challenges VET professionals face and how they cope with them. Consequently, the research question is as follows: What challenges and problems regarding their professional development, as well as possible solutions, do German VET professionals describe?

This study's aim is to enable activity-based educational and occupational biographical professionalisation for in-company vocational training personnel. It incorporates the perspectives of relevant players and institutions from VET research, practice and policy.

2 The German VET System

In this section a short overview about the German VET system is given. This will briefly cover the system in general and the training for VET professionals.

2.1 Brief Overview of the German VET System

The German 'dual' training system enjoys an excellent international reputation (Clarke et al., 2021; Oeben & Klumpp, 2021). According to many experts, German skilled workers form the basis for technically sophisticated, high-quality production and Germany's success in exporting correspondingly high-priced goods (Pilz & Wiemann, 2021). One characteristic of the dual training system is its two places of learning—the vocational school and the company. This ensures that theoretical learning is combined with practical learning and work experience. Most training takes place at the company, occurring three to four days per week. The training starts with a training contract between the trainee and the company. During the training period, which usually lasts three years, vocational schooling is compulsory (Hippach-Schneider et al., 2007). Trainees also receive a salary that increases as their vocational training progresses.

Solga et al. (2014) as well as Hippach-Schneider et al. (2007) draw attention to another special feature of dual vocational training is its 'corporatist' control—that is, the equal participation of the state and industry: The state defines the framework conditions and standards for training via the Vocational Training Act (BBiG) and the Crafts Code (HwO; rights and obligations of trainees, remuneration, suitability of training facilities and training staff, regulations on the final examination, etc.) (Solga et al., 2014). On its side, industry influences vocational training in that the social partners—the employers' associations and the trade unions—determine learning content and conditions for individual training occupations, which are then laid down in corresponding training regulations (Brockmann et al., 2008). The Federal Institute for Vocational Education and Training (BIBB) prepares training

regulations and takes the lead in drawing up the drafts of the training regulations with experts from vocational practice; in the process, attention is also paid to coordination with the framework curricula for vocational schools, which are drafted by experts from the federal states (Bahl, 2018; BIBB, 2021).

The involvement of the business community ensures that training imparts the knowledge and skills that are truly needed in working life (Clarke et al., 2021). Referring to BIBB (2021) the involvement of the state via the BBiG, the HwO and training regulations in turn guarantees that companies in Germany must adhere to clear rules when providing training. This standardization of training across all companies creates an unique feature among the international training systems. In Germany, quality standards are maintained and skills are trained that are relevant to the economy as a whole and not just to a specific company. Thus, people with dual training qualifications can also use their acquired knowledge in different companies and move more easily from one to another (BIBB, 2021; Federal Ministry of Education and Research [BMBF], 2021).

2.2 VET Trainer Professionalisation in Germany

A key role in the training system involves the VET professionals. The German Ordinance on Trainer Aptitude (AEVO) is the minimum standard for all VET trainers, coaches and teachers in the field of vocational education. By attending and passing the AEVO, VET professionals should gain a set of clearly structured competences that are meant to be important for their role as in-company educators and are embedded in the daily working routines. These competences are settled among four areas of vocational training—namely, planning, preparing, assessing and implementing. The overall goal is to foster competences that are essential for becoming a competent VET trainers, coaches and teachers. Despite all regulations, the curriculum of the AEVO is broadly formulated rather than based on fixed standards. It becomes increasingly evident that the AEVO functions more as a training authorisation and less as a minimum qualification (Elbers et al., 2021). In addition, it cannot ensure the didactic-pedagogic preparation of skilled workers undergoing training as VET trainers, coaches and teachers (see Bahl & Brünner, 2013; Gössling, 2016; Solga et al., 2014).

To meet the high demands placed on in-company training personnel in continuing VET and to facilitate their strengthening and professionalisation, the reinstatement of the AEVO has already enacted two uniform, nationwide continuing training regulations for *Certified Continuing Education and Training Pedagogues* (German Qualification Framework [DQR], DQR-6) and *Certified Vocational Pedagogues* (DQR-7). However, expectations of a boost to professionalisation linked to these regulations have not been fulfilled. Since their nationwide regulation in 2009, these qualifications have not been able to establish themselves in VET. They hardly register any graduates, are largely unknown on the market and are often not

accepted by employers, as a recent evaluation study on the DQR-7 continuing training qualification has shown (Schley et al., 2020). This means that an analysis of the initial situation already provides indications for the further development of the vocational training's qualification system.

Overall, there is a lack of systematic and open qualification options for VET professionals. As a result, there is an insufficient basis for professionalisation processes, especially in the sense of developing vocational identity or forming a self-image of an occupational group, and classification in collective agreements (Di Maio, 2021; Gössling, 2016). The German Qualifications Framework (DQR) basically refers to the European Qualifications Framework (EQF). Below level 6, there is currently no vocational pedagogic AEVO qualification that provides vocational pedagogues with a continuous development path across all sectors and towards the integration of their existing competencies. In addition, there is currently no integration at the upper end of the DQR, such as in vocational school employment fields.

3 Theoretical Framework

This section points out the relevant theoretical framework. Covering aspects of continuous prfessional development and the concept of 21st century skills.

3.1 Continuous Professional Development

Continuous professional development (CPD) is one key figure for life-long learning and for maintaining and acquiring job related skills and knowledge (Sandal, 2021). Although widely used it is rarely fully recognized nor defined (Collin et al., 2012). "CPD could be defined as learning which takes place in workplaces and organizations […]" (Collin et al., 2012, p. 161). It includes formal trainings, work related learning opportunities forms of coaching and mentoring, as well as informal learning process'.

Kennedy (2005) reveals the wide spectrum of models in continuous professional development (CPD). Using five key question to categorize adequate, such as types of knowledge acquisition or the focus within CPD as individual or collective.

CPD is regarded as essential to help individuals, organizations and industries as a whole to keep their skills and knowledge up to date. CPD-related training courses, workshops and events allow professionals to maximize the benefits of participation by using the time to meet their individual requirements (Sandal, 2021). By investing in continuing education, knowledge and skills will not become obsolete. This contributes to become more effective in the workplace and contribute meaningfully within teams and tasks. Finally, this is a major opportunity for career advancement. Taking this into account Lambert et al. (2012) combined the various approaches and models of CPD and set them in relation to the degree of freedom from a learner perspective.

The result is a category for nine basic types of CPD increasing in its capacity for professional autonomy. Table 1 presents the nine models assigned to three broad categories, transmission, transitional and transformative.

Table 1: Spectrum of CPD Models (Lambert et al., 2012)

Model of CPD	Purpose of Model
The training model	Transmission
The award-bearing model	
The deficit model	
The cascade model	
The standards-based model	Transitional
The coaching/mentoring model	
The community of practice model	
The action research model	Transformative
The transformative model	

In addition, Lambert et al. (2012) regard professional development as a multidimensional process, especially in vocational training policies. Therefore, they enhance the concept within CPD to foster the capability for work, learning and training, work–life balance and additionally for voice and participation within the companies.

Increasing the work-related capabilities to achieve and maintain professional expertise on systematic, organizational and individual level is consequently one benefit of CPD (Billett et al., 2008; Collin et al., 2012; Sandal, 2021).

Based on these concepts of CPD (Collin et al., 2012; Sandal, 2021), daily work situations offer opportunities for professional development based on the demands of the workplace, setting and structural or political dimensions (Merriam, 2018). Professional development can be understood as a process through which trainers or teachers enlarge their competencies and qualifications (Fernández, 2013). To sum up, CPD can on three levels individual, organizational and systematic or political level (Billett et al. 2008; Collin et al. 2012; Tynjälä, 2008).

3.2   21st Century Skills

While CPD addresses a rather general perspective and the frame where learning arrangements could take place, the construct of 21st century skills offer a particular perspective about necessary skills for professional development (Hamby 1992; Mutohhari, et al. 2021). DiBenedetto (2019) states that 21st century skills are likely to be obtained via a mix of formal qualification, informal learning activities and a learning culture characterised by the presiding

company or domain. Since VET professionals' professional development and CPD are often only informal and based on their experience, it is necessary to keep a close eye on the real-world challenges and problems they face in their daily work routines (Dymock & Tyler, 2018; Urbani, 2020). Referring to Janssens et al. (2017), learning from and at the workplace is a crucial point for maintaining competitiveness and performing in the most suitable way. This can affect daily routines, continuous challenges and future work tasks.

Against the background outlined above, the demand for the further professionalisation of VET personnel is not new (see e.g., Brünner, 2014; Diettrich, 2017), nor does it come as a surprise in view of recent research on the situation of in-company training staff (see e.g., Bahl, 2018; Di Maio, 2021; Forster-Heinzer, 2013; Klein et al., 2020; Solga et al., 2014). However, given the challenges described above and the importance of training pedagogical personnel, professional development and its curriculum are becoming increasingly relevant as a VET success factor in the digital working world (Billett, 2020). Within this concept, developing a set of professional competencies based on knowledge and experience from domain-specific demands appears to be crucial for daily work performance and professional development (Andersson & Köpsén, 2019; Baumert & Kunter, 2013; DiBenedetto, 2019). Accordingly, the European Commission identified the three following levels of competence as crucial for VET trainers, coaches and teachers:

- Vocational competencies

- Pedagogical and social competencies

- Management competencies

According to Martin (2018) the 21st century skills have a direct influence on the development of innovations and are therefore also referred to as innovation competencies. Models approaching these concepts like Trilling and Faden (2009) or Di Benedetto (2019). These include inter alia:

- The competent use of media, technologies, information and data.

- The Virtual and face-to-face communication and collaboration against a background of diversity (e.g., interdisciplinarity, interculturality, age).

- The creative problem solving, ability to innovate, think analytically and critically.

- The flexibility, tolerance for ambiguity, self-motivation, ability to work independently.

This outlines that 21ˢᵗ century "[…s]kills are a vital ingredient for economic success and individual and social well-being, now more than ever before as the Fourth Industrial Revolution gets into its stride and ageing populations and workforces become the new norm." (Martin, 2018, p.30).

In line, DiBenedetto (2019) sets up a set of 21ˢᵗ century skills contributing to these levels. This includes e.g. applying appropriate academic and technical skills; modelling integrity, ethical leadership, and effective management; planning education and a career path aligned to personal goals; or using technology to enhance productivity. These concepts are used for the construction of the category system within the methodical approach in this study.

Vocational competencies are considered a prerequisite for becoming a VET trainers, coaches and teachers. However, most of them lack pedagogical, social and management competencies; therefore, such competencies have become a priority for continuing education actions (Fernández, 2013; Sloane et al., 2018).

4   Methodical Approach

This study followed a research design with two main steps, which are as follows: (A) Group discussions conducted with VET professionals ($N = 53$ participants in six group discussions) and (B) questionnaires for evaluations of the group discussion results in the form of statements by VET experts from Germany ($N = 10$) regarding their importance and authenticity. The methodical approach drew on results from a further training 'vocational pedagogue' acceptance study (Schley et al., 2020) and selected results from another study on the responsibilities and implementation structures used by in-company training personnel (Brünner, 2014). The method also stemmed from the evaluation of these results' pedagogical relevance of these results for in-company training action (Bahl & Brünner, 2013). With a research approach in the form of workshop concepts (i.e. group discussions) for systematic implementation (Krause et al., 2019), the tasks and existing framework conditions of VET personnel, qualification practice and calls for action were set down in four model sectors based on the geographical location (from Northern, Southern, Eastern and Western parts of Germany).

4.1   Research Design

The implemented research design satisfies the six quality criteria postulated by Mayring (2014), which are as follows: Procedural documentation, argumentative interpretation validation, rule guidedness, object proximity, communicative validation and triangulation. Existing knowledge was used for discursive processing and for developing solution approaches. Based on the different workshop formats (Figure 1), plenty of results emerged. On the one hand, in the research design, the results were concrete framework specifications, conditional

factors and players that must be considered to develop appropriate, high-quality qualification modules and their embedding in a career model. Furthermore, alternative solution approaches arose that were evaluated in a further iterative process. In the conceptual phase, four different workshop formats were implemented (Figure 1).
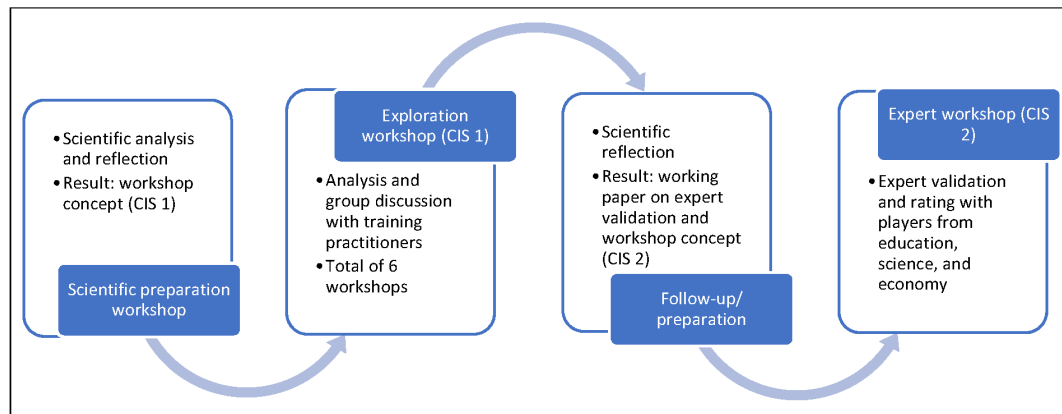
Figure 1: Methodical Approach Within the Workshop Format Framework

The first step involved analysis and reflection on existing research findings. During the opening workshop, the three participating universities and two participating institutes developed a concept for exploration workshops. The workshops were designed as agile workshops in the form of concept innovation sprints (CISs). Based on this, six exploration workshops were conducted throughout Germany with 53 mixed participants (training and further educational personnel; participants and graduates of further training; experts and further stakeholders, e.g. managerial personnel from companies and service providers; [vocational] school principals; social partners; chamber representatives, etc.). During these workshops, the status quo and challenges and problems with the professionalisation of VET personnel were investigated and discussed per a homogeneous methodical design, and initial solution approaches were developed. The workshops were recorded, transcribed in their entirety and evaluated. The other parts were documented by means of photographs and transcripts and then put together in a protocol describing the entire course of the workshop.

The key results from the exploration workshops were then analysed and interpreted by the project team in line with the project context. The results from the second scientifically oriented evaluation loop were laid down in a working paper on the expert validation workshop. This paper was sent for expert validation prior to the CIS-2 workshop. This was subsequently discussed and evaluated in the CIS-2 workshop with select experts.

The concept and homogeneous execution of the exploration workshops, the professional coordination of those leading the workshops and the subsequent evaluation and analysis steps guaranteed quality-assured results. The workshop leaders were members of the project team and had all attended similar trainings and instructions regarding the procedure of the workshop, as well as the theoretical foundation and procedures for the qualitative content analysis. Each workshop was led by at least two project members. The data were analysed by the workshop leaders in mixed peer groups. One further factor for quality assurance was an external result validation by critical friends—that is, cooperating partners tending to positively perceive the project goal yet able to give critical comments—in CIS 1, as well as additional external experts in CIS 2.

The selection of the participating players for the exploration workshops was carried out based on theoretical sampling and sampling according to specifications (Mayring, 2014). By means of theoretical sampling, attention was given to a balance of gender, in addition to the groups' functional suitability and representation. It was likewise possible to achieve an appropriate variety of VET-related professionals with concurrent consistency across all six workshops. Participant recruitment also took place by means of personal contacts and networks to garner particularly committed players who could comment and enhance the workshops through their convictions, positions and experiences. The selected persons represented such types as chamber representatives and training managers who were active at an operative level of training and further education in their respective occupations. In this way, the structuredness of the phenomenon and the range of its manifestations could be recorded. This procedure also made it easier to obtain comprehensive insights, contradictory positions and possible common perspectives, and it had the goal of recording high-quality results as largely typical and representative of the vocational training personnel and their framework conditions. Thus, the groups to be investigated were put together according to basic relevant criteria and invited to the workshops.

(A) Group Discussions

Six group discussions were conducted with 53 German VET professionals. The number of participants in the group discussions ranged from 8 to 10. The participants were training and further educational personnel, managerial personnel from companies and service providers, vocational school principals, social partners and chamber representatives. In terms of participant heterogeneity, qualification levels and institutions, this composition gave an almost ideal portrayal of the organisations and players involved in Germany's real vocational training process.

Based on theoretical CPD models (Collin et al., 2012) and DiBenedetto's (2019) model of 21st-century skills, a semi-structured interview guideline was developed. Furthermore, a framework in which interview statements could be included on strategic (e.g. finance),

organisational (e.g., organisational goals) and individual (e.g., support by supervisors) levels was arranged. In each group discussion, the participants were first asked to introduce themselves; they were then given information about data protection and informed about the procedure. They signed an informed consent form to have their opinions published, and they were told how their personal information would be protected throughout the project. In the second part, they were asked to explain their challenges and problems in VET. The participants were also asked to explain concrete situations, analyse them step by step and discuss their experiences with them. The participants discussed whether they have experienced similar situations or different ones that can be added. In the third and final part of the group discussion, the participants were asked about their potential solutions to the described problems and challenges. A whiteboard and memo technique were used to visualise the described framework and interview statements from the participants in keywords. The whole group discussion was recorded and transcribed, as well as being visually documented in photographs.

(B) Expert Ratings

A questionnaire with statements including the key results of the group discussion was developed. Ten experts on German VET (e.g. policymakers, general human resources [HR] managers, Chamber of Commerce and Industry [IHK] representatives and BIBB personnel) were asked to rate the statements on a dichotomous scale (yes or no) according to their importance and authenticity. In addition, these participants' expertise was used to identify further challenges and possible solutions within the CIS-2 workshop.

To obtain targeted insight into current challenges in the education and further training of VET personnel, two work phases were established in the workshop concept. In this exploration, the participants came together in small groups and intensively discussed the following: (1) *Challenges and problems* and (2) *ideas, experiences and solution indications*. Here, the following questions were presented that were to be managed from systematic, organisational and individual perspectives:

1. Challenges and problems: What are the most urgent challenges and problems in your region? What opportunities arise from a solution? What will happen if no action is taken?

2. Ideas, experiences and solution indications: What does a concrete solution to the problems mentioned look like? What value will training measures have here? What does this mean for training approaches?

The results were subsequently presented and examined in the workshop plenum, per their relevance.

4.2 Analysis

(A) Group Discussion

A qualitative content analysis (Mayring, 2014) was used to assess the data. The system included the two following main data categories: (1) Challenges and problems and (2) solutions. Within the categories, further subcategories (e.g. training and further education, mandatory rules and clear consequences for pedagogic qualifications) were introduced. Further, the framework categories (structural, organisational and individual) were used to classify the results. Based on these analyses, 12 statements that included the key results were developed. Table 2 gives a short insight on the category system and the coding.

Table 2: Exemplary Extract From the Developed Category System

Category	Sub-category	Coding	Theoretical Base	Description	Exemplary Quotes
challenges and problems		Ch_P	DiBene-detto, 2019 Lambert et al., 2012 Sloane et al., 2018	The participant mentioned challenges	
	Organisational level	Ch_P_O	Bahl (2018), Brünner (2014), Diettrich (2017) Ulmer (2019)	The participant mentioned challenges and problems that can be categorized to an organizational level within the company. Like hierarchy issues, access and recognition further trainings, or salary.	Yes, I wish there was uniform recognition of the additional pedagogical qualifications in supporting learning processes, training and further education pedagogues in companies, in public tenders, in the actual qualifications that people achieve and that are experienced in companies. (Female participant (39), chamber representative) 'I would like [...] better recognition of vocational pedagogues in comparison to university courses'. (Male participant (55), leading position at a chamber of commerce)

(B)   Expert Ratings

The experts rated the 12 interview statements as important and authentic or unrealistic and inauthentic. Statements rated as unrealistic and inauthentic by more than five experts were excluded from the study.

Subsequently, a questionnaire with statements was developed that contained the most important results of the group discussion. Ten experts in German VET (e.g. politicians, HR managers, IHK representatives, BIBB employees) were asked to rate the statements on a dichotomous scale (yes or no) according to their significance and authenticity. In addition, the expertise of these participants was used to identify further challenges and possible solutions in the CIS-2 workshop.

To gain a targeted insight into current challenges in the training and further education of vocational training personnel, two work phases were defined in the CIS-2 workshop concept. In this exploration, the participants came together in small groups and discussed the following points intensively:

1. Challenges and problems and

2. ideas, experiences and approaches to solutions.

Key issues were presented that needed to be addressed from a systematic, organisational and individual perspective.

The results achieved in each step were documented photographically. A protocol for the entire workshop also consolidated the results. All results of the expert workshop were interpreted and weighted by the project team in line with the project concept.

5 Results

The results of the group discussion (A) were summarised in 12 statements. These statements showed problems and solutions on the systematic, organisational and individual levels. The importance of the statements was then rated by German VET experts (B). The results were in line with previous studies on this topic (e.g., Bahl, 2018; Ulmer, 2019) and demonstrated a huge need for qualification and learning opportunities for VET professionals.

5.1 Results From the Six Regional Exploration Workshops

The country-wide coverage, with 53 participants in six exploration workshops, made it possible to balance gender, the groups' functional suitability and representation as well as taking regional peculiarities into account. The organisations and the participants' activity profiles are listed in table 3.

Table 3: Organisations and Participant Activity Profiles

Participating Organisation Forms	Participant Activity Profiles
Educational companies (gGmbH[1] & e.V.[2])	(Vice) managing directors
Vocational training centres	Area managers
Businesses (AG[3], KdöR[4], GmbH[5], & e.V.)	Executives
Vocational schools	Training managers
General education schools	VET trainers, coaches and teachers
Special interest groups	Personnel developers
Chamber representatives	Project managers
Freelance work in the educational sector	Project management supervisors
Federal Institute for Vocational Training	School principals
State university	Freelance workers
Private university	Research associates
	Social workers
	Advisers

Legend of organisational forms:
gGmbH[1] gemeinnützige Gesellschaft mit beschränkter Haftung = non-profit limited liability company
e.V.[2] eingetragener Verein = registered association
AG[3] Aktien Gesellschaft = joint-stock company
KdöR[4] Körperschaft des öffentlichen Recht = corporation under public law
GmbH[5] Gesellschaft mit beschränkter Haftung = limited liability company

Table 3 gives an overview about the heterogeneity in the group of VET trainers, coaches and teachers and the huge variety of places of work and their level of qualification and hierarchy.

With regard to heterogeneity, qualification level and institutions, this allocation of organisations and participants activity profiles gave an almost ideal portrayal of the organisations and players involved in the real German vocational training process. The distribution of the organisational forms, the persons working in those forms and their fields of activity were relatively consistent across the regional workshops.

To obtain an overview of the workshop participants' pedagogical qualifications and examination activities, a classification schedule according to Martin et al. (2016) was created. Then, a systematic analysis of the persons involved in VET education and further training was carried out. The qualifications of the workshop participants are summed up in Table 4.

Table 4: Workshop Participants' Qualifications Based on Martin et al. (2016)

Qualification	Entries (n) (More than one entry possible)
Trainer training according to AEVO	31
IHK training and further education pedagogue	5
IHK vocational pedagogue	7
Ongoing studies with a major in human sciences related to pedagogy (educational science, psychology)	6
University degree (B.A. / M.A.) in studies related to pedagogy (e.g. educational science, psychology)	26
University degree (B.A., B.Sc., B.Eng. / M.A., M.Sc.) in non-related studies to pedagogy (e.g. accounting, mechanical engineering)	15
Train the trainer training (IHK)	11
Additional rehabilitation pedagogic qualification (ReZA)	4
Other pedagogic qualification (e.g. media education)	14
Examiner in initial vocational training	14
Examiner in further vocational training	18
No such qualifications	3

Table 4 outlines the great variety in approaches for continuous professional development. Heterogenous attempts can be approaches of the vocational biography and to maintain a high performance level. In addition, it underlines that there is no regulation by law for basic qualification apart from the before mentioned AEVO. This overview showed a majority of participants with a VET trainers, coaches and teachers-suitable qualifications in pedagogical training vocations. This distribution generally portrayed the heterogeneous image of the players' qualifications in initial and further training and education. Furthermore, the role plurality in which the training personnel worked became clear, as for example, trainers and further educators concurrently carried out voluntary examiner activities.

The personal details on the qualification level reflected the participants' conclusion that despite the necessity of formal professionalisation in this field, the majority of VET professionals must still be able to profit from offers below official levels (e.g., AEVO). Several professionals pointed out that their tasks require suitable learning offers that are not available simply by chance or unsystematically, but that also lead to competency proof and certificates. Many VET professionals ultimately sought visible recognition of their activities or personal commitment to pedagogical and company-economic functions. A qualification combining work domain–specific content with vocational pedagogical content was also frequently demanded. This could be a didactic professional skills method for training in a particular field of work. In addition, it became clear that many individual interests and concrete challenges and problems trigger individual qualification needs; however, the increasingly multi-faceted network structures in which VET professionals work also call for further qualifications, such as

learning location cooperation, cooperation with IT service providers and cooperation with social pedagogues and special needs teachers. The next sections consider the results from the exploration workshops in more detail from the viewpoints of *challenges and problems* and *ideas, experiences and solution indications.*

Challenges and Problems

In an overlapping evaluation of all six regional workshops, table 5 shows the following points from the players' viewpoints that emerged as relevant framework conditions.

Table 5: Level-Specific Challenges and Problems per the Workshop Participants

Systematic Level	Organisational Level	Individual Level
No description of the necessary competencies of skilled training personnel (6/6)	Lack of acceptance by management personnel (4/6)	Generational differences (old-young, young-old, young-young) (3/6)
No AEVO refreshment (4/6)	No interchange of ideas between training personnel (5/6)	Separation: Support and assessment (4/6)
Skilled worker career vs. management career (5/6)	Training is tied to the 'job' (master's/business certificate) (4/6)	Learning/support from trainers (5/6)
Convincing skilled workers and management (5/6)	No interchange of ideas with other training locations (6/6)	Consider/observe trainee learning progress (5/6)
Formal recognition of training personnel (6/6)	Limited time resources in the human resource development sector (HRD) sector (5/6)	No self- or role conception of the training (6/6)
No certificate for training personnel = no requirements profile (4/6)	Financial resources (6/6)	Digitalisation (6/6)
Digitalisation (6/6)	Digitalisation (6/6)	Self-competency and personal competency not defined (5/6)
Recognition of the qualification (6/6)	Job profiles/descriptions (4/6)	Training personnel's action-oriented qualifications (6/6)
	Role explanation (5/6)	Socio-pedagogical training contents (4/6)
		Conflicts of interest (human, employee, educator, trainer) (6/6)

The numbers after the bullet points refers to the frequency the point has been mentioned throughout the workshops. For example, "No AEVO refreshment (4/6)" would mean that this phrase has been mentioned in four out of the six workshops.

Ideas, Experiences and Solution Indications

In an overlapping evaluation of all regional workshops, the following points also emerged from the players' viewpoints as relevant framework conditions, illustrating as important key solutions to the challenges they face. In addition, we highlighted these solutions by adding exemplary quotes of the participants:

– Mandatory rules and clear consequences for pedagogic qualifications:

"For certificates, additional modules and modules at all, the qualification is important. Not every education and training educator, not every vocational educator needs the same!" (Male participant [41], Federal Institute for Vocational Training)

– Integration of those responsible for training:
"The AEVO is used in a completely inflationary way, it often takes place completely out of context, e.g. it is embedded in some courses of study, in which students acquire the Ada certificate without ever having entered a company or so far had no confrontation with real training and further education." (Male participant [62], chamber representative)

– Definition of vocational training personnel:
"Yes, I would like to see a unified recognition of the additional pedagogical qualifications of the learning process facilitator, the education and training pedagogue in companies, in public tenders, in the actual qualification as it is also acquired by people and experienced in companies. Activity transparency and further training possibilities." (Male participant [40], training manager)

– Creation of digital learning areas:
"Continuing education degrees and continuing education offerings must be further developed in coordination with the economic and social partners in such a way that they take into account additional competence requirements, e.g., in the course of digitalization. I would take a somewhat critical view of this, because in view of digital change and the speed at which it is taking place, I think the economic and social partners need to consider how they can find solutions more quickly and not just seek the lowest common denominator." (Female participant [48], area manager for an educational company)

The excerpted results of the six exploration workshops are clarified by 12 central statements of the participants. In them, the substantial aspects of the challenges and possibilities for solutions are condensed and can be recorded in generalised form. These statements serve as the basis for expert validation and systematic work on the findings presented in CIS 2.

5.2 Central Statements From the Exploration Workshops

The statements are supplemented by a scientific classification and location determination solidified in the project context. The following section summarises the 12 central points from these exploration workshops in basic statements. These results were analysed and validated in the CIS-1 and CIS-2 workshops.

Statement 1: *"I would like to see more recognition of training personnel, both within companies and in society in general, irrespective of whether they have academic or non-academic training."* (Female participant [46], leading position in an educational company)

Appreciation and recognition are the key characteristics of educational and further training personnel. These individuals' positions—although often between the devil and the deep blue sea—are perceived as deficient and difficult to balance out. This applies both to appreciation of their work and career and remuneration.

Statement 2: *"Well, the training personnel's view of this person, this human being enriched with competencies and abilities that are simply there and just need to be unwrapped, [is] like a kind of candy. It's wrapped in beautiful foil that you unwrap and then get to the core [of]. None of us would put the candy in our mouth with foil on it. We unwrap it beforehand. To see what's in there."* (Male participant [51], VET teacher in a vocational school)

Educators and further training personnel may develop a strong personal bond with trainees, for example, and feel pleasure and pride when the training and educational tasks are successful (e.g. difficult youths become good skilled workers and colleagues). These successes create motivation and satisfaction, as well as compensating, in part, for a lack of recognition and appreciation.

Statement 3: *"In my opinion, there really is a lack of linkage between the training personnel or training in general and companies' business field development. That is, knowing where the company is headed, which products should come into the market […] which competencies will be needed in the future."* (Male participant [36], chamber representative)

Training and further education should be connected more strongly with company business and innovation processes, for training and further education are increasingly taking over important strategic functions in companies: Notably, training personnel are responsible for dynamic competency development processes within the training and further education of highly qualified up-and-coming skilled workers. These skilled workers are decisive in the strategic positioning and even continued existence of the company, initiating operational innovations above and beyond training and further education. However, companies do not often discern this, and this is further complicated, for example, by the institutional separation of company training and personnel development.

Statement 4: *"Training is unfortunately still just a job on the side, particularly in commerce. Like they have also said with salesclerks: Here, you have a trainee. Get on with it!"* (Male participant [57], training manager in a joint-stock company)

Training personnel have great significance (both qualitatively and quantitatively) for successful vocational training. Even so, they are admittedly not often prepared or qualified for their training responsibilities—and sometimes, they are not even designated to do these tasks. Increasing social and special educational challenges, for example, that have altered young people's moral values, dynamic changes in work processes and modern work forms

all change training personnel's tasks and make these tasks more difficult, particularly as they typically receive little support from their company.

> Statement 5: *"Well, I would find it better if there was regular further training for training personnel after the AEVO courses."* (Female participant [29], project manager in an educational company)

The AEVO is a basic qualification for taking on training responsibilities and is frequently perceived only as formal training authorisation. Regular, precise and suitable certifications are necessary in addition to this to constantly expand training personnel's competencies by means of suitable qualification forms and measures and to have them adapt to new requirements.

> Statement 6: *"I would like digital competencies to be incorporated into the qualifications of vocational training personnel."* (Male participant [32], VET trainer in a vocational training centre)

Qualifications for educational and further training personnel are often viewed as deficient in content and very traditional with regard to the teaching and learning forms used. There is hardly any further development in these forms that takes a look at real action and task requirements, and the adaptation of professional pedagogical forms from schools and universities seldom functions as intended. In this way, company learning cannot keep pace with the partly important changes in the work world through, for instance, digital transformation, process organisation and internationalisation. Thus, training personnel need more digital competencies.

> Statement 7: *"I would like [...] better recognition of vocational pedagogues in comparison to university courses."* (Male participant [55], leading position at a chamber of commerce)

The existing further training professions are little known or appreciated by employers or further training supporters; while the contents are assessed relatively positively, the concluding job titles are not. In general, the workshop participants confirmed the need for greater development in their evaluation of the further training profession vocational pedagogue (see Schley et al., 2020), as well as the unsecured permeability in the higher education sector.

> Statement 8: *"I think that the educator is definitely only the supervisor in the training and that mistakes are not only tolerated but most certainly also desired. Because you can learn from mistakes as long as they can be repaired. But it also gives the trainee the opportunity of asking himself while he is still in training whether the path he has chosen for himself is the right one."* (Female participant [48], managing director in a vocational training centre)

The pedagogical role of training and further education personnel is changing in light of the current methods and concepts in vocational learning, such as action orientation, self-directed

learning and blended learning. Pedagogical, supportive and advisory responsibilities are gaining in significance, whereby educators are increasingly experiencing (or having to experience) vocational integration, socialisation, advisory and orientation functions.

> Statement 9: *"We don't have time for that [e.g. new approaches in learning]. We need to see we get them through the examinations. But this interrelationship has something to do with the examination if you want to take competency orientation seriously in your vocational training—this mental step is very difficult to convey. Because, in my opinion, this competency orientation has not yet really arrived with the educators."* (Male participant [49], VET trainer in a limited liability company)

Modern vocational pedagogic concepts often do not reach training practice, which is sometimes described as following a traditional learning approach (the four-stage method). Competency and action orientation as didactic guidelines are often 'sacrificed' for short-term goals. Too little time for learning during the training and a strong orientation towards examinations can make it difficult to develop long-term competencies so that only the abilities, skills and knowledge relevant to the examinations are taught.

> Statement 10: *"Yes, I wish there was uniform recognition of the additional pedagogical qualifications in supporting learning processes, training and further education pedagogues in companies, in public tenders, in the actual qualifications that people achieve and that are experienced in companies."* (Female participant [39], chamber representative)

A comprehensive, sequentially developed and permeable qualification and qualification-level structure for training personnel is considered appropriate. This involves the possibility of tiered professionalisation and specialisation for educational and further training responsibilities with different recognition or crediting mechanisms, as well as the recognition of qualifications in the job market or individual companies.

> Statement 11: *"The contents are more important than the career path—first and foremost: What they produce! The career ladder is only the second step. I think it only becomes interesting when people also see that the contents help them."* (Male participant [52], training manager)

A question arose in the workshop as to which contents should be integrated into training personnel's qualifications or vocational training and further education and how these change over time. The corresponding answer indicated that training personnel's qualifications, apart from pedagogical-didactic content, must also include and combine professional or didactic content for various professional domains. However, this has not been the case up to now in existing qualification concepts.

Statement 12: *"Training is a management task and demands high specialist and human competencies from the acting persons."* (Male participant [45], leading position in a vocational training centre)

The management task coexists alongside the training personnel's specialist, pedagogical and didactic competencies. All three responsibilities imply different roles that training personnel need to implement and master in their contradictoriness. Frequently, there are management tasks without disciplinary management functions, so a great deal of self-competency, self-reflection, empathy and ambiguity tolerance is required.

5.3 External Expert Validation of the Conception Phase Results

The conclusions from the six exploration workshops in the four model regions were condensed and prepared for expert validation. The goal of this final methodical step in the conception phase was to identify the necessary tiered and permeable qualification model for training personnel that should be developed in the project and to discuss it with experts from education and economics. This took place during a one-day workshop. The sample construction for the CIS 2 was also carried out in this step based on theoretical sampling and sampling according to specifications (Mayring, 2014). The people invited were of the same representative types as in the exploration workshops. Their respective work was different; however, the participants were now from the management level, the level of strategic planning and conceptualisation. They included, for example, division-level HR managers, representatives of education at the decision-making level and directors for a company's entire training field.

The results achieved in the respective steps were documented photographically. A protocol for the entire workshop consolidated the results as well. All results from the experts' workshops were interpreted and weighted by the project team along the lines of the project concept.

6 Discussion of the Findings

In this paper we took a close look on VET professionals and their professional development. Thereby we analysed the challenges and problems regarding the professional development, as well as possible solutions, that are described by training professionals in VET in Germany. The research design based on a nationwide explorative study with group discussions (N = 53 participants in six groups) and a validation of the results by VET experts (N = 10).

The results of this study show that there is a huge need for qualification and learning opportunities for VET professionals. The demand is mostly for modern, tried-and-tested

concepts and central themes, such as action and competency orientation, practice and transfer orientation, individual and structural reflection, media competency and learning support in all formats and at all levels.

6.1 Interpretation

The participants in the workshops emphatically pointed out that despite the necessity of formal professionalisation in further training, most VET trainers, coaches and teachers must still be able to profit from courses and trainings below the AEVO, at the AEVO level and beyond the AEVO. Several players also indicated that participants in future workshops require suitable course offers that are not available simply by chance, unsystematically or in crisis situations and that lead to competency proof and certification below AEVO. Many VET trainers, coaches and teachers ultimately seek visible recognition of their activities or personal commitment to pedagogical and company-economic functions. A qualification combining skilled work–specific content with vocational pedagogical content was also frequently demanded in the sense of 'professional skills didactics' components for training in a particular field. In addition, it became clear that many individual interests and concrete challenges and problems trigger individual qualification needs; however, the increasingly multi-faceted network structures in which training personnel work also call for further qualifications (learning location cooperation, cooperation with IT service providers, cooperation with social pedagogues and special needs teachers, etc.).

The following theories were deduced from the survey phase and flowed into the discussion as follows:

– VET trainers, coaches and teachers' professional biographies are either one-way streets or cul-de-sacs.

– New tasks, particularly within dual study courses, reinforce the change in roles. This results in further pedagogical professionalisation.

– It is essential to develop a tiered, permeable qualification system for vocational training and further education personnel. There is, in particular, a lack of qualification at the DQR-5 level.

– The interface to study courses should be expanded. However, permeability with teaching posts in vocational schools does not appear to be productive.

These themes should subsequently be further differentiated topically according to target groups to discuss the necessary qualification models for target groups along the DQR stages.

The surveys conducted and exploration in the conception phase validated previous analyses (Bahl, 2018; Brünner, 2014; Diettrich, 2017; Ulmer, 2019) through the participants in the exploration and expert workshops. In addition, the current developments, opportunities and challenges faced by educational personnel were identified and integrated systematically and scientifically into the project concept. Not only were the theories deduced from the exploration workshops largely confirmed by the experts, but their relevance for necessary educational action was also underlined once more.

6.2   Implications

There is a fundamental consensus that the development, testing and implementation of systematic internal and external VET and personnel professionalisation are important for improving the quality of training and further education. At the same time, they offer training personnel their desired qualification and professionalisation options—and in individual cases, even career options. Thus, a structural, innovative qualification system for training personnel will improve the quality of training and further education, enhance vocational training and contribute to excellence in vocational training. This also applies to the competition among increasingly significant private education institutions and universities, which for their part, are currently seriously investing in study quality (quality packets in teaching, development of university didactics; e.g., Schley et al., 2020). Contents and organisational concepts as well should be appropriate to the target group and be able to be completed 'pragmatically'. The courses should include new forms of teaching and learning (in further training and company application) while simultaneously being systematic and oriented.

Professionalisation in VET demands the systematic, cross-facility and cooperative further development of existing further training professions, modular complementing of the to-date largely missing DQR-5 stage, as well as the further development of interfaces in study courses with a high general recognition of professionally acquired skills. The goal is a career model that begins with a basic VET trainers, coaches and teachers qualification for skilled workers that can be continued both modularly and interchangeably in further certification. This includes branch and target group modular offers at the DQR-5 level. Cross-facility cooperation and additional learning offers at the DQR-6 level allow continued development of the existing further training profession (Certified Continuing Education and Training Pedagogue) per specific content focus (digital teaching and learning, special needs/educational assistance, learning support, internationalisation, etc.) right up to the DQR-7 qualification (Vocational Pedagogue). The offers should also be interdisciplinary (trainers and further educators, teaching personnel, training managers, personal trainers) and mutually interchangeable with university courses (e.g. integration of university modules).

6.3   Limitations

As mentioned previously we addressed professional development of VET trainers, coaches and teachers in Germany. Referring to challenges and possible solutions emerging from their workplaces. It should be noted that we focus on German VET professionals. We did not compose a study with an international focus. So, we concentrated our research on a nation-wide survey. Nevertheless, apart from regional and political characteristics we could identify challenges and possible solutions, relevant for VET professionals in a broader perspective.

Regarding the limitation of the study, the small sample size could be mentioned. 53 participants in six nationwide workshops can only be a starting point for further research projects. On the other hand, the sample size in this study is common, based on the concepts of explorative studies (Mayring, 2014). The workshops were conducted until the saturation point has been reached and the carried-out content analysis indicated no sign of a lack of information or answers due to the sample size.

The nature of an explorative study itself can be a limitation. But given the fact that there are always upcoming new fields of research, an explorative study like this, can be a very first insight in unexplored concepts. With the goal, obtaining insights into professionalization of VET trainers the explorative findings point out new paths for upcoming research. In addition, we used the expertise of ten VET experts to the results.

6.4   Recommendation

On the other hand, it was urgently pointed out that, despite all the necessity of formal professionalization paths in the area of further training, the majority of VET trainers, coaches and teachers must be able to benefit from the offers below the AEVO, at AEVO level and in the area of AEVO plus. Many stakeholders have pointed out that the relevant group of people needs appropriate offerings that are not only available randomly, unsystematically and in crisis situations, but should also lead, for example, to proof of competence and certificates below the level of continuing education. Ultimately, the VET trainers are also interested in a visible appreciation of their activities and their personal commitment in terms of pedagogical and economic-operational functions. Frequently, a qualification was demanded that combines technical-domain-specific with vocational-pedagogical contents. In addition, it became clear that many individual interests and concrete challenges and problems trigger individual qualification needs, but in particular the increasingly diverse network structures in which the educational staff works, require further qualifications (learning location cooperation, cooperation with IT service providers, cooperation with social and special educators, etc.).

In the workshops and expert discussions, the need for systematic professionalization in the sense of a graduated, permeable qualification system for vocational education and training staff was called for in order to improve the quality of education and training and at the

same time create professional and career options. This would enhance the value of vocational training and also increase the desired appreciation for the training personnel who plan, implement and monitor training processes. In addition, this could be a decisive step, alongside BA Professionals and MA Professionals, towards the desired equivalence of vocational and academic education.

On the other hand, there is a need for systematic, cooperative further development of existing continuing education occupations across learning locations, a modular supplement to the DQR 5 level, which has been largely lacking in the broad spectrum to date, and the further development of interfaces to courses of study with high proportions of lump-sum recognition of vocationally acquired competencies. The goal is a qualification system that begins with a basic qualification for skilled workers in training and can be continued in a modular and permeable manner in the direction of instructor qualification. This is followed by sector- and target group-specific modular courses at DQR 5 level. Learning location cooperative, pedagogical differentiation offers on DQR 6 further develop the existing advanced training occupation ("Certified Education and Training Educator") with regard to specific content-related focal points (including digital teaching and learning, special/social pedagogical support, learning support, internationalization), up to the qualification "Certified Vocational Educator" (DQR 7). The courses should be designed to be cross-professional (trainers, teachers, education managers, personnel developers) and mutually permeable to higher education (e.g., integration of university modules).

In the intended modularized qualification system, the individual elements can be linked systematically, which can lead to individualized career paths for the vocational training and further education personnel and enables a permeable structure in terms of content and concept. Especially the last aspect is particularly innovative.

When constructing developmentally logical curricula, the following learning domains should be identified:

– Orientation and overview knowledge,

– Contextual knowledge,

– Detailed and functional knowledge and

– Subject-systematic in-depth knowledge.

Work and learning tasks should be formulated in such a way that they are significant for the respective learning area and have the potential to support the learner in achieving the next level of competence development (Rauner, 2021).

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Biographical Notes

Sebastian Anselmann is a scientific assistant at the department of vocational education at the University of Education in Schwäbisch Gmünd, Germany. His research interests focus on learning activities at the workplace in general and facilitating and inhibiting factors in particular. In his PhD project, he investigates barriers that might hinder the accomplishment of a successful learning activity.

Stefan Harm is an external PhD student at the department of vocational education at the University of Rostock, Germany. His research interests focus on qualification and professionalization of vocational education and training staff. In his PhD project, he investigates the professional VET staff focusing on providers of education and training with special interest in pedagogical and economic goals.

Uwe Faßhauer is full Professor of Pedagogy/Vocational Education at the University of Education in Schwäbisch Gmünd. His research interests include a variety of topics in (technical) vocational education and training (VET) with a focus on pre-service teacher training.

Being a Vocational Teacher in Sweden: Navigating the Regime of Competence for Vocational Teachers

Sofia Antera*

Stockholm University Department of Education, Frescativägen 54, 114 18 Stockholm

Abstract

Context: Vocational teachers are called to constantly meet the upcoming needs in social and working life. In Sweden, the high demand for vocational teachers has led to their recruitment in the early stages of vocational teacher studies or even before teacher training. Entering this new community of practice, vocational teachers cross boundaries between their previous occupation and their teaching job, mediating the introduction of competence between them. In this context, the study explores vocational teachers' competence through their own perceptions, addressing important competence areas, as well as how competence is understood.

Approach: The study employs a socio-cultural perspective on learning. Communities of practice establish their regime of competence, a set of principles and expectations that recognise membership. To be competent is translated as understanding the shared enterprise of the community, being capable and allowed to engage in it and, thus, interact with the other members and with the available resources. Hence, what is expected by members to know and to be is defined by the regime of competence and, hence, by the community. Comprised of 14 semi-structured interviews with vocational teachers in different vocational disciplines, employed both in upper secondary and adult education schools, the study adopts a qualitative research strategy. The research material was analysed thematically.

Findings: According to findings, important competence comprise of up-to-date vocational competence supporting the performance of vocational teaching, but also interpersonal

*Corresponding author: sofia.antera@edu.su.se

competence, including good communication and the construction of a close relationship with the students. The student-teacher relationship serves as the basis to match students with their work placement, facilitating higher work-based training quality. Moreover, maintaining a continuous development attitude and openness to critique are crucial for teachers. Finally, teachers approach competence focusing on its relationship to action and performance, while also referring to its situated nature. Therefore, to be competent is understood differently in different practices (teaching and occupational), highlighting the importance of understanding the uniqueness and duality within the regime of competence of vocational teaching.

Conclusion: Teachers have described the importance of competence which was not developed during teacher training. Instead, important competences were often developed in the previous profession or informal teaching activities. Vocational teachers seem to value and utilise their previous occupational worker identities to a high extent. This should be considered when teacher training or in-service training is designed to support individuals in developing their (new) teacher identity.

Keywords: Professional Competence Development, Vocational Teachers, Communities of Practice, Vocational Education and Training, VET in Sweden, Workplace Learning

1 Introduction

In times of societal change, vocational teachers receive pressure to meet the upcoming social and work life demands by reshaping their practices (Fejes & Köpsén, 2014; Ketelaar et al., 2012). In Sweden, vocational teachers are expected to cooperate closer with industries and trades (Andersson et al., 2018; Köpsén & Andersson, 2017; Statens offentliga utredningar [Swedish Government Official Reports], 2008), turning the workplace into an essential element for the outcomes of Vocational Education and Training (VET) (Mårtensson et al., 2019). International research indicates that vocational teachers feel competent in their occupational area (Hofmann et al., 2014; Stephens, 2015), while they are positive with attending in-service training on general pedagogical competence (Canrinus et al., 2019) highlighting that although vocational competence is achieved, pedagogical or teaching competence is being developed in the teachers' workplace. Even in different VET systems, vocational teachers seem to deal with a duality regarding their identity and competence that is universal. This duality refers to a constant effort of balancing the teacher and the worker (e.g., Tapani & Salonen, 2019; Vloet et al., 2020). Understanding the complexity of teachers' work is necessary, if their professional development is to be supported (Billett, 2014). As part of teachers' competence is developed at work, understanding this complexity refers also to identifying what competence is seen as important in connection to work.

Previous research has stressed the connection between competence and identity, indicating that strengthening the first supports the development of the latter. Fejes and Köpsén (2014) highlighted the dual identity of vocational teachers as teachers and occupation experts, while Köpsén and Andersson (2018) investigated the role of continuous professional development in the formation of this identity. Mårtensson et al. (2019) explored the various roles teachers have in relation to the students' work placement, showing the multifaceted work reality of vocational teachers. This reality includes the support of a learning process with a current and future orientation, where both technical and interactional competence are needed for teachers and students (Asplund et al., 2021).

In the Swedish VET, the high demand for vocational teachers has led to recruitment in the early stages of their teacher studies or sometimes even earlier (Fejes & Köpsén, 2014). Vocational teachers often start working while studying, entering the new working environment not always knowing what to expect. The transition from a craftsman to a teacher is an individual journey, where teachers find their own ways of being. Entering the vocational teacher community in this unregulated way often means teachers are developing professional competence while negotiating with the rest of the community members on what is important. The interplay between their participation and reification leads to a social history of learning with a set of criteria for membership (Wenger, 2010). Hence, participants learn and at the same time define what is important, encapsulated in the regime of competence, a set of principles and expectations that recognise membership (Wenger, 1998). The selection of specific competence deemed as important for the teaching profession is crucial in strengthening the teachers' identity not only on an individual, but also a collective level. This is especially true when considering that vocational teachers as a group have not yet achieved a clear sense of their professionalism (Köpsén, 2014; Maurice-Takerei, 2015).

The ageing of teachers, the lack of vocational teacher-students, and the high teacher demands in Swedish VET create a shortage. This shortage is distributed unequally within regions and programmes (Berglund et al., 2017). In upper secondary schools, 56.5% of the vocational teachers are qualified (National Agency of Education [NAE], 2020a). In adult education, the percentage reaches up to 66.7% (NAE, 2020b). This percentage also varies between programmes, with 67.7% of the vocational teachers in the nursing programme being qualified, while for the HVAC and property maintenance programme[1] the percentage is 36.7% (Berglund et al., 2017; NAE, 2020a). Teaching qualifications can be acquired by completing vocational teacher training (90 European Credit Transfer and Accumulation System [ECTS]). When receiving teaching qualifications, candidates' vocational education and previous work experience are validated. Teachers become qualified for teaching specific vocational subjects, and not qualified for teaching in vocational programmes. Due to the differences between occupations, validation occurs separately in each case (Asghari & Berglund,

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1 HVAC: Heating, ventilation and air conditioning.

2020). In vocational teacher research in Sweden, learning, knowledge and, thus, competence has been seen as situated in a specific community of practice, the vocational practice (Köpsén & Andersson, 2017, 2018; Mårtensson et al., 2019).

In contrast to other teacher groups, vocational teachers bring their previous vocational knowledge into their teaching practice both through formal and informal learning, which complicates the process of developing and defining their teacher identity. Furthermore, vocational teachers are expected to maintain parts of their previous identity, for example their occupational competence, and expand it by transforming it into a new (teacher) identity (Fejes & Köpsén, 2014; Köpsén & Andersson, 2017).

Consequently, vocational teachers constantly cross boundaries (Fejes & Köpsén, 2014), while trying to connect different "forms of competence whose claim to knowledge may or may not be compatible" (Wenger-Trayner & Wenger-Trayner, 2015, p. 18). At the intersections of these boundaries, competence become blurred. The current study explores how vocational teachers' competence is perceived by vocational teachers in Sweden, while also mapping the professional competence of vocational teachers and its connection to everyday teaching activities. Competence for vocational teachers is approached and described through teacher's own perceptions answering:

1. How is competence understood and perceived by vocational teachers in relation to their work?

2. What competence is important for vocational teaching practice and how is it described?

For the present study, competence is approached in relationship to learning, not only as its result, but as the instant capture of the learning process, its outcome combined with its further potential.

2   Theoretical Framework

This study is inspired by theories related to socio-cultural perspectives on learning, competence development, and identity (Wenger, 1998). Lave and Wenger (1991, p. 100) suggest "that learning occurs through centripetal participation in the learning community of the ambient community", and refer to Communities of Practice (CoP) understanding learning as a "trajectory into a community" instead of an individual cognitive task. Including knowledge, skills, attitudes and values, professional competence is connected to action, while it has a distinct developmental and situated character (Antera, 2019). In other words, competence, "the individual's capacity to actualise a specific activity in a given situation and context" (Antera et al., 2022, p. 78), is manifested through action and it can be developed, while its limits are defined by the context in which it is constructed and negotiated.

Participation, according to Wenger (1998), is the social experience of membership and active engagement in social communities and enterprises. Participation is linked with belonging and occurs on the personal and social level. Located in the middle ground between the social and the individual, identity is approached as an outcome of participation (Lave & Wenger, 1991; Wenger, 1998). Identity is, hence, perceived as a self-understanding, which derive from who one is in relation to others in a given context, but also from what one attributes to themselves in relation to their memberships.

Engagement in social life combines feeling, thinking and acting, and involves meaning making, which comes as a result of the interaction of participation and reification (Wenger, 2010). Reification describes the construction of concrete objects as the result of solidifying experience into "thingness" (Wenger, 1998, p. 58), for instance the publication of articles about the community's actions. Through the creation of these objects, points around which the negotiation of meaning occurs are created. Participation and reification are different; still complementary (Wenger, 2010). In the case of VET, teachers participate directly in teaching activities, staff meetings and reflections on their work, while they simultaneously construct conceptual artefacts, like course plans and teaching strategies. These different forms of reification reflect a shared practice and experience which are the basis to organise participation within VET teaching. It is this interplay between participation and reification, which creates the regime of competence (Wenger-Trayner & Wenger-Trayner, 2015).

CoP establish their *regime of competence*, a set of principles and expectations that recognise membership. In other words, to be competent is translated as understanding the shared enterprise of the community, being capable and allowed to engage in it and, thus, interact with the other members and with the available resources (Wenger, 2010). Hence, what is expected of members to know and to be is defined by the regime of competence and, therefore, by the community (Wenger, 1998). Consequently, competence cannot be perceived as disconnected from the practice, as it "… is by its very practice – not by other criteria – that a community establishes what is to be a competent participant, an outsider, or somewhere in between" (Wenger, 1998, p. 137).

Vocational teachers' competence is situated in a specific community of practice, the vocational practice. In other words, in order to teach a vocational subject, teachers should develop knowledge and skills within the area of teaching, but also competence within the main field of the vocational practice. Competence development, as well as the formation of a professional identity are achieved through several boundary-crossings between the occupational and the teaching practice. As brokers, vocational teachers introduce ideas from their work in the teaching landscape, connecting practices and facilitating cross-boundary experiences. Brokering activities are legitimised by an institutional authority or a CoP. They can affect and shape the regime of competence as the role of broker is to translate, coordinate and align different perspectives and meanings (Wenger, 1998).

Guided by the research questions, the study seeks to identify points of importance for teachers, which are expressed as competence demands in their everyday work, formulating the regime of competence. CoP provide the context in which competence is investigated, offering insights on how members, communities and landscapes influence the regime of competence. The regime of competence developed through the CoP is then used as a conceptual framework to interpret the findings.

3　　Methods

This study has a qualitative research design. The research material was collected through semi-structured interviews, a flexible instrument, allowing the interviewees to steer the discussion to issues of importance for themselves (Bryman, 2012). The interviews took place online via Zoom[2] from May to October 2021. Their duration varied from 32 to 74 minutes. All interviews were video/audio recorded and transcribed[3] verbatim. Personal data has been protected, according to the regulations by Stockholm University (2020).

In total 14 interviews with vocational teachers in different vocational disciplines were performed. Teachers worked both in upper secondary and adult education schools. Regarding demographics, Table 1 provides the informants' details about gender, teacher training, type of school and vocational programme.

Table 1: Informants' Details

Informant	Gender	Vocational Programme	Vocational Teacher Training	School Type
Teacher 1	Female	Hotel and tourism	Completed	Upper-secondary school
Teacher 2	Male	Restaurant management and food	Completed	Adult school
Teacher 3	Male	Restaurant management and food	Completed	Adult school
Teacher 4	Male	Restaurant management and food	Completed	Upper-secondary special education school
Teacher 5	Female	Health and social care	Completed	Upper-secondary school
Teacher 6	Male	Restaurant management and food	Completed	Upper-secondary school

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2　Exception is interview 5 (in person).

3　Interview 5 audio file was partly destroyed. Research material derives from the 20-minute audio file and the researcher's notes.

Teacher 7	Female	Health and social care	Undergoing	Upper-secondary school
Teacher 8	Female	Child and recreation	Completed	Adult school
Teacher 9	Female	Business and administration	Completed	Upper-secondary school
Teacher 10	Female	Health and social care	Completed	Adult school
Teacher 11	Female	Health and social care	Undergoing	Adult school
Teacher 12	Male	Handicraft (dance programme)	Completed	Upper-secondary school
Teacher 13	Male	Health and social care	Not completed	Upper-secondary school
Teacher 14	Female	Handicraft (hair and make-up programme)	Completed	Upper-secondary school

The informants' age varied from 30 to 59 years and their teaching experience from 2 to 22 years. In their previous occupation, they have worked from 7 to 28 years. 11 teachers had completed vocational teacher training, whereas 2 were undergoing studies, when the interviews occurred. With reference to school types, 8 teachers were employed in upper secondary schools, including one in a special education school, and the rest in adult education centers.

Participation in the study was voluntary. Potential interviewees' contact details were collected from school websites and a list of vocational teachers collaborating with Stockholm University. Potential interviewees were informed about the study and gave their consent prior to interviewing. All information details of individuals or schools are hidden with the use of numbers. All information is stored in secure location.

3.1 Analysis

With an inductive approach, the study started from the research material, searching for recurring patterns. The transcripts were analysed thematically (Braun & Clarke, 2006). The first step was the familiarisation with the material (Braun & Clarke, 2006). As a second step, initial codes were generated and a line-by-line coding was followed. Codes are the most basic segments of raw data with a meaning (Boyatzis, 1998) and are indicative of a feature that presents some interest for the analyst (Braun & Clarke, 2006). At this stage, codes like leadership, calmness, openness to critique and updated vocational knowledge were generated in relationship to important competence. This first selection of codes was applied to all transcripts. The researcher performed a review round to ensure reliable and consistent coding (Saldana, 2009). New codes were added and older ones were reviewed.

In the third step, codes served as the basis to create themes. Themes are recurring patterns that capture something important or interesting in the data (Maguire & Delahunt, 2017). Comparing the initial codes, the researcher realised that the importance of competence acquired meaning in the context of specific tasks. Moreover, embarking from the idea

that learning is situated, it was to be examined in relation to the context it is developed and practiced in. In other words, the importance of the context for understanding the themes was supported both by the theory (situated learning) and the method (thematic analysis) (Clarke & Braun, 2006). For this study, vocational teachers' regime of competence was explored in relationship to the teachers' duties. For instance, communication, was associated with interpersonal competence, as it related mostly with approaching students, rather than teaching them. *Interpersonal competence* although connected with teaching, was a separate theme, due to its frequency and importance for the informants. Codes were often associated with more than one theme (Maguire & Delahunt, 2017).

In step four, themes and subthemes were reviewed and modified (Braun & Clarke, 2006). Some subthemes were overlapping. For example, openness to critique and continuous development attitude were discussed always in relationship to each other and, thus, were unified under continuous development attitude. The themes and the findings were structured based on theoretical concepts. Finally, the themes and subthemes were investigated with reference to their relationships. The researcher explored the proximity of themes and subthemes in the text, especially its frequency, and tried to understand the themes connection with the practice they were presented in.

3.2   Limitations

The findings of this study are limited by two factors, the conditions of the interviews and the profile of the informants. Interviews were conducted in English with the occasional use of Swedish words or phrases[4]. The second limitation addresses the profile of informants, most of which had been or were currently undergoing vocational teacher training. That implies a potential positive stance towards professional development.

Conducting interviews via a digital platform has influenced the discussion outcome, since the creation of a trust environment became more challenging. Nevertheless, the informants were already accustomed to digital platforms, introduced in their work life a year before the interviews. Furthermore, informants were offered in person meetings when the travel distance allowed, but most of them preferred online meetings, due to intense work schedules.

Interviews served as a useful tool in the reflection of teachers' actions in their practice. The researcher's partial understanding of the Swedish language allowed informants to speak Swedish whenever they felt uncomfortable in English. By introducing this possibility in the beginning of the interviews, the researcher created the ground to ask clarifications for terms and nuances in the Swedish language that were not fully understandable. However, restricted language skills might have discouraged potential informants from accepting the invitation for discussion. The language barrier triggered more effort for clarifications, with the

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4 Interview 7 occurred in Greek.

interviewees providing examples and contextualising their answers. Indeed, several teachers reflected on their actions, the reasons behind them and their meaning for their practice before the interviews, some of them by preparing notes as well. However, as interview material remains a verbalised version of individual thoughts, observations or analysis of objects, like lessons plans, could offer a better insight. Unfortunately, COVID19 restrictions and language limitations refrained the collection of further material.

4 Findings

Analysing the vocational teachers' perception of the concept of competence, the study identified three aspects of competence, the action aspect, the situatedness, and developmental aspect. Furthermore, addressing the question of what competence is important for vocational teachers, the study revealed themes prevalent in the research material, including vocational teaching, interpersonal competence, continuous development, and work placement related competence (student work placement – APL[5]).

4.1 Understanding Competence

For the majority of teachers, competence is perceived as the result of education and experience, in an understanding parallel to formal competence and experience whose interplay tends to promote learning (Wenger, 1998).

4.1.1 Competence as Action

In addition to how competence is developed, it is expected to be manifested to other people, stressing the importance of demonstrating and not just acquiring knowledge.

> It's a mixture of theoretical knowledge and practical knowledge, and as a teacher, you have to be able to förmedla [mediate], to express it to other people as well. We all had that professor who couldn't teach, extremely boring, but a lot of knowledge. So you have to have both sides. (Teacher 11)

Approaching competence as the ability to translate the teacher's work experience in teaching is the most common understanding of the concept. In all interviews, the need to demonstrate competence through application in everyday work is apparent, highlighting the importance of the context for competence and the fact the latter is seen as action, elements of competence present in previous research (Antera, 2021). Furthermore, teachers discussed their professional freedom, often reporting feeling confident about their expertise, since

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5 APL is an abbreviation for Arbetsplatsförlagt lärande and it refers to workplace learning.

students, colleagues and principals had been giving them positive feedback for their work. This attitude confirms that competence is seen through action and performance, while it highlights the importance of legitimacy within the community of practice, which is gained when competence is acknowledged within performance.

4.1.2 The Situated Aspect of Competence

In her interview, Teacher 14 brought up an aspect of competence, not directly addressed by other teachers. For her, competence meant an ability to understand the situation, including the people involved, the norms, and the conditions given.

> Even if you are, for example in the profession and you're meeting a client, or if you as a teacher, meeting a student, I think the willingness of, to like understand where this person comes from or what they want and what they have with them as skills or competence. (Teacher 14)

Being able to see the full picture and understand the context makes someone competent. In that sense, competence is relational to the environment and the people in it, and hence situated. When referring to professional competence then, the professional context is perceived as a combination of the professional practice, the members, and the community around it.

The context has a key role in confirming the existence of expertise and competence. Therefore, competence in communities of practice is not only individual or collective. Instead, it is the instant capture of an ongoing negotiation over what is important for the practice through the lenses of the community members. This negotiation is situated in space and time. Competence of importance for the community becomes part of the regime of competence (Wenger, 1998).

Nevertheless, as stated by Teacher 11, individuals might prefer competence excluded from the regime of competence (dis-identification). In this case, their sense of belonging in the community is weaker.

> But my colleagues say no no no Teacher11, you are telling too much, you have to keep, keep on the basics, only. And it's very difficult to me. Because I know a little bit too much maybe for this level. And.... for me also, a very big demand is that, to accept the low level. (Teacher 11)

4.1.3 The Developmental Aspect of Competence

The developmental aspect of competence was expressed through the focus in continuous learning reported by teachers. Teacher 12 stated that "The day I lose my curiosity, the day I lose my, I lose mine desire for more knowledge, it will be the day I stop.". While curiosity is a

key motive for development, another aspect of this developmental nature is the capacity for self-awareness.

> Instead of feeling angry or fall out to the student, you can say, all right, I have no idea. Good question. Let's talk about that next next week. That's a good teacher for me. You don't have to know everything. You have to know where your knowledge starts, begins, and stops. (Teacher 10)

In other words, with a clear picture of one's own knowledge and skills, teaching and learning are better facilitated within action.

Moreover, teachers described exercising competence, which was obtained in different settings, in their teaching jobs. These competences have been developing over time, usually during extracurricular activities. Their introduction to the teaching job has been soft and subconscious, according to teachers. Self-awareness, as reported above, might be vital in exploring these previous teaching experiences and realising their impact on current practices.

4.2 Vocational Teaching

Vocational teaching includes planning and teaching in both theoretical and practical classes, assessing, as well as mentoring the students, and in some cases also designing curricula. With reference to vocational knowledge and courses, the informants reported teaching up to 13 different courses, while they should, additionally, remain informed on the current trends in their respective occupation.

A feeling of belonging to the teaching community is expressed, when teachers mention how rewarding it is to watch their students evolve and become professionals.

> Some of them are really demanding, and if when you put the effort, and then you get, get the change, that's really rewarding. When you see someone success in some way and you know you've been a part of it, that's really rewarding. (Teacher 4)

Holding the overall responsibility of vocational teaching, teachers feel a bigger share in the learning outcome of the students, regarding not only the grades, but also their development as professionals.

4.2.1 Vocational Competence and Remaining Updated on the Occupation

Concerning professional competence, teachers claim that a deep understanding of their occupation and more specifically the knowledge in it, is the basis for teaching it further. In this competence, the innate interest for the occupation is the driving force for remaining updated, but also for teaching the occupation to students. Therefore, teachers feel accountable to at least two regimes of competence, the occupational and the teaching one. Keeping vocational

knowledge updated is a key competence for all informants, while its significance is prevalent in the previous research too (Antera et al., 2022; Mårtensson et al., 2019).

> I work extra on evenings and weekends. Because I don't want to lose my connection with the work. I still think is very fun to take care of customers. And this communication and service and everything that comes with customers. I like it, I still like it. And I think it's very important for me to still be in them in the yrket [occupation]. Because if I lose that, what can I compare it to? (Teacher 9)

Maintaining up-to-date competence is usually achieved by working part time in the previous occupation, having contact with the supervisors of the students' placements and looking for material on different sources. In addition to the individual initiative for learning, Teachers 11, 12 and 13 stated that the vocational knowledge teachers have should be higher than the level of what they teach and should be certified (e.g., licenced nurse or physiotherapist). For those teachers, tertiary level vocational training should be a requirement for teacher recruitment.

Describing school management, Teacher 13 stressed that principals without vocational experience might underestimate the value of VET and the importance of certified vocational competence for VET teachers.

> So yeah, you have health care, but they don't know what that that's inside that. They just see it as a course. Sometimes you think can we just pick the person from the street? No, you cannot pick a person from the street to do this. Then perhaps is more difficult to understand why do you need higher education to do this.

Describing his discussion with the school principal, Teacher 13 also added "Would you hire a Swedish teacher or history teacher that only went to high school? (translation by the author). No, no. Why would I do that? Why are you thinking of doing that in healthcare, you cannot do that."

Overall, teachers suggest that the principals cannot evaluate neither their vocational nor their teaching competence, as "they lack knowledge about vocational programs. And it's, it has become more and more obvious" (Teacher 1). Therefore, they focus on formalities, like qualifications, and on the outcome of teaching, meaning good grades. As Teacher 7 states "what interests her [the principal] is the result, that I have a good result. If I don't have a good result, it shows on the students who will complain, it shows on the student grades, it shows on many things" (translation by the author). This creates low trust from the teacher to the management, but also more freedom for the teacher. Teachers ground their decisions on their vocational or teaching competence. That strengthens the feeling of expertise, but not the feeling of belonging in the school community, as teachers feel that others in the school do not understand their work and needs.

Participation in the vocational teaching practice is not sufficient; nor is recognition of good work. Teachers need to see their competence valued in various different ways. With the school principals being mostly peripheral members of the vocational teacher community, their opinion is not as valued regarding the regime of competence. Nevertheless, their role in the school and their power to legitimise and shape the regime raises their importance and enacts teachers to negotiate about what the regime should include. Giving vocational teachers' CoP voice and the legitimacy to influence decisions with their knowledge can benefit the school with increased retention of talent (Wenger et al., 2002).

4.3 Interpersonal Competence: Student-Teacher Relationship and Communication

Interpersonal competences, enacted when individuals interact with each other, support the development of relationships among individuals. According to Buhrmester et al. (1988) five competence types are important in interpersonal situations, namely relation initiation, assertiveness, self-revelation, handling conflict and emotional support. These refer both to initiating relations, and maintaining them. Key for the work of teachers, interpersonal competence development is based on opening up and trusting others (Britton et al., 2017; Han & Son, 2020).

Interpersonal competence was discussed as essential for achieving a close relationship with students. This relationship was perceived as the basis for every other task to be achieved, as it has a crucial role in teaching, social life, students' placement, and teachers' own development. Interpersonal competence contains two areas, communication and developing a personal student-teacher relationship, with both being interrelated and often the first acting as the introduction to the latter. Communication is described on an initial level, as clarity, especially with reference to the learning goals and the teaching methods, but also as the ability to remain calm and handle conflict. For the nurse-teachers and the child and youth programme teacher these competences have been developed in their previous profession. In this competence area, teachers also included leadership, which they developed in previous jobs.

Developing a close student-teacher relationship is further significant, since trust is important for brokering (Wenger, 1998). This relationship refers to approaching students as individuals, knowing what is important for them (e.g. their issues and interests) (Vloet et al., 2020), and building a relationship of trust, where the teacher is an advisor and a supporter. For Teacher 9 this relationship is the basis for achieving further goals, allowing her to set the limits, gain students' respect and attention. In other words, becoming an important-other for the students is the ground for openness; students consider the teacher's advice due to a relationship of respect and trust.

> Basically I think that's the most interesting part and I think that, well I think that the, my center is about trying to evolve the students into reasonable adults. And I think the chef part, or the cooking part is a good way of reaching them. But I think the most important part is getting them to grow up and be nice people. So I think the cooking part, even though it's my profession from the beginning, it's quite a small part in the whole school thing. (Teacher 4)

According to Teacher 4, the student-teacher relationship is crucial, because the main goal of education is to develop "nice people" first and then good professionals. Prioritising the social aspect of learning and, thus, of teaching, vocational teachers identify primarily as teachers and secondary as occupation experts. Indeed, most of the informants declared themselves as teachers, with the exceptions only among novice teachers emphasising both identities. As the teachers mentioned, the transition from the occupational worker to the teacher occurred in the first 3 years of their teaching and it was recurrent participation in the teaching practice combined with limited participation in the occupational practice that lead them there. This participation increased both commitment and competence for the teaching profession. Moreover, acceptance by their new working environment, by students and colleagues reinforced this transition.

4.3.1 Supporting With Special Pedagogy

Concerning creating a close relationship to students, vocational teachers often discussed their role as curators and/or special pedagogues. Although not part of the teaching practice according to them, teachers feel accountable to help their students in any way possible. Describing student groups as with "messy backgrounds", including "diagnoses", not speaking Swedish, lacking previous education and having several other life issues, it seems that the role of a supporter is inevitably needed.

> We've got at the moment two students with ADHD[6] and that's another challenge for us because they are very square in their minds and how they think… and the big challenge there is how to get them not to follow a recipe point for point. (Teacher 2)

The main challenge Swedish vocational teachers face is students with the need for extra support (Antera et al., 2022). According to the interviews, this support is directed to students with diverse needs emerging from different education levels, low language skills, different cultural backgrounds, but also students with social, psychological or economic challenges at home.

> I think we are a bit special education teachers. Our students have a messy background when it comes to school. Some of them are really low in confidence. And we have to… a big part of our work is to restore the confidence to the school system or "I can do this" and just help them, support. (Teacher 10)

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6 Attention deficit hyperactivity disorder (ADHD).

In relationship to this challenge, the teachers refer to their lack of competence in special pedagogy. They claim that special pedagogy can support them in dealing with student diversity, providing their students with what they need, arguing the importance of this competence upon students' needs (see also Colliander, 2019). At the same time, teachers feel that the knowledge on special pedagogy received during their teacher training is not sufficient, as shown in previous research as well (e.g., Berglund et al., 2017). Opposed to this approach is the view of Teacher 14, a qualified special educator, working part time as special pedagogue. She claims that to deal with the different student needs, didactics are sufficient. Special pedagogy is of help, but its focus is more tailored on learning difficulties and not challenges of socio-economic nature.

Altogether, the rising importance of special pedagogy is an indication of teachers negotiating the regime of competence within vocational teaching practice. While this knowledge is already part of the teacher training, the insisting for further development sets it higher in the agenda. Either by deliberately developing special pedagogy competence or by indirectly applying its principles, acting like informal special pedagogues, vocational teachers negotiate the importance of special education and give rise to its practice, since it is the practitioners' actions that can only produce a practice (Wenger-Trayner & Wenger-Trayner, 2015).

4.4   Continuous Development Attitude and Activity

The positive stance of teachers towards continuous development is obvious when perceiving openness to critique and feedback as attitudes contributing to constant development and growing. This critique can be initiated in students or teachers, but students' opinion is more appreciated. In the same line of thought, a continuous development attitude expresses the avoidance of stagnation and the need for constant improvement. The basic requirement is teachers accepting that they cannot and they do not know everything and, thus, there is always room for improvement.

Another aspect of continuous development attitude is the teachers' desire to see others growing and to support them in this process. In the following quote, the value of development and supporting others to develop becomes intertwined with the teaching identity and profession.

> And then, I think a willing to get to know people and to develop them. And a willing to always make everything better, I think. I don't know, we had some, as I said, we have a lot of students coming to us, teacher students working with us. And I think the ones who do best is the ones who are genuinely interested in the students, who get a good contact with them. Because especially if they are up to third grade I don't... they see through you. And if you are not into genuinely want them to succeed, they won't let you in and let you see what they do. (Teacher 4)

In relationship to continuous development, vocational teachers often participate in formal learning activities and develop themselves with individual non-formal learning. Formal learning in schools takes place in groups or individually, with the two main topics being how to handle non-Swedish speaking students and students with learning disabilities. Other subthemes centre around teaching students from different cultures, pedagogical planning, classroom management, bullying, digitalisation, student motivation and building a shared school vision. These topics are decided in collaboration between teachers and principals. With principals managing resources necessary for teachers' professional development, their role in facilitating teachers' learning intensifies (Ballangrud & Nilsen, 2021).

Development on the previous occupation competence is supported by the school, but left to be planned by individual teachers. However, most teachers experienced the need to remain updated as a responsibility of their own. Several teachers were dissatisfied with the limited support they receive from the school about occupational competence development, commenting that "They don't value. We do it on our own because all we have an interest in in what we do. We are… it's not the school that offers that offers that, it's our own, on our own initiative." (Teacher 13). In this case, teachers started selling their services as health professionals to the municipality, gaining money for conference participation. This commercialisation of their competence is an example of reification, an action the importance of which was negotiated by the teachers and solidified into a service product.

4.5 Work Placement Related Competence: Finding and Matching Workplaces With Students

Regarding student work placements (APL), vocational teachers are assigned with finding the workplaces, matching them with students, coordinating and evaluating the learning process. Matching the students with the workplaces creates better conditions for the students' engagement. This require that the teacher has already established a good student-teacher relationship and is able to understand the students' competence and interest. Although a combination of interpersonal competence and vocational knowing, this theme is distinct because it includes some type of critical thinking in the decision making. Making a choice that is appropriate in the given situation is not as obvious, when issues of vocational knowledge or interpersonal relations are discussed.

> I have a lot of network that I have built up. So I know that because it is very much about matching the place with the student. I can't, I can't put every student on every place, it will not end well. (Teacher 9)

So I need to match. Because if the student is comfortable there, and like the handledare (supervisor), he will probably go there. If he doesn't like the handledare (supervisor), he doesn't like the working place, he will not go there. (Teacher 9)

The APL activity is seen as crucial but time-consuming and tiring, introducing a strain on the relationship between the teachers' professional identity and this work element. Matching the students with the workplaces is vital for teachers, in order to achieve the desired outcome and fulfil part of their identity. For the majority of the teachers, keeping a network of contacts with previous colleagues and local business owners facilitates the arrangement of good student placements. Some teachers use these contacts only for student placements, while others remain also informed on occupation updates via these connections. This emphasises the need for double membership, in the teaching and in the occupational community.

In comparison to subject teachers, vocational teachers seem to have more time with students and, thus, are able to create closer relationships with them. Teachers feel confident providing students with the necessary occupational competence for their APL. However, they sometimes feel insecure about the results of the matchmaking, indicating that their occupational competence is established, while their teaching competence, and thus their ability to understand the student needs, is still negotiated.

Teacher 14 has extensively discussed the challenge of raising the importance of APL, when the hours allocated for it are not included in the schedule for both teachers and students. This administrative hindrance seems to create an overload for teachers and lower the value of APL for students. A tension between the role of a teacher and of an administrator/ APL coordinator is noticed. While all teachers consider the students' work placement central in their work and crucial for their students, parts of it are administrative and not teaching tasks. Although teachers accept the roles of r*ecruiter, matchmaker* and *firefighter* (Mårtensson et al., 2019) in relationship to student work placement, they express dissatisfaction for the administrator role.

You know my salary is a lot better than an administrator. So why use ten, ten hours of my week to do… to send a letter or make a phone call. I don't know, is not good use for the money. (Teacher 10)

As suggested by previous research (e.g., Vähäsantanen & Hämäläinen, 2019), that often creates a tense relationship between their commitment to realise quality training for students and the distraction caused by administrative work. Finally, the size of the school affects the teachers' duties. In bigger schools, the APL coordination is assigned to specific teachers. Hence, vocational teachers can focus on the design and the evaluation of the learning process. These conditions are seen as positive.

Vocational teachers are given the important task of organising the APL process and, thus, the legitimacy to do it. Once the task is completed, teachers gain accountability. When

teachers maintain a clear teaching profile, free from administrative tasks, it becomes easier to achieve accountability for performing the APL task. Participation in any duty alone is not sufficient. Teachers' self-esteem and intrinsic learning motivation increases when they are given relevant, interesting and varying tasks (Hofmann et al., 2014). Teachers want to participate in processes that are of importance to the teaching identity, in order to develop competence high in the regime of competence of vocational teaching practice and, hence, strengthen their legitimacy.

5   Discussion

Acknowledging the importance of vocational teachers' learning, this study presented findings answering how vocational teachers perceive competence in their profession, addressing what competence areas are important and how they are described by teachers.

Important competence for vocational teachers, constituting the backbone of their *regime of competence*, include up-to-date vocational competence combined with legitimised teaching competence, continuous development attitude, interpersonal competence and matchmaking in APL (for a detailed list of competencies within these areas see Antera et al., 2022). The need for constantly up-to-date competence in both the occupational and teaching area, and the negotiation of what defines a good teacher indicate that the regime of competence is influenced by various actors and characterised by a dynamic and transformative nature. The continuous development attitude highlights the developmental aspect of the regime, meaning the urge to improve the members, but also the practice, making it more relevant to the context. Finally, the importance of understanding others and the occupation (interpersonal competence & APL matchmaking) suggests the vital role of the context in which the CoP perform and the regime of competence is valid. "We become who we are by being able to play a part in the relations of engagement that constitute our community" (Wenger, 1998, p. 152).

From the theoretical point of view, reflecting on how the *regime of competence* is shaped, this study sheds light on the introduction of competence developed in the previous occupation into teaching and the negotiation over its solidification. In other words, the mutual dynamics between the individual subjective experience and the influence of the collective, encapsulated in the established community understanding of teaching, are highlighted. Teachers feel confident with the regime of competence prevalent in their previous occupation and they assume legitimacy based on it, for example, when novice teachers can design parts of the vocational curricula. When encountering challenges in teaching, teachers apply strategies that have been successful for them before, utilising competence developed in other settings (Sarastuen, 2020; Stephens, 2015), mostly informal teaching activities and previous occupations. The success of this application raises their accountability and, thus, legitimacy and it supports them when negotiating the introduction and reification of the respective competence in the

regime of competence. In this study, competence developed in other settings and used in teaching include handling people (e.g., patients), scaffolding their independence, motivating, and resolving conflict.

Comparing the regime of competence in the previous and the current occupation, an imbalance becomes obvious. Occupational experience and vocational knowledge acquired during previous studies and work is deeply rooted in vocational teachers, who are accustomed to a production rather than learning function (Moodie & Wheelahan, 2012). The certified and acknowledged vocational competence of teachers boosts their confidence, creating their safe area, while it offers a better point of negotiation than other professions. Hence, they enter the vocational teaching practice landscape as partly equipped members (Wenger-Trayner & Wenger-Trayner, 2015). For instance, up-to-date vocational knowledge and network of industry contacts are parts of the regime of competence for vocational teachers. They can be novice teachers, yet they are experts within their occupations (Eick, 2009) and that can affect the power dynamics between peripheral and centripetal participation. Because vocational teachers have already established part of the regime of competence from their occupational experience, they are able to have some legitimacy and influence within the greater regime of vocational teaching.

On the contrary, their teaching competence might not be recognised yet (März & Kelchtermans, 2020). Participating in teacher duties or holding a teacher certificate is not enough to grant legitimacy. Vocational teachers need to keep their vocational knowledge updated and develop their teaching competence, in a constant effort to prove their vocational teaching expertise and gain membership in the community. The freedom and autonomy some of them enjoy, stems from their vocational expertise and rarely from their teaching expertise, although both might be acknowledged by their CoP. Hence, their teaching expertise becomes a source of authority relatively later in their career.

The recruitment process is key at this point. Most informants claimed to have received job offers because of their vocational profile. Therefore, entry requirement to the vocational teacher community was based on the vocational and not the teaching competence. This influences the vocational teachers' regime of competence, setting occupational competence and experience as the basis of the regime, leaving teaching competence to a different place. This part of the regime is shaped as such based on actual recruitment processes suggesting the pervasive influence of the employing institution (Wenger, 1998). In addition, vocational competence might consolidate easier in the regime of competence also due to the long exposure of vocational teachers to the labour market logic, including the principle of causality, ideas internalised during their years as occupational experts.

Moving from the labour market to education, vocational, teachers transition between a logic of effectiveness and profit, to a logic of individual wholesome development, expected to be combined with professional development. This transition can lead to a tension between

the vocational and the teacher identity (Tyler & Dymock, 2021). Nevertheless, teachers in this study prioritised interpersonal competence (see also Antera et al., 2022), and more specifically the ability to create a student-teacher connection, over vocational expertise. This discrepancy can be explained by the principals' role in the recruitment process, whose focus on vocational competence as the main requirement of employment gives prominences to the vocational identity of teachers, undermining the transition to a teacher identity. Principals, being members in other communities as well, have mostly peripheral membership in the community of the vocational teaching practice. Although the two communities might overlap, an agreement in the respective regimes should not be taken for granted. In the effort to align different regimes of competence, tensions might arise. Nevertheless, it is important to note that the regime is shaped and legitimised by external factors too, as the CoP exists in a broader landscape of practices and communities. Hence, the regime is refined by the interaction between the individual and the community, but also between the community and the landscape, with its negotiation occurring in different levels.

The development of teaching related competence and their subconscious use in teaching requires more attention. In an international comparative study, Canrinus et al. (2019) compared vocational with other teachers, suggesting that the latter may have opportunities to try out their future profession before starting working as teachers, while vocational teachers start teaching with limited teaching experience (Aamodt et al., 2016). Opposed to these findings, the present study suggests that vocational teachers have experience of relevance to teaching and thus some level of competence, developed in different settings, usually informal. Often, they are not fully conscious of the learning potential of these experiences, and hence, they remain unexploited.

With established vocational identity and competence, vocational teachers can act like brokers between communities, both in Sweden and in other countries (Canrinus et al., 2019; Sauli, 2021). According to Wenger (1998), one should belong to the occupational community and at the same time maintain distance from it, implying some form of multi-membership. This work demands boundary-crossing (Berner, 2010; Tanggaard, 2007), but also *boundary extension* (Mårtensson et al., 2019), suggesting that school norms are extended and applied in the workplace. The present study contributes to national and international VET research by showing that vocational teachers enrich the regime of competence not only with vocational knowledge and skills, but also with previous teaching competence, developed often in informal settings, like extracurricular activities. In that sense, they cross the boundaries between informal and workplace learning, highlighting that competence regime is not a standard, but a negotiated concept encompassing learning within formal, non-formal and informal spheres.

6   Conclusion

Overall, approaching important competence through the regime of competence concept has underlined the dynamic and transformative nature of competence and regime of competence, a characteristic that should be considered when studying competence development in communities. With the regime being influenced by several actors, a need to better define membership, especially in levels of peripheral participation or membership in overlapping communities, is stressed. Moreover, since the CoP theory focuses on the community and its members, it is crucial to note that the attention is distracted from the role of social structures, like regulations and recruitment strategies, which also are determinant in shaping the regime of competence.

In closing, considering that parts of teaching competence seem to derive from previous learning experiences, investigating the enactment of previous competence is critical. Formally valued competence, like occupation qualifications and experience seem to receive higher value due to the legitimacy the system attributes to them. Teaching competence on the other hand, as competence required by the job, receive value due to their relevance for the practice. The lack of alignment between the formal and the actually required not only sets a dilemma over prioritisation to teachers, but also entails the risk of misinterpreting the joint enterprise of the practice of vocational teaching. With reference to learning this might lead to one sided competence development, which does not support the multifaceted work demands of vocational teachers.

The development of competence shared between the vocational and the teaching practice in informal activities is of interest for further research. The subconscious everyday teaching activity performed in various settings can be the starting point of reflection for future vocational teachers. Indeed, the realisation of presuppositions on teaching should be explored in the earlier stages of developing a teacher identity with aim to support smooth professionalisation.

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Biographical Notes

Sofia Antera is a PhD candidate in the Department of Education, Stockholm University, Sweden. Her main research interest lies within Vocational Education and Training (VET), with a focus on teacher training and professional competence development for teachers and teaching stuff. Other interests include adult education and migration.

Workplace Learning in China: Transferring Training Into Practice to Improve Performance

Xingheng Wang[1], Weihan Lin[1], Tianwen Xue[2], Adam Green[3], Limin Gu[1], Yansheng He[1], Xiaoshan Huang[4], Zilu Jin[5], Yihua Wu*[5]

[1]Novartis Pharmaceuticals (China), No. 4218 Jinke Road, Zhang jiang Hi-Tech Park, Pudong , 201206 Shanghai, China
[2]Zhejiang Haisen Pharmaceutical (China), Room 401, No. 11 Building, Fengye Apartment, Lane 533 Xinshi Nan Rd, Hongkong District, 200000 Shanghai, China
[3]Southern Illinois University Carbondale, 1263 Lincoln Dr, Carbondale, IL 62901, USA
[4]McGill University, 845 Rue Sherbrooke O, Montréal, QC H3A 0G4, Canada
[5]Shanghai Delightgo Internet Technology Co., Ltd, No 550 Hongqiao Road, Xuhui District, 200032 Shanghai, China

Abstract

Purpose: The present study seeks to examine the efficacy of different training modalities on increasing workplace learning, representatives' intent to transfer what they learned into their work, and importantly how training impacts actual work performance. These relationships are tested in the context of a Chinese division of a multinational pharmaceutical company, where pharmaceutical representatives are tasked with relaying relevant efficacy and safety information on pharmaceutical products to health care professionals who prescribe them to patients.

Methods: The present study employed a three-group between-subjects experimental design. Representatives received varying forms of training (instruction only, instruction plus reflection, and instruction, reflection, plus direct feedback; Gibbs, 1981; Gibbs & Simpson, 2005) based on experimental conditions. After three training sessions over the course of six weeks,

*Corresponding author: vic.wu@delightgo.com

representatives were assessed on how much they learned in the training and their actual work performance through observer assessment of meetings with health care professionals, facilitated by the representatives.

Findings: In this study, it was found that the process of actively reflecting on what was learned in training led to increased learning, as well as increased performance, compared to simply studying the material. However, receiving direct feedback on training performance, combined with active reflection training, did not provide any further benefits in terms of learning or work performance. Notably, there were no differences in intent to transfer learned material to work, as all conditions reported high levels of transfer intention.

Conclusion: The finding provides insightful evidence to support the benefits of fostering trainees' active reflections for work-based learning in the Chinese industry training scenario. In contrast, receiving direct comments on how students performed from a manager or trainer, as well as advise on how do better in the future, had no effect on increasing learning or performance. Although the effect of direct feedback is not statistically significant in this context, further research should be done in understanding individuals' thoughts and behaviors when received direct feedbacks received in workplace training. Relatively little workplace research has assessed both workplace learning and performance in the same study, specifically in the Chinese context. While training efficacy likely varies across cultures to begin with, compensation structures in China do not provide the same monetary incentives for workplace learning (i.e. chance to increase income) as Western culture. This means that any way to increase workplace learning should be of extra value, as employees otherwise may not engage in it at all.

Keywords: Transfer of Training, Performance, Workplace Learning, Self-Directed Learning, Vocational Education and Training, VET

1 Introduction

Learning is something humans do throughout their lifespans. Learning is most closely associated with school, but happens at home, in social situations, and in the workplace. Perhaps because of this association with school, many adults assume that once they are done with school, they are done learning; they have paid their dues to education. However, recognizing that workplace learning is beneficial and pursuing learning opportunities are both necessary for successful development of employees (Matthews, 1999). In China, the formalized practice and study of workplace learning is relatively new (Liu et al., 2020). China is one of the world's largest economies, with around 800 million workers in total (The World Bank, 2022). If the fundamental assumption of workplace learning is true, that employees who engage in

workplace learning will outperform those who do not, due to their increased knowledge, skills, and abilities (Hager, 2005), the optimization of workplace learning programs in the Chinese context will lead to distinct advantages for firms that utilize it.

The assumption that workplace learning leads to increased workplace performance depends on the willingness of the employee to put what they have learned into practice. In other words, they must have the intention to transfer what they have learned into their workplace tasks (Yamnill & McLean, 2001). Blume et al. (2019) proposed a dynamic theory of training transfer which posits that employees' attempts to transfer learned material to practice need to be supported through feedback and allowed time to adjust to the new methods of carrying out their tasks. This model is notable for proposing multiple iterations of learning and transfer opportunities when measuring the efficacy of a training program.

Thus, the goal of the present study is to assess which workplace training methodologies are most effective at not only increasing knowledge but also workplace performance in Chinese workplaces. Specifically, the present study poses the following question: "When seeking to train employees who are not necessarily 'new' on the job, what methods are most effective in facilitating learning, and subsequent transfer of that learned information or skills into practice (specifically in a Chinese context)?"

Transfer of Training

While learning for learning's sake is certainly a noble goal on its own (in an academic's opinion, that is), the end goal of most workplace learning programs is to facilitate performance gain. To translate training into practice, the knowledge, skills, and/or abilities (KSAs) gained from training must be transferred into the actual job context (Blume et al., 2010). While some research has directly measured performance, still too many studies focus solely on learning outcomes only (Baldwin et al., 2017). Without an accurate picture of the mechanisms animating the process of turning learned KSAs into actual increases in work performance, massive investments in workplace learning programs, on the part of large corporations, risk being completely wasted (Ford et al., 2018).

The message made clear by prior research is that studies should emphasize both learning and related performance outcomes, and should ideally be conducted in real work settings with real employees (Baldwin et al., 2017; Blume et al., 2010; Ford et al., 2018). Research conducted in this manner adds to the generalizability of the relationship between workplace learning and job performance.

1.1   Intent to Transfer Training

A primary driver of whether material learned in training is actually transferred into practice is the extent to which the learner intends to incorporate what they have learned into their work; which is known as the Intent to Transfer Training (Gegenfurtner et al., 2009). The

learner is ultimately in control of their own actions in most circumstances encountered in a workplace training context. Therefore, it makes fundamental sense as to why it would be important to follow workplace training practices which promote engagement and buy-in from the learners, which will lead to higher rates of intent to transfer the learned material into their jobs (Curado et al., 2015; Wen & Lin, 2014a).

Past research on program features which promote transfer intentions, via learner engagement and buy-in, include critical thinking-oriented reflection tasks and direct feedback from supervisors/teachers (Gibbs & Simpson, 2005). Additionally, programs which support high self-efficacy in the learners, often by providing a supportive environment for training transfer in addition to the training itself, are associated with higher intent to transfer training, regardless of specific features of the program (Islam, 2019; Khan et al., 2015; Wen & Lin, 2014b).

1.2   Training Methods to Improve Learning/Performance

Much prior research has focused on what features of training programs lead to the most learning and, through transfer, performance (Blume et al., 2010; Blume et al., 2019; see Gegenfurtner et al., 2009). Two facets of training stand out, based on principles laid out by Gibbs and colleagues: Engaging in active learning through reflecting on the material covered in training and receiving direct feedback and advice from supervisors (Gibbs, 1981; Gibbs & Simpson, 2005; Hinrichs, 2014). While school education emphasises a more broad-based development of subject domain knowledge, work-based training is more task-oriented (Anseel et al., 2009), focusing on specific professional skills that must be applied well in specific positions; however, both sites share similar learning objectives for the processes and outcomes.

Reflections and feedbacks are two main interventions that have been applied in various educational context (for critical thinking of novice nurses, see Forneris & Peden-McAlpine, 2007; capacity of midwifery students, see Sweet et al., 2019; for medical students, see White et al., 2009) to improve student-centre task performance. One of the previous studies compared prompts with a purely reflective effect and reflective prompts grounded in self-regulated learning, which effectively improve the reflective process (van den Boom et al., 2004). Further, consistent self-reflections and peer feedback are addressed to be beneficial in groupwork and growth in problem-based group learning (Holen, 2000). Moving from school-sites to work-place training, reflections and feedbacks are playing essential roles in performance; therefore, it is essential to apply appropriate intervention that foster active reflection and instant feedback.

1.2.1 Active Reflection

Reflection is an important phase in self-regulated learning (SRL) frameworks (Pintrich, 1995; Winnie & Hadwin, 1998; Zimmerman, 1989). According to Zimmerman (1989), SRL is a cyclical learning processes containing three phases, namely forethought (understand the task, set goals, and plan for achieving goals), performance (adapt to appropriate strategies throughout the task), and self-reflection (reflect on the whole process and internalize knowledge and skills learned in the task for further study). SRL has been proved to be effective strategies in driving deep learning processes and better performance outcomes (Azevedo et al., 2004; Greene et al., 2010; Ifenthaler, 2020). Researchers are investigating ways to promote self-regulated learning behaviours in learners. Recent studies have begun to investigate the three stages of SRL on a micro-level; for example, high performers exhibited more after-thought phase of SRL (e.g., monitoring) strategies, while low performers tended to orient and reorient (forethought phase of SRL) throughout the task (Lajoie et al., 2021). In another study, Lajoie et al. (2018) and colleagues find out that high performers spend more time than lows in a subcategory of the reflection phase. Interestingly, it could be extremely exciting to encourage the use of higher-level SRL strategies such as reflections to better support learners' higher performance. Gibbs (1981) gives six 'stages' of the reflection cycle that should be completed in order to obtain maximum understanding and internalization of the learned material: 1) Description of the material, 2) Feelings toward the material, 3) Evaluation of the learning process, 4) Analysis of the material (i.e., why it was important to learn), 5) Conclusion about the material, and 6) Plan for implementation of material into practice.

1.2.2 Direct Feedback

Gibbs and Simpson (2005) also discuss the importance of direct feedback from supervisors in the learning and transfer processes. Feedback increases self-efficacy and engagement with the training material, and is thought to be the single largest influence on achievement, at least when it comes to student learning outcomes in traditional scholastic environments (Gibbs & Simpson, 2005; see also Winstone et al., 2017). However, it should be noted that the feedback studied by Gibbs and others primarily refers to private feedback, rather than publicly known feedback (i.e., peers do not see/hear the feedback given). Gibbs and Simpson (2005) also reported that learners often disregarded feedback when they performed poorly or if the feedback was overly harsh. Further, there are also some debates about the effects of direct and indirect feedback. Some scholars believe that direct feedback is more beneficial than indirect feedback (Elashri, 2013; Hashemnezhad & Mohammadnejad, 2012), whereas others believe that indirect feedback has a greater impact on students (Jamalinesari et al., 2015); these studies all targeted at different groups of participants from secondary school students to adult learners. Due to the fact

that direct feedback is more effective in the context of work-based training (Gibbs & Simpson, 2005), we will examine the effect of combining reflection with direct feedback (Anseel et al., 2009) in this study.

1.3 Cross-Cultural Research on Workplace Learning

While workplace learning, and specifically transfer of said learning into practice, has long been studied in organizational psychology (Ford et al., 2018), there exists relatively little research on the topic in non-Western settings. Perhaps this can be attributed to the lack of emphasis on the subject in some Eastern cultures, such as China (see Yan et al., 2001). However, this is changing, as workplace learning is being noticed by Asian countries as a potential avenue of gaining a competitive edge over rival firms (Li & Huang, 2011; Wang et al., 2010).

In China, only a few studies have directly addressed learning in the workplace setting (Meng-Cheng & Su, 2015; Wang et al., 2021; e.g., Yan et al., 2001). The human resource development field as a whole is gaining traction in China, however, with several studies examining Chinese employee samples (Kim & McLean, 2014; Kim et al., 2006; Li & Huang, 2011). Clearly, there is a strong need to address this gap in research by studying workplace learning in Asia in general, and particularly in China.

2 Hypotheses

According to the literature review on theoretical backgrounds and empirical findings on reflections and feedbacks' positive significant influence on learning, three assumptions were made on prompting active reflection and providing direct feedbacks' effects in transfer in workplace training; specially, the three assumptions are listed below:

Hypothesis 1: Employees who are only given training sessions will learn less effectively than will employees who engage in active reflection in addition to attending training sessions, and these employees in turn will learn less effectively than will those who receive direct supervisor feedback in addition to attending training sessions and engaging in active reflection.

Hypothesis 2: The pattern of learning outcome differences predicted in Hypothesis 1 will also apply to employee performance in the work setting.

Hypothesis 3: The pattern of learning outcome differences/work performance predicted in Hypotheses 1 and 2 will also apply to the intent to transfer learned material to the work setting.

3   Methods

To examine our hypothesizes, a three-group between-subjects experimental design was used in this study. We randomly assigned 192 participants in training with varying forms (i.e., instruction only, instruction plus reflection, and instruction, reflection, plus direct feedback; Gibbs, 1981; Gibbs & Simpson, 2005). We elaborated the detailed processes and measurements in the following sections.

3.1   Design

The present study employed a three-group between-subjects experimental design with pharmaceutical representatives randomly assigned to one of three conditions. Condition 1 was the "Learning-Only group", Condition 2 was the "Active Reflection" group, and Condition 3 was the "Feedback" group. The Learning-Only group received learning sessions only. The Active Reflection group received the same learning sessions as the Learning-Only group, but also completed active reflection activities to solidify and enhance their learning. The Active Reflection condition involved assigning reflections tasks based on the model proposed by Gibbs (1981), with prompts such as: "Please describe in detail the main goals of this meeting and evaluate how they have been achieved", designed to lead representatives to critically consider the function of their training and whether or not its goals were successfully achieved. The Feedback group received the same learning sessions as the Learning-Only group, completed the same active reflection activities as the Active Reflection group, but also received direct feedback on their learning from a manager who conducted a group feedback session reviewing performance in the training, as well as offering advice on how to improve as workers.

3.2   Participants

192 pharmaceutical sales representatives from a large, multi-national pharmaceutical company were recruited into the study by their employer. Representatives were 51.56% Female, most were between 26-35 years old (65.1%), and had been employed in the pharmaceutical sales industry from between five months and 20 years ($M = 7.374$, $SD = 4.193$) (see Table 1). While four experimental conditions were initially planned, managers and representatives who would have been assigned to a 'waitlist' condition wanted to be provided training as well and were therefore added to the learning-only condition, as resources did not allow for their inclusion into the other groups.

Table 1: Sample Distribution: Pharmaceutical Representatives (N=192)

variables	n	%	variables	n	%
Gender:			1.8	1	0.52
M	92	47.92	2.0	13	6.77
F	99	51.56	3.0	16	8.33
Age:			3.5	3	1.56
21-25	22	11.46	4.0	11	5.73
26-30	54	28.13	5.0	22	11.46
31-35	71	36.98	6.0	21	10.94
36-40	30	15.63	7.0	18	9.38
Over 40 years old	14	7.29	8.0	12	6.25
Education level:			9.0	11	5.73
3 years diploma	51	26.56	9.3	1	0.52
Undergraduate	135	70.31	10.0	20	10.42
Postgraduate	5	2.60	11.0	5	2.60
Major:			12.0	6	3.13
Medical related	109	56.77	13.0	7	3.65
Non-medical related	82	42.71	15.0	7	3.65
Years of experience in the field of pharma sales (y):			16.0	2	1.04
0.5	1	0.52	17.0	3	1.56
1.0	3	1.56	18.0	4	2.08
1.5	2	1.04	20.0	1	0.52

3.3 Measures

Throughout the workplace training period, we measured the participants' learning results, training performance, and intent to transfer in interpreting the effects of our intervention on the randomly assigned groups. The following sections described each measurement and the sequence of data collection in details.

3.3.1 Learning

Representatives' learning was assessed using a 12-item exam which included items directly related to what they had been assigned to learn, presented in multiple-choice format. The following is a translated example of a question on the exam:

Manager 'BN' was checking the preparations made by representative 'A' regarding the health care professional meeting he will hold for next week. representative 'A' said: *"I have everything ready. Host and speakers are well arranged, the PowerPoint slides and the patients'cases, applications and attendees are all ready to go".*

What option do you think best describes BN's most likely next question?
  A.   *"What is the budget for the meeting?"*
  B.   *"What is the meeting host's mindset going in?"*
  C.   *"What is the purpose of this meeting?"*
  D.   *"What is the subject of this meeting?"*

3.3.2 Performance

Representative performance was assessed by independent coding of seven prespecified behaviors during meetings with health care professionals (i.e., clients). Coding was carried out by an independent team of three raters, who were trained by a supervisor, then watched the recorded meetings separately. The raters then met together and compared their ratings, resolving any disagreements and arriving at a final rating for each meeting. Example behaviors include a) utilizing a set of prepared questions to direct meeting conversation and b) summarizing and providing a recap of the meeting at its conclusion.

A secondary measure of performance was developed to assess performance when the representative was responsible for coaching a health care professional who was not the host of the meeting, which included responding to questions accurately in a timely manner (i.e., not needing to search notes to find answers), speaking for a substantial portion of the meeting, and actively taking initiative to guide the meeting. All behaviors were coded as '1' if observed and as '0' when not observed.

3.3.3 Intent to Transfer

Intent to transfer learned material was assessed using a Mandarin Chinese version of the 12-item Reduced Instructional Materials Motivation Survey (RIMMS) scale, adapted from prior research which has validated its use (Villena Taranilla et al., 2019; Wang et al., 2020) to the workplace training context. The RIMMS scale contains items concerning four facets of motivation to learn/utilize training: Attention paid to the training, perceived Relevance of the material to work, Confidence in their ability to improve their performance using what they have learned, and their Satisfaction with the training process as a whole. Example questions are available upon request (in Chinese and English). The reliability of this scale was quite high, as each 3-item subscale exceeded $\alpha = .975$, though this is due to severe ceiling effects (see below for more information).

3.3.4 Self-Efficacy

Representatives were asked to evaluate the extent to which they felt confident in their ability to take what they had learned and apply it in their job. Representatives rated this on a scale of 0-100, with 0 meaning no confidence whatsoever and 100 meaning maximum confidence. This measure was taken after each training session.

At the end of the experiment, representatives were also asked to retroactively rate their own abilities in performing their job as they were at the start of the experiment, on the same 0-100 scale.

3.4 Procedure

Medical representatives were randomly assigned to one of the three conditions. Representatives in the learning-only condition were given access to the instructional material only, attending learning sessions through an online learning platform. Representatives in the active reflection condition were given access to the instructional material, plus participated in brief active reflection sessions with a manager after each learning session. Representatives in the feedback condition were given access to the instructional material, participated in brief active reflection sessions with a manager after each learning session (Villena Taranilla et al., 2019; Wang et al., 2020), and they also received feedback on how they performed, as well as ways to improve going forward, from their manager in a group setting.

Learning sessions occurred three times, once every two weeks, lasting approximately 60 minutes each time, with the reflection/feedback activities adding approximately 15/30 minutes to that training time, respectively. Prior to, and following, each learning session, representatives were asked to report their perceived self-efficacy regarding the learned material. Additionally, following each learning session, representatives were asked to report their intentions to transfer what they learned into their work using the Attention, Relevance, Confidence, and Satisfaction (ARCS) scale which is RIMMS Chinese Version (Loorbach et al., 2015). After the final training session, representatives were given a 12-question exam covering the material that they had been learning.

To obtain measures of performance, meetings involving hospital health care professionals, arranged by the representatives, were recorded. The meetings served as means by which the company could promote and assure the safety of its products directly to medical personnel. These meetings were held online through video calls due to the COVID-19 Pandemic.

The Training Period started on the 1st of June and ended on the 7th of June. As shown in Figure 1, the meetings took place after the Training Period, from Application Transfer Stage 1 (June 8, 2021, to June 22, 2021) to Application Transfer Stage 2 (June 23, 2021, to July 7, 2021) for approximately six weeks total.

While over 100 meetings took place, only 79 were recorded due to various hospital and governmental regulations. These recordings were analyzed by a third-party team with predetermined markers to assess whether the representative had effectively facilitated the meeting

Figure 1: The Process of Experiment Conduct
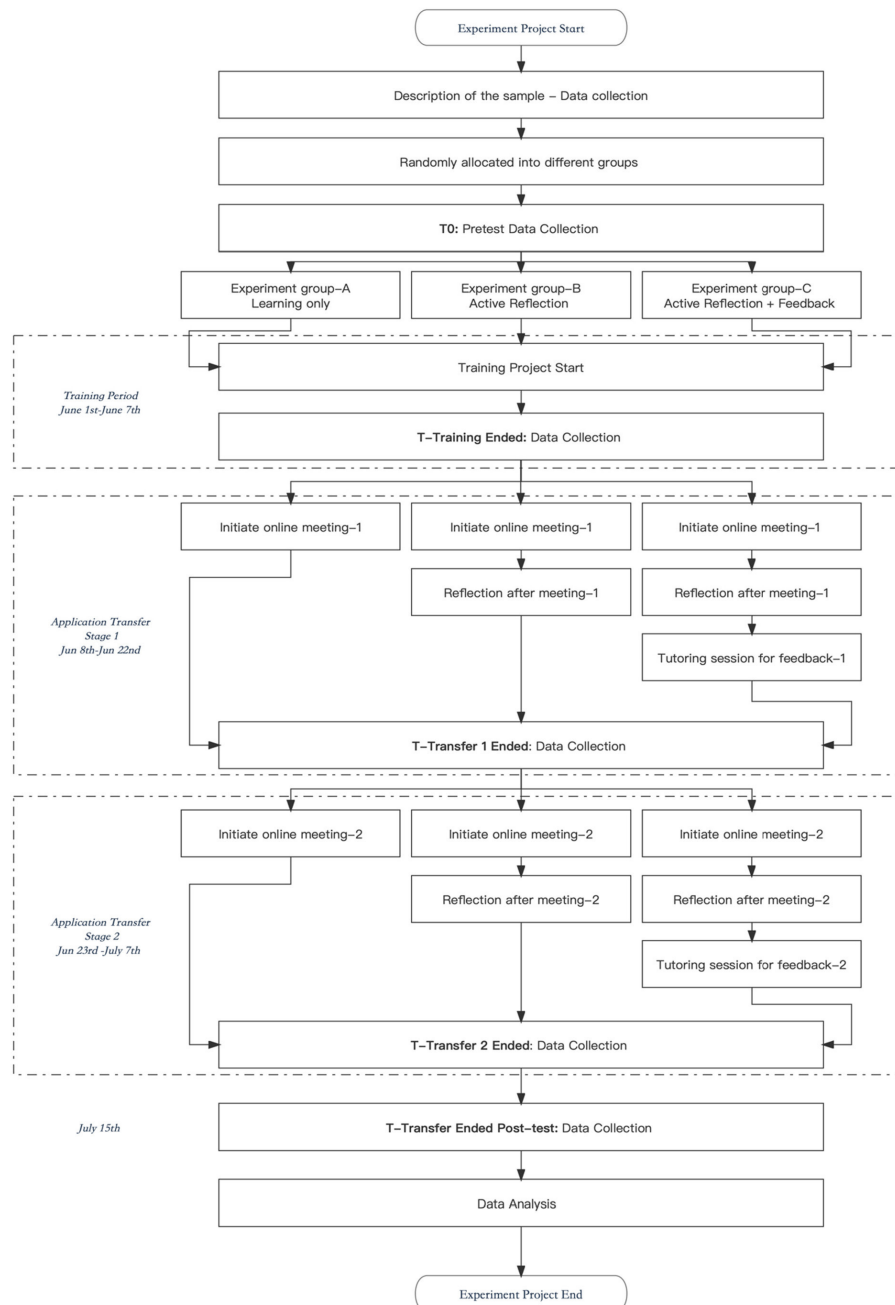
4 Results

It was hypothesized that different training protocols would lead to different learning scores (Hypothesis 1) and work performance (Hypothesis 2) among pharmaceutical representatives. To test this, two univariate Analysis of Variance (ANOVA) analyses were performed comparing the three experimental conditions on learning scores and work performance. As an added measure of work performance, and thus an additional test of Hypothesis 2, three Chi-Square analyses were performed comparing the three experimental conditions on the frequency with which certain behaviors (speaking for a substantial portion of the meeting, promptly answering questions, and taking initiative in directing the flow of conversation). Additionally, it was hypothesized that different training protocols would lead to different levels of intent to transfer training into work (Hypothesis 3) for pharmaceutical representatives. To test this, a third ANOVA analysis was performed comparing the three experimental conditions on their intent to transfer scores.

4.1 Learning

Of the initial sample size of 192 pharmaceutical representatives, 38 did not take the concluding examination and were thus excluded from the analysis. This left a total sample size of 154 representatives. All remaining subjects' residual scores fell within +/- 2.5 standard deviations of their predicted scores, meaning that all were retained in the final analysis. The learning-only group contained 78, the Active Reflection group contained 41 representatives, and the Feedback group contained 39 representatives.

The ANOVA revealed a significant effect of experimental conditions on participants' final examination scores, $F(2, 155) = 8.088$, $p < .001$, $\eta p^2 = .095$. Therefore, Hypothesis 1 was supported. Post-hoc analysis using Tukey's HSD formula was conducted. Specifically, the Learning-Only ($M = 56.68$, $SD = 16.185$) group scored lower than either of the Active Reflection ($M = 64.61$, $SE = 18.090$; $HSD = -7.93$, $p = .029$) or the Feedback groups ($M = 68.49$, $SE = 12.685$; $HSD = -11.81$, $p < .001$). However, contrary to expectations, the Active Reflection and Feedback groups did not significantly differ from each other ($HSD = -3.88$, $p = .523$). See Table 1 for condition means, sample sizes, and standard deviations.

4.2 Performance

A total of 79 pharmaceutical promotion sessions were recorded throughout the course of the study. A univariate ANOVA was used to compare the experimental conditions on their performance scores during these sessions. The Learning-Only group contained 34 representatives,

the Active Reflection group contained 12 representatives, and the Feedback group contained 33 representatives.

The ANOVA revealed a significant effect of experimental conditions on participants' meeting performance scores $F (2, 76) = 10.227$, $p < .001$, $\eta p2 = .212$. Therefore, Hypothesis 2 was supported. Specifically, and similarly to Hypothesis 1, the Learning-Only ($M = 2.74$, $SD = 1.421$) group scored lower than did both the Active Reflection ($M = 4.500$, $SD = 1.168$) and the Feedback groups ($M = 4.152$, $SD = 1.642$) (see Table 3). Again, and contrary to expectations, the Active Reflection and Feedback groups did not significantly differ from each other. See Table 2 for condition means, sample sizes, and standard deviations.

Additionally, the performance of speakers who assisted in meetings was also compared across groups using three Chi-Square analyses. The first analysis compared speakers on whether they satisfactorily responded to questions in a timely manner. The analysis found significant differences between groups ($X^2(2) = 10.241$, $p = .006$, Cramer's $V = .243$), such that the Active Reflection group and Feedback groups responded to questions better than did the Learning-Only group.

The second analysis compared speakers on whether they contributed a significant amount to the overall discussion in the meeting. The analysis found significant differences between groups ($X^2(2) = 17.281$, $p < .001$, Cramer's $V = .312$), such that the Active Reflection group and Feedback groups contributed to the discussion more than did the Learning-Only group.

Table 2: Mean Learning Outcome Across Conditions

		Learning Score (100 = Maximum Score)	
Condition	*n*	*Mean*	Standard Dev.
Learning	78	56.68	16.185
Active Reflection	41	64.61	18.090
Feedback	39	68.49	12.685
Overall	*158*	*61.65*	*16.642*

Table 3: Mean Performance Score Across Conditions

		Host Performance Score (7 = Highest Performance)	
Condition	*n*	*Mean*	Standard Dev.
Learning	34	2.74	1.421
Active Reflection	12	4.50	1.168
Feedback	33	4.15	1.642
Overall	*79*	*3.59*	*1.653*

The third analysis compared speakers on whether they actively took initiative in the meeting. The analysis found no significant differences between groups ($X^2(2) = 1.745$, $p = .418$, Cramer's $V = .100$), meaning that groups did not differ in whether speakers actively took initiative during the meeting. This was likely due to a lack of noted instances of initiative-taking across all groups.

4.3 Intent to Transfer

It was also hypothesized that the groups would differ in their intent to transfer their training to their work. However, there were severe ceiling effects for all groups when assessing intent to transfer. This made the analysis of group differences a moot point, as there was little observed variation in the sample overall. Therefore, Hypothesis 3 was not supported.

4.4 Exploratory Self-Efficacy Analysis

Another indicator of learning, and potentially behavior change related to performance (see Bandura, 1977; Bandura et al., 1999), is self-efficacy in performing one's job. However, accurate self-assessment requires knowledge of one's own lack of knowledge. In general, the pharmaceutical representatives rated themselves quite highly on self-efficacy measures. However, there was a sizeable amount of variation in how, when asked at the end of the study, representatives retroactively assessed their own self-efficacy at the beginning of the study. To assess whether this was due to group differences, a univariate ANOVA was run comparing the groups on their ratings of what their 'true' self-efficacy levels were, in reality, at the start of the study. In other words, this was a retroactive assessment of their own abilities prior to their training. As there were no hypotheses made about differences in self-efficacy across groups, this analysis and its results are strictly exploratory, and should therefore be interpreted with caution.

The ANOVA revealed a significant effect of experimental conditions on participants' retroactive self-efficacy scores $F(2, 148) = 5.600$, $p = .005$, Specifically the Learning-Only ($M = 6.48$, $SD = 10.81$) group scored lower than did both the Active Reflection ($M = 11.77$, $SD = 9.97$). and the Feedback groups ($M = 12.72$, $SD = 11.17$). Similarly, to the previous analyses, the Active Reflection group and the Feedback group did not differ from each other.

5 Discussion

Two of the three primary hypotheses of the study were supported (Hypotheses 1 and 2). Representatives in the Active Reflection and Feedback conditions scored higher on both learning and performance than did representatives in the Learning-Only condition. However,

conditions did not differ in their intent to transfer their training into their work (see limitations section below for likely explanations for why this occurred). This result is counter to predictions made by past research which suggests that people who learn, engage with, and attend to the contents of a training program should show higher levels of intent to transfer what they learned into practice (e.g., Blume et al., 2010). While feedback from supervisors was expected to provide some additional benefit to representative learning and performance outcomes, though no benefit was found in the present study, which is similar to findings in another Chinese sample (Wang et al., 2021). Given the support found for Hypotheses 1 and 2, the present study lends weight to the argument that workplace learning does indeed translate into work performance in the context of Chinese pharmaceutical representatives.

There are several main implications of this study. First, it has demonstrated that Chinese workers are receptive to workplace learning programs, even though there are limited incentives for workplace learning in place relative to other cultures. Second, it has demonstrated a link between workplace learning and directly observed work performance in the Chinese context. Third, employees retroactively assessed their abilities to effectively carry out their job tasks prior to learning, relative to their abilities at the end of learning, with those who engaged only in learning rating their prior abilities most positively. This indicates that they had actually gained the least knowledge over the course of the training program relative to the other groups. Last but not least, implications for assessment methods in future workplace learning are discussed.

5.1   Active Reflection

Reflecting on the study material was the component of training which showed an improvement over simply studying the material. Using activities based on Gibbs (1981), representatives were led to consider more deeply what constituted optimal performance in their job and, importantly, why performing in a certain way was optimal. The success of the active reflection intervention demonstrates that effective prompting of the reflective process is important for improving learning performance in the workplace.

5.2   Direct Feedback

In this context, receiving direct feedback from a manager or trainer as to how they performed in their training, as well as advice on how to improve in the future, was not of any benefit in increasing learning or performance. One possible explanation is, as Blume et al. (2019) mentions in his dynamic training transfer model, that the provided feedback was not completely observed and converted into trainees' own working strategies, and thus their learning and performance outcomes are not highly dependent on whether or not they receive direct

feedback. Compared with learners in school educational context, trainees who have started their early career in the workplace evaluate the usefulness of feedback in various degrees and might be more committed to their own style of working, thereby choosing not to accept the direct feedback in work-based learning. Still, managerial feedback is considered to be an important route to improved performance, so the lack of any effect here is worth noting. Future study can further examine whether the trainees actually take the feedback and make modification; moreover, it is also essential to investigate both external (i.e., environmental and interactional) and internal (i.e., psychological) factors that influence learners' behaviors in tackling with feedback.

5.3   ARCS Measure

One notable outcome of this study was the lack of differentiation in the intent to transfer learned material across conditions. The usage of the Attention, Relevance, Confidence, and Satisfaction (ARCS) (Keller, 2009) model of motivation to utilize learned material RIMMS scale (Loorbach et al., 2015) may have been ineffective in the Chinese context. While the present study used an adapted version of the scale already translated into Mandarin Chinese (Wang et al., 2020), representatives reported high levels of transfer intention across all conditions. This could be due to several factors. First, Chinese employees may be particularly acquiescent and therefore tend to exaggerate the amount that they intend to cooperate with management directives. Second, that the training involved primarily learning knowledge (rather than skills or abilities) led to little reluctance to implement what they learned. Finally, employees may have perceived a lack of anonymity for their responses. If this were the case, they would feel pressured to respond positively to any evaluation of the training program or company itself. It is possible that all three of these factors contributed to the ceiling effects seen in the present study.

5.4   Assessment Methods

Although this study proves effective intervention of active reflection on transfer in workplace learning, it is acknowledged that the transfer is a complex process. However, in this case, the transfer occurred over a two-month period, with the emphasis on the representatives' knowledge changing in a time-limited manner. And only a brief period following learning was used to gather and evaluate participants' transfer processes. While effective training on certain specialized abilities within a specified time frame is critical for organizational behavior, additional research on transfer in workplace learning should investigate the long-term transfer consequences. For instance, to review trainees' working performance on a consistent basis over a longer period of time. Apart from behavioral observations, it is recommended

to combine behavioral assessment with other forms of assessing learning achievement (e.g., questionnaires to assess acquired knowledge, think-aloud protocols to assess changes in cognitive processes, and focus group interviews to obtain peer formative feedback, etc.).

6   Conclusion and Limitations

The present study provided a rare opportunity to measure learning and performance of Chinese pharmaceutical representatives engaged in workplace learning programs. Both learning and actual performance were increased significantly by representatives engaging in active reflection about the purpose of their training. The result provides insightful evidence to support the benefits of encouraging trainees' active reflections for work-based learning in the Chinese industry training context. In contrast, receiving direct feedback on how students performed from a manager or trainer, as well as guidance on how to better in the future, had no effect on enhancing learning or performance. Although the effect of direct feedback is not statistically significant in this context, more research should be done in understanding individuals' thoughts and behaviors when received direct feedbacks received in workplace training. Overall, in the Chinese context, where workplace learning is arguably underutilized and certainly understudied, the present study contributed to the extant literature by demonstrating training methods which improve both the efficacy of workplace training initiatives and result in real gains in work performance.

One limitation of the measures of performance used in the present study was the limited availability of meeting recordings. Approximately half of the meetings which took place were available to coders, meaning that half of the meetings were not rated, greatly reducing sample size and statistical power. However, the ANOVA analysis of performance, while containing unequal group sizes (see Table 1), did not violate any statistical assumptions: For example, the assumption of equal variances across groups was met (Levene's Test $p = .128$), and residual plots showed no distinct patterns in errors. However, due to the unequal cell sizes in the performance analysis, the results should be interpreted with some caution.

One primary feature of the Dynamic Transfer Model (Blume et al., 2019) is the assessment of learning after each opportunity for transfer of training. In the present study, there were two opportunities to transfer training, once midway through the training program, and once after training had concluded. Learning, as well as intent to transfer training, was measured at both times. However, the exam used to measure learning midway through the training program showed very high scores across all conditions (likely due to representatives having just learned the material immediately beforehand), and was therefore not useful for analysis due to ceiling effects. Thus, the ability of the present study to adequately test the Dynamic Transfer Model in its entirety is limited. This limitation is compounded by the ceiling effects observed in the intent to transfer measure which was used. The intent to transfer ceiling

effect is most likely due to social desirability bias on the part of the representatives, as well as the identifiable nature of the data (representative names were linked with their responses due to practical considerations involving the assignment of managers to training conditions).

In spite of these limitations, due to the unique nature of the sample, the measurement of both learning and performance, and the truly experimental design used with random assignment, the present study retains more than enough value to contribute to the body of literature regarding effective workplace learning practices.

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Biographical Notes

Xingheng Wang is the Head of the Field Training and Development Department at Novartis Pharmaceuticals (China). His research interests are self-regulated learning, deep learning strategies, learning transfer, learning measurement, competency modeling, and performance-based training assessment in workplace learning with a focus on China.

Weihan Lin is the Head of the Digital Learning Center of the Field Training and Development Department at Novartis Pharmaceuticals (China). His research interests are learning analytics, online learning strategies and technologies, learning engagement, learning transfer, and performance-based training assessment in workplace learning.

Tianwen Xue is Vice President and BU Head of strategic brand of Zhejiang Haisen Pharmaceutical. He has been worked in Novartis Pharmaceuticals (China) business unit national sales director in charge of field sales management. His research interests are mainly focused on the application of learning transfer areas.

Adam Green is Doctoral Candidate in the Applied Experimental Psychology program of Southern Illinois University Carbondale, his research interests include business ethics, moral psychology, and information communication.

Limin Gu is the Business Unit's Sales Training Leader at Novartis Pharmaceuticals (China). Her research interests are in performance-based training assessment, instructional design, learning engagement, and learning transfer in workplace learning, with a focus on China.

Yansheng He is the Senior Field Training and Development Manager at Novartis Pharmaceuticals (China). His research interests include instructional design, design-based learning, instructional strategies, learning engagement, and learning transfer in workplace learning, with a particular emphasis on China.

Xiaoshan Huang is a PhD student in the Department of Educational and Counselling Psychology (ECP) at McGill University, and a member of the ATLAS (Advanced Technologies for Learning in Authentic Settings) Lab. Her areas of research interests include investigating learners' self-regulated learning, motivation, and epistemic emotions in both academia and the workplace, as well as socially shared regulation in collaborative learning.

Zilu Jin is the project support of the Online Small Meeting project from Shanghai Delightgo Internet Technology Co., Ltd. Her areas of interest in research include training measurement and evaluation, learning engagement, data analysis, learning-oriented assessment, and training transfer, with an emphasis on China.

Yihua Wu is the Project Manager from Shanghai Delightgo Internet Technology Co., Ltd. His research interests include learners' self-regulated learning, learning engagement, training measurement & evaluation, learning oriented assessment and training transfer, organizational behavior, IRT Theory, Computer-Adaptive Testing.

Profiles in Teachers' Value-Based Tensions in Senior Secondary Vocational Education and Training

Kennedy Tielman[1]*, Renate Wesselink[2], Perry den Brok[2], Fadi Hirzalla[3]

[1]Fontys Teacher Education Institute, Professor Goossenslaan 1, 5022 DM Tilburg, Fontys University of Applied Sciences, The Netherlands
[2]Education and Learning Sciences, Hollandseweg 1, 6706 KN Wageningen, Wageningen University and Research, The Netherlands
[3]Erasmus School of Social and Behavioural Sciences, Burgemeester Oudlaan 50 3062 PA Rotterdam, Erasmus University Rotterdam, The Netherlands

Abstract

Context: With an increase in cultural diversity in many countries, schools and teacher educators are grappling with the question of what this diversity might bring in vocational education, and how teachers can be prepared to work with this diversity. In order to train and empower teachers who experience tensions because of culturally diverse student populations, it is useful to know whether teachers do have different needs to work with this diversity. This study reports on profiles in teachers' experience of value-based tensions (professional ethics and stance, diversity and communality, respect, personal autonomy, and justice) teaching in culturally diverse classes of Senior Secondary Vocational Education and Training (SSVET).

Methods: This study relied on data from a questionnaire completed by 891 teachers from 20 culturally diverse SSVET schools in the Netherlands. A Hierarchical Cluster Analysis was performed to identify subgroups of teachers that have a similar pattern of responses (profiles) with regard to the different value-based tensions they experienced. Subsequently, the association of the distinguished profiles with the competence elements (knowledge, skills and attitudes) was examined with ANOVA. Lastly, the P-value of the Pearson Chi-Square was

*Corresponding author: k.tielman@fontys.nl

examined through cross-tabulation analysis to determine whether the associations between the distinguished profiles and personal and contextual characteristics were statistically significant.

Findings: Hierarchical cluster analysis identified three profiles suggesting that teachers experienced all tensions more or less to a certain degree: Relaxed, rarely tense, or reasonably tense. "Professional ethics and stance" tension was the most frequently experienced value-based tension in all three profiles. The profiles were related to teachers background characteristics. The teachers with a reasonably tense profile work mainly in the lower levels of the SSVET. These teachers reported to have had more training on the topic of multicultural education. Teachers with relaxed profile reported having fewer skills than teachers with medium and reasonably tense profiles.

Conclusion: The current study suggests that the culturally diverse student population creates tensions for teachers in SSVET and - depending on the type of profile - for some teachers more than others. The most frequently experienced tension on professional ethics and stance in all profiles confirms that all teachers experience conflicts with regard to their own norms, values and convictions and those of their students on the one hand, and the standards of the labor market with its own specific requirements for professional ethics and stance as a third party on the other. For teacher educators, the profiles can be useful as a reflection tool during study and professional development, as different groups of teachers have been distinguished and some groups need extra training in all the tensions. In SSVET, teachers with the different profiles could support each other in the process of coping with the value-based tensions.

Keywords: Tensions, Values, Teacher Profiles, Cultural Diversity, Vocational Education, Vocational Education and Training, VET

1   Introduction

Teaching in culturally diverse classes is demanding for teachers and they are often confronted with tensions for which they feel not competent to cope with (Banks & Mc Gee Banks, 2004; den Brok & Levy, 2005; Ladson-Billings, 2004; Tielman et al., 2012). Teachers bring their own personal characteristics, norms and values which interfere with the wide variety of value orientations of their students with cultural diverse backgrounds in every lesson. These value-driven interactions can create tensions for teachers (Leeman, 2006; Radstake, 2009; Tielman et al., 2021). Teachers of culturally diverse classes rate value-based tensions as the most difficult tensions to deal with (Radstake & Leeman, 2007). These tensions manifest themselves in many ways and vary in intensity depending on the personal perception of the

teacher (Henze et al., 2000; Radstake et al., 2007). Such tensions may challenge personal feelings, values, beliefs or perceptions and are therefore often not easy to resolve (Pillen, 2013). In the Netherlands, students from culturally diverse backgrounds increasingly are entering schools for senior secondary vocational education and training (SSVET) and in some large cities they make up as much as 80% of the student population (CBS StatLine, 2018). Before proceeding, some remarks on the Dutch SSVET.

The Dutch education system encompasses separate schools for SSVET. SSVET prepares students for work or subsequent study programs and social participation. SSVET is divided into four training levels, varying from qualification level 1, i.e., assistant training (duration of 1 year), to qualification level 4, i.e., management training or specialist training (duration from 3 to 4 years). In SSVET schools a distinction is made between two types of learning tracks, the school-based, and the work-based track providing a total of 735 training qualifications (http://www.mboraad.nl/[1]). Together with the differentiated nature of SSVET and the multitude of different subject areas to be trained and customized, there are also large differences between teachers in terms of personal characteristics and educational backgrounds (de Bruijn, 2013; Duch & Andreasen, 2015). In addition, SSVET teachers have different roles, such as teachers of general subjects, vocational subjects, practical subjects and practical supervisors. Aside from the cultural diversity, the teaching staff is diverse in itself.

Dutch SSVET has a cultural diverse student population that causes, just like in any other type of education, value-based tensions for the teachers (Tielman et al., 2021). Within SSVET the causes of value-based tensions do not only lie in the interaction between teachers and students due to discrepancies in common norms and values, but also in the field of professional ethics and stance (Tielman et al., 2021), which means that the interaction of both students and teacher with the labor market does play a significant role in creating additional tensions. In the present study, value-based tensions in SSVET are defined as the teacher's internal struggle between, on the one hand, his/her own beliefs, norms and values and, on the other hand, the requirements of the profession versus the student's culturally formed beliefs and perspectives on norms and values. In order to cope with these value-based tensions teachers should develop multicultural competence, which is seen as *"an ability to continuously (a) explore their attitudes and beliefs about multicultural issues, (b) increase their understanding of specific populations, and (c) examine the impact this awareness and knowledge has on what and how they teach as well as how they interact with students and their families"* (Spanierman et al., 2011, p. 444).

In previous research conducted by the authors, value-based tensions (professional ethics and stance, diversity and communality, respect, personal autonomy and justice) were found (Tielman et al., 2021) and teachers' multicultural competence appeared to be associated with the experience of value-based tensions (Tielman et al., 2022). Table 1 gives a description of the value-based tensions.

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1 The MBO Raad is the branch organization of schools in SSVET and adult education in the Netherlands.

Table 1: Value-Based Tensions (Tielman et al., 2022)

Value-based tensions	Description of the tension
Diversity and Communality	How to cope with group differences in terms of ethno-cultural background. The tension is that teachers mainly focus on the differences between students and not on the similarities.
Respect	Involves disrespect of students towards female teachers and school rules, disrespectful interaction between students and authority problems in the class.
Professional ethics and stance	Tensions or different values of teacher compared to students in coaching students on their professional attitudes and work ethics with regard to punctuality, integrity, dealing with authority and professional standards.
Justice	Tensions related to whether or not the teacher acts fairly, according to the students, when assessing students' work or evaluating students' behavior.
Personal Autonomy	Tensions, often occurring with individual students who, in the teachers' opinion, choose loyalty to the group rather than acting more autonomously in their decisions.

Examples of values-based tensions in the classroom for diversity and communality are situations where difficult topics need to be discussed, related to sexuality or religion. For respect, an example is when a teacher may feel that their rules or procedures are not respected. Professional ethics and attitudes may be at stake when, because of their cultural background/ beliefs, students have difficulty performing certain professional tasks or have difficulty exhibiting professional behavior in the professional context. For justice, the teacher may feel confronted with unjustified accusations of discrimination by students. Finally, for personal autonomy, an example is when students refuse to tell the truth because they do not want to betray someone else in the group. Research also shows (Tielman et al., 2021) that when tensions are examined, they can also end up being positive. For example, in that study one teacher reported that his sensitivity to culturally diverse student populations increased after he interviewed students about the tensions he was experiencing; as a result, he invested more in creating a trusting relationship with his students.

In the context of SSVET, on average, value-based tensions related to professional ethics and stance, respect, and diversity and communality were experienced relatively frequent, and tensions related to personal autonomy and justice were experienced less often in comparison with other tensions (Tielman et al., 2021). However, there are considerable differences between SSVET teachers in experiencing these tensions, similar to the significant differences in value-related tensions experienced by teachers in culturally diverse general secondary education (Radstake, 2009). SSVET teachers are very diverse in background, prior education and position, even more so than teachers in general education (Orr, 2019), and it is possible that their experiences of value-based tensions are different and distinct from those in secondary education (e.g., Leeman, 2006; Radstake, 2009). SSVET teachers could perhaps be grouped according to the extent to which they experience different tensions, in order to learn more about the level and nature of the tensions experienced, the tensions as such and the SSVET context in which these tensions occur. Furthermore, the ways in which teachers

experience value-based tensions (Leeman, 2006; Radstake, 2009; Tielman et al., 2021) may differ according to their multicultural knowledge, skills and attitudes and their personal and context characteristics (Tielman et al., 2022). In general, multiculturally competent teachers experience less tensions (Henze et al., 2000; Radstake, 2009) than less competent teachers. However, in our previous research (Tielman et al., 2022) the outcomes were less clear cut and we could not properly explain all findings regarding the relationship between competencies and background characteristics of teachers in SSVET and the experience of value-based tension. Teachers' self-perceived multicultural knowledge, attitudes and skills showed different associations with each of the perceived value-based tensions. The more multicultural knowledge teachers perceived to have, the less tension the teachers experienced, while the more multicultural skills they perceived to have the more tensions they reported to experience. We could not bring forward an explanation why skills related in a different way to value-based tensions than knowledge and attitudes did. No other explanation could be found either; internationally there has been little research on teachers in SSVET (Cedefop, 2009; OECD, 2010). In our above mentioned study on the relationship between teachers' characteristics and competencies and their experience of tension (Tielman et al., 2022), several personal and contextual characteristics, such as qualification levels, age, training need and training received, correlated with teachers' experience of value-based tensions. The question is whether looking at separate or combined factors across all teachers will provide an ultimate answer to our questions. Additional and different analyses may be helpful in this respect. The variables of interest (tensions experienced) may be present in different teachers to different degrees; therefore, a variable-based approach may not provide an uniform picture in terms of differences between teachers. In order to understand differences between teachers more in-depth, a person-centred approach may be helpful and is followed in the present study.

We were inspired by other research, not specific to SSVET, which has used a person-centred approach and found that teachers can experience very different levels of tensions. Pillen et al. (2013) classified beginning teachers into different profiles based on their experience of professional identity tensions. These profiles related both to specific types of tensions (e.g., dealing significant others, care-related tensions, responsibility-related tensions) as well as the amount of tension perceived overall (e.g., moderately tense teachers, tension-free teachers, and troubled teachers). They also found that these profiles were subject to change which implies that they can be reduced if teacher educators or mentors in schools provide support. Hence, for the present study it may be worthwhile to search for profiles in order to be able to interpret the considerable differences found between SSVET teachers with regard to experiencing value-based tension and to be able to provide appropriate support. To the best of our knowledge, no specific research has been done on the profiles of teachers in SSVET with regard to value-based tensions, nor on the aspects that influence the experience of those tensions. For school practice, having these profiles might enlighten that there are differences

within (i.e., between teachers) and between schools when it comes to teachers experiencing tensions and that a general situation cannot be assumed. Targeted training can then be set up for teachers with different tension profiles. The present study aims to profile teachers according to their value-based tensions, summarizing the different tensions experienced alongside each other into smaller pieces that are more accessible and easier to understand (Rickards et al., 2005), which may enhance reflection, consciousness and design of professional development approaches.

Person-centred analyses seek to identify unobserved subgroups of individuals who are comparable with respect to certain indicator variables (Muthén & Muthén, 2000). A person-centred approach will distinguish profiles of teachers with regard to their experience of value-based tensions. According to Rickards et al. (2005) reflection on teachers' competence may be enhanced if information regarding that behaviour is presented in profiles.

> *"Profiles are powerful tools for reflection because they can be used to conceptualize complex and interrelated information, (as is the case with competence elements and background characteristics with regards to the experience of value-based tensions) because they can summarize information into chunks that are easier to comprehend, and because they can stimulate associations with the teachers' own knowledge if they are accompanied with powerful labels" (p. 268).*

Such a reflection can be useful when creating an approach for teachers with those profiles, or for making others aware of differences.

In the present study, we adopt a profile approach to investigate how certain combinations of value-based tensions teachers experience and to see which combinations are more and less prominent. In addition, we examine whether the distinguished profiles differ with regard to their competences and background variables. This might help teachers to become more aware of their value-based tensions and make these explicit and also make it easier for teacher educators to recognize such tensions and prepare student teachers in dealing with them. For research it might reveal the specific role of skills.

To date, no specific research has been found on the profiles of teachers in SSVET with regard to value-based tensions, nor on the aspects that influence the experience of those tensions. Based on the survey data, this study aims to investigate, using a person-centred (e.g., profiling) approach, whether there are groups of teachers in which tensions occur together in certain combinations or not or whether teachers perceive tensions to a certain extent (cf. Pillen et al., 2013). In addition, we will examine whether the subgroups with distinctive teacher profiles differ in terms of their self-perceived competencies and background variables.

The following research questions will be answered:

1. What different profiles in teachers' value-based tensions can be distinguished among teachers teaching culturally diverse SSVET?

2. How do these distinguished profiles in teachers' value-based tensions relate to teachers' self-perceived competences?

3. How do these distinguished profiles in teachers' value-based tensions relate to teachers' background characteristics?

2   Methodology

To answer the research questions, this study relied on data from a questionnaire distributed to teachers of SSVET schools in the Netherlands. The questionnaire was based on an earlier study by the authors that investigated what value-based tensions were experienced by these teachers and what competence elements and background characteristics of these teachers influenced these value-based tensions (Tielman et al., 2022). Participants for the question-naire study were acquired by approaching schools within the research team's professional networks, organizations representing the interests of teachers in SSVET, and professional journals to gain support for the study. They were informed of their voluntary participation and the confidentiality of treating their data. The survey was administered via Qualtrix. Three teachers completed a draft questionnaire to ascertain whether they could sufficiently recognize the tensions. This was the case and no changes were deemed necessary. From 20 different culturally diverse SSVET schools, 898 teachers participated in the survey. The teachers had a mean age of 44.3 years (SD = 12.5), and 58% were women. This is representative for Dutch SSVET, as the average age of the Dutch SSVET teacher in 2020 was 46.4 years and 57% were female (Ministerie van Onderwijs, Cultuur en Wetenschap, 2021). All background and context characteristics are presented in Table 2.

Table 2: Background and Context Characteristics (own compilation)

Background & context characteristics	Subcategories	%
Gender	Female	58
	Male	41
	Unknown	1
Ethic background		
Native[2]		51
Migration background[2]		49
Age (in Years, SD)		44.3(12.3)
Teaching expereince (in Years, SD)		11.3(9,95)
Teachers employed by city size (inhabitants)		27
> 300.000		63
> 100.000 and < 300.000		10
> 100.000		
Teaching certification		44
Teacher training program		56
Different or no certification		
Training multicultural education		62
received		51
need		

2.1 Measurements

The questionnaire used for this study was originally developed to measure the relationship between value-based tensions (based on Radstake, 2009) and competence elements (based on Spanierman et al., 2011; Ponterotto et al.,1998) and personal and context characteristics of teachers (Tielman et al., 2022).

With regards to the experience of value-based tensions *(diversity and communality, respect, justice, personal autonomy and professional ethics and stance)* respondents used a five-point Likert scale ranging from 1 being "almost never occurs" to 5 being "almost always occurs" to rate how often they had experienced tensions. A previous study (author) identified these value-based tensions as separate factors through factor analysis. For *diversity and communality* (Cronbach's α =.72, N of items = 4) a sample item was: "One or more students do not want me to interfere with the content of a row in class". With regard to *respect* (Cronbach's α = .65, N of items = 3), an example item was "one or more students do not respect my opinion as a teacher". For the *justice* scale (Cronbach's α = .65, N of items = 3), a sample item was: "One or

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2 In this study we define the group of teachers with a migration background as teachers who were themselves born in a non-western country or had at least one parent born in a non-western country.

more students accuse me of discrimination". Concerning *personal autonomy* (Cronbach's α =.66, N of items = 3), an example item was "one or more students refuse to tell me the truth because they do not want to betray the person who did something". With regard to *professional ethics* and *stance* (Cronbach's α =.85, N of items = 10) an example item was "one or more students have difficulty carrying out certain professional tasks towards a specific target group because of their cultural background/beliefs". The Pearson correlations among the value-based tensions are presented in Table 3.

Table 3: Bivariate Correlations Between Value-Based Tensions and Competence Elements (own compilation)

		1	2	3	4	5	6	7	8
1	Diversity and Communality	--							
2	Respect	.696**	--						
3	Justice	.603**	.629**	--					
4	Personal Autonomy	.630**	.625**	.674**	--				
5	Professional Ethics and Stance	.624**	.637**	.534**	.549**	--			
6	Skills	.111**	.063	.048	.130**	.198**	--		
7	Attitude	.080	.039	.023	.079	.152**	.645**	--	
8	Knowledge	-.033	-.047	-.049	.032	.026	.553**	.401**	--

* = p < 0.05
** = p < 0.01

As Table 3 shows, the value-based tensions are positively correlated. These correlations indicate some overlap or high associations between the different tensions, but at the same time they also show sufficient distinctiveness of the different value-based tensions (Jong & Westerhof, 2001). Based on this reason, and on the fact that the tensions are conceptually different and distinct, and because a Principal Components Analysis in our prior study suggested different factors (Tielman et al., 2022), the different tensions will be treated as separate constructs.

To assess the elements of competence (*knowledge, skills and attitudes*) of the teachers, items were formulated on a five-point Likert scale with an answer format ranging from 1 "totally disagree" to 5 "totally agree". One example of an item for *multicultural knowledge* (Cronbach's α = .83, N of items = 6) was "I am knowledgeable of how experiences of various ethnic minority groups may affect students' learning". A sample item for *multicultural skills* (Cronbach's α = .89, N of items = 9) was "I often include examples of the experiences and perspectives of racial and ethnic groups during my classroom lessons". One example of the items

for *multicultural attitude* (Cronbach's α = .87, N of items = 8) is "To be an effective teacher, one needs to be aware of cultural differences present in the classroom".

Table 3 also shows the bivariate correlations between the value-based tensions and the competence elements. Multicultural skills had a significant correlation with the value-based tensions *professional ethics and stance* (r= .198, sig p< .01), *personal autonomy* (r= .130, sig p< .01), and *diversity and communality* (r= .111, sig p< .01). Between multicultural *attitude* and *professional ethics* and *stance* the correlation was r= .152 (sig p< .001). All correlations were small. Next, we determined the partial correlations of the perceived value-based tensions by stepwise linear regression with all independent competence variables and the teacher and context background variables combined.

Compared to the bivariate correlations the positive relationship between multicultural *skills* and *professional ethics* and *stance* increased and decreased *for diversity and communality*. Multicultural *skills* became positively correlated with *respect*. The more multicultural skills teachers reported to have, the more value-based tensions teachers experienced with regard to *professional ethics and stance* (standardized coefficient β = .183, SE= .038 p< .001), diversity and communality (standardized coefficient β = .121, SE= .041 p<. 05), and *respect* (standardized coefficient β = .116, SE= .046, p< .05) (see Table 4).

Table 4: Overview of the Extent of Relation Between Experienced Value-Based Tensions and Involved Variables (own compilation)

Variables		1.	2.	3.	4.	5.
Independent variables	Skills	.121* (.041)	.116* (.046)			.183*** (.038)
	Attitude	-.171** (.037)				
	Knowledge	-.104* (0.56)	-.175** (.041)	-.116* (.030)		-.162** (.034)

Variables:

    1. Diversity and Communality
    2. Respect
    3. Justice
    4. Personal Autonomy
    5. Professional Ethics and Stance

* = p < 0.05
** = p < 0.01
*** = p < 0.001
(Coefficients Std. Error)

In comparison with the bivariate correlation multicultural *knowledge* became negatively related with *respect*, *professional ethics and stance*, *justice* and *diversity* and *communality*. The less multicultural *knowledge* teachers reported to have, the more value-based tensions teachers

experienced with regard to *respect* (standardized coefficient β = -.175, SE= .041 p< .01), *professional ethics and stance* (standardized coefficient β = -.162, SE= .034 p<.01), *justice* (standardized coefficient β = -.116, SE= .030 p<.01), and *diversity* and *communality* (standardized coefficient β = -.104, SE= .056 p< .01).

Multicultural attitude showed no longer a significant correlation with *professional ethics and stance* but became negatively significant to *diversity and communality*. The less positive the attitude, the more value-based tensions they experienced with regard to *diversity and communality* (standardized coefficient β = -.171, SE= .037 p< .01).

Personal and context characteristics of teachers were included in the analysis as follows. Age was measured as the teachers' ages in years when they completed the questionnaire. Teachers' gender was coded as 0 = female and 1 = male. For the migration background of teachers a dichotomous variable (0 = migration background and 1 = native) was constructed. Teaching experience was measured by the number of years respondents had been working as a teacher, including the year in which the questionnaire was answered. For the variables teacher diploma and SSVET qualification level, dichotomous variables were constructed, respectively (0 = pedagogical didactic certificate[3] or other and 1 = teacher training diploma full-time/part-time) and (0 = qualification levels 1, 2, 3 and 1 = qualification level 4)[4]. Training received was coded as 1 = yes and 0 = no. For the variable diversity in teacher population for each participating school the Herfindahl Index (Putnam, 2007) was calculated, considering the number and size of different ethnic groups. On average, schools had a teacher divers population score of .239 (SD = .184). For the analysis a dichotomous variable were constructed, (0 = schools with less diverse teacher population (M< .239)) and (1 = school with more diverse teacher population (M > .239)).

2.2 Analysis

A Hierarchical Cluster Analysis (HCA) was performed on the questionnaire data using SPSS version 27. We used HCA as a person-centered cluster analysis to identify subgroups of teachers that have a similar pattern of responses (profiles) with regard to the different value-based tensions *(diversity and communality, respect, justice, personal autonomy and professional ethics and stance)* that teachers experienced. HCA with squared Euclidean distances and Ward's method were chosen to ensure that teachers within a profile were optimally comparable and that different groups or profiles were optimally different. Solutions with two to seven clusters were tested in the search for the optimal number of profiles. For each cluster

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3 These are post-secondary education graduates with non-tertiary vocational training or graduates with tertiary vocational training but no teacher training who participate in a work-focused internship program leading to a teaching certificate with authority to teach exclusively in SSVET (Smulders et al., 2016). This internship program lasts 18 months and includes both pedagogical and educational topics.

4 This classification is based on the fact that in the Netherlands students with a migration background are more represented in levels 1 to 3 than in level 4 and that generally 50% of Dutch SSVET students follow level 4 (CBS StatLine, 2018).

solution, an analysis of variance (ANOVA) was performed with the distinguished clusters as the independent variable and each of the five value-based tensions as dependent variables. This way the variance explained by the solutions was established, based on which the optimal solution could be identified to answer research question 1.

Subsequently, we examined whether the distinguished profiles in the optimal solution as independent variables were related to the dependent competence elements *(knowledge, skills and attitudes)* by means of variance analyses to answer research question 2.

Furthermore, to answer research question 3, we examined the P-value of the Pearson Chi-Square by means of cross tabular analysis to determine whether the associations between the distinguished profiles and the personal and contextual characteristics *(ethnic background (native), gender, teaching diploma, training received, training need, qualification level and diversity in teacher population level)* were statistically significant. We conducted an analysis of variance to assess the associations with the ratio variables *age* and *teaching experience*.

3 Results

In the first part of the results section, we describe the different profiles in teachers' value-based tensions. Moreover, we examine in the second part the extent to which the distinguished profiles in teachers' value-based tensions are related to teachers' competencies. Finally, in the third part, we describe the extent to which the distinguished profiles in teachers' value-based tensions are related to teachers' background characteristics.

3.1 Different Profiles in Teachers' Value-Based Tensions (Research Question 1)

The results of the analysis suggested that a three-cluster solution was the best fit of the data based on the explained variance and interpretability of the solution. Overall, as indicated by eta-squared for all cluster solutions in table 5, solutions with more than 3 profiles explained little extra variance in teachers' tension ratings, whereas solutions with fewer than 3 profiles explained considerably lower amounts of variance. Moreover, in the 3 cluster solutions, each of the profiles appeared to be interpretable.

Table 5: Eta Squared for the Different Cluster Solutions (own compilation)

	Clusters					
	2 clusters	3 clusters	4 clusters	5 clusters	6 clusters	7 clusters
	Eta Squared					
Professional ethics and stance	.361	.477	.478	.601	.614	.648
Diversity and Communality	.429	.602	.637	.660	.668	.695
Respect	.458	.637	.686	.709	.714	.722
Personal autonomy	.338	.554	.654	.658	.710	.720
Justice	.421	.598	.625	.625	.660	.678

The identified 3 cluster solution were labelled according to the experience of value-based tensions by teachers. The results show that no particular tension stood out, but that all tensions in the groups increased per profile. The groups could thus not be labelled by referring to specific tensions. Cluster 1 corresponds to *relaxed* teachers, cluster 2 *rarely tense* and cluster 3 *reasonably tense* teachers. The characteristics of these three clusters are shown in Table 6 and graphically displayed in Figure 1.

Table 6: Cluster Sizes, Means (on Scale 1 to 5), Standard Deviations (Between Parentheses) and Eta Squared Coefficients for the Value-Based Tensions (own compilation)

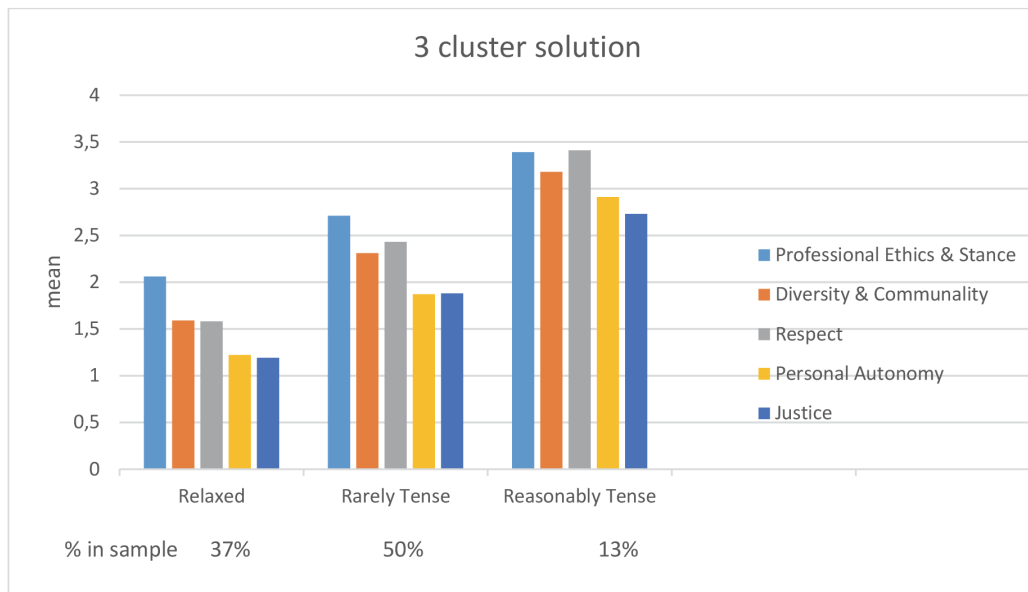|	Eta Squared	Clusters			
		Relaxed	Rarely tense	Reasonably tense	Total sample
Cluster size		37%	50%	13%	100%
Professional ethics and stance	.477	2.06 (.50)	2.71 (.43)	3.39 (.41)	2.56 (.63)
Diversity and Communality	.602	1.59 (.39)	2.31 (.44)	3.18 (.41)	2.16 (.66)
Respect	.637	1.58 (.43)	2.43 (.46)	3.41 (.47)	2.24 (.74)
Personal autonomy	.554	1.22 (.29)	1.87 (.54)	2.91 (.62)	1.76 (.71)
Justice	.598	1.19 (.27)	1.88 (.43)	2.73 (.61)	1.73 (.64)

Figure 1: Graphical Display Showing Means for Each of the Three Profiles (own compilation)

The Eta Squared values for the three cluster solution were quite high. Professional ethics & stance had a score of .477, diversity & communality .602, respect .637, personal autonomy .544, and for justice the score was .598. This means that between 47 and 63 percent of all differences between teachers on the variables could be explained by this clustering solution.

As indicated by table 6, the first profile cluster (37% of the sample), labelled as *relaxed,* was composed of teachers who experienced all value-based tensions below the average of the total sample. The second profile cluster (50% of the sample), labelled *rarely tense,* consisted of teachers who experienced tensions that were slightly above the averages of the total sample. For the tensions of professional ethics and stance and respect, values were highest. The third profile cluster (13% of the sample), labelled *reasonably tense*, was composed of teachers who experienced all tensions far above the sample average. Professional ethics and stance had by far the highest average in the *low and rarely tense* cluster. In the *reasonably tense* cluster, professional ethics and stance had the highest average, after the tension of respect.

3.2 Extent to Which the Distinguished Profiles in Teachers' Value-Based Tensions Relate to Teachers' Competences (Research Question 2)

Next, we examined the relationship between the three-cluster solution *(relaxed, rarely tense and reasonably tense)* and the multicultural competence elements *(knowledge, skills and attitude)*. In contrast to skills, no statistically significant differences were found between the

profiles with regard to the competence perceptions in the area of knowledge and attitude. The means of the competence elements in the three profile clusters are presented in Table 7.

Table 7: Description of Means (on Scale 1 to 5), Standard Deviations (Between Parentheses) of the Profile Clusters in Terms of the Competence Elements (own compilation)

	Skills	Knowledge	Attitude
Relaxed	3.30 (.91)	3.00 (1.00)	4.00 (.72)
Rarely tense	3.52 (.77)	3.05 (.95)	4.10 (.70)
F_{asymp} (df1/df2)	5.394 (2/307.401)*	.218 (2/339.697)	1.620 (2/197.804

* = p< .01

At first glance, all three profiles seemed to report similar levels of *skills* and teachers with high and rarely tense profiles, respectively, perceived to have more *skills* than teachers with the relaxed profile. However, the post hoc test indicated that the mean differences were significant between the relaxed and rarely tense profile and the relaxed and reasonably tense profile, but not between rarely tense and reasonably tense.

3.3 Extent to Which the Distinguished Profiles in Teachers' Value-Based Tensions Relate to Teachers' Background Characteristics (Research Question 3)

We compared the distinguished profile clusters for background characteristics by means of cross tabular analysis. These results are presented in Table 8. As regards the significant associations, qualification level ($\chi2$ (2, N = 623) = .003, p< 01), training needed ($\chi2$ (2, N = 623) = .000, p< 001) and, training received ($\chi2$ (2, N = 623) = .000, p< 001) will be described for each cluster.

Table 8: Description of Percentage of the Background Characteristics of the Total Sample per Profile (own compilation)

	Relaxed	Rarely tense	Resonably tense
% Female teachers	34.5%	50.7%	14.8%
% Native	37.7%	49.4%	12.9%
% Qualification level 4*	38.6%	52.2%	9.2%
% Teaching diploma Teacher Institute	36.7%	52.5%	10.8%
% Training needed*	30.2%	54.7%	15.1%
% Training received*	28.7%	53.7%	17.6%
% Diversity in teacher population	34.8%	51.8%	13.4%

* significant associations

Most of the teachers who taught qualification level 4 were in the rarely tense cluster (52.2%) and the smallest group of teachers was in the reasonably tense cluster (9.2%). Of the group of teachers who indicated that they needed training, the largest group was in the rarely tense cluster (54.7%) and the smallest group in the reasonably tense cluster (15.1%). Most of the teachers that indicated that they received training (53.7%) were in the rarely tense cluster and the smallest group of these teachers were in the reasonably tense cluster (17.6%). Teachers with more tensions also had more need for training and received more training, and were less likely to teach SSVET qualification level 4.

The control variables teacher gender ($\chi2$ (2, N = 623) = .329), being native or not ($\chi2$ (2, N = 623) = .825), having a teaching diploma teacher institute or not ($\chi2$ (2, N = 623) = .799) and, diversity in teacher population ($\chi2$ (2, N = 623) = .438) were not statistically significant associated with the three profiles.

With respect to the ratio background variables *age* (p = .795) and *teaching experience* (p = .146), no statistically significant differences were found with the three profiles by means of an ANOVA.

To summarize, 3 profile clusters of value-based tensions were found in this study. The relaxed profile consisted of 37% of the teachers in the sample who experienced all value-based tension (professional ethics and stance, diversity and communality, respect, personal autonomy and justice) below average. They experienced the most tension in the fields of professional ethics and stance and the least in the area of personal autonomy. In terms of multicultural skills, these teachers scored below average, which means that the teachers in this group perceived to have fewer skills than the average teachers in this study. Most teachers (65%) in this group taught at the highest qualification level of SSVET. Half of the teachers (50%) indicated that they needed training in multicultural education, while 30% reported that they had already received training.

The rarely tense profile consisted of half of the teachers from the sample (50%). Teachers with this profile experienced the tensions slightly above the average. Professional ethics and stance was the most experienced tension followed by the tension of respect. These medium profile teachers scored slightly above average on multicultural skills. Almost two-thirds of teachers (65%) with this profile taught at SSVET qualification level 4. Of the teachers in this group, 67% indicated a need for training and 42% received training.

The reasonably tense profile was composed of 13% of the teachers in the sample. They experienced all tensions far above the average with the highest score for professional ethics and stance after respect. In terms of self-perceived skills, these teachers scored highest of all the distinguished profiles. Just over half of the teachers (55%) with this profile taught the lower levels of SSVET and received training (54%). Of the teachers with this profile, 73% indicated a need for training.

4   Discussion and Conclusion

This study aimed to profile teachers according to their value-based tensions and to determine whether the distinguished profiles were related to teachers' self-perceived competences and their background characteristics.

Based on a cluster analysis of the questionnaire data from 891 teachers of 20 culturally diverse SSVET schools it appeared that these teachers could be classified into three different profiles, namely: *Relaxed, rarely tense* and *reasonably tense*. We found that all 5 tensions were strongest in the reasonably tense cluster, moderate in the rarely tense cluster, and lowest in the relaxed cluster. This pattern does not challenge our previous explanation of why we deem it useful to distinguish between the different tensions. It rather indicates that in the optimal cluster arrangement (with three clusters), all types of tensions correspond in intensity in the different clusters. Apparently, people generally experience the different tensions more or less to a similar degree.

We found no clear profiles based on the type of tension or particular clusters of tensions. This is partly in line with another study on profiles (Pillen et al., 2013) where the tensions in some profiles also increased simultaneously and no specific tension prevailed – although their study also found other profiles that could be interpreted thematically. One explanation may be that SSVET schools as a whole are changing and that there is little training on the topic of multicultural teaching. The current study suggests that the culturally diverse student population creates tensions for teachers in SSVET and - depending on the type of profile - for some teachers more than others. Comparing the three profiles on multicultural skills, it is notable that teachers with the relaxed profile report having fewer skills than teachers with medium and reasonably tense profiles, while the latter experience more tensions. In that sense, the current findings confirm, replicate and extend our previous study that was variable based (Tielman et al., 2022). Current study indicates much more precisely that those who do not (yet) experience so many tensions across the board (37% of the total sample) also do not (yet) possess many skills. In contrary, the result that perceptions of more multicultural skills go together with higher tensions experienced is noteworthy and inconsistent with the literature which states that teachers who possess multicultural skills tend to do better in culturally diverse classrooms (e.g., Deardorff, 2009; Paccione, 2000; Taylor & Quintana, 2003). A potential explanation for this results of the present study is that teachers with more multicultural skills may be more aware of and sensitive to tensions and more likely to recognize them (Leeman, 2006). On the other hand, teachers with more skills may be more daring to experiment in their lessons and may experience less tensions in the process (or be less affected by them).

Along the same lines, teachers in the reasonably tense profiles reported to have had more training on the topic of multicultural education. These teachers also have the highest scores on self-perception of skills. The fact that they have the most training could explain why they

must have acquired skills in their own opinion. Perhaps more training has made teachers more aware of and receptive to tensions.

Remarkably, the same teachers who received (more) training and experienced more tensions also indicated that they needed training the most. Perhaps in this case they would like to have additional training because of greater awareness of tensions they experience or perceived gaps in their expertise. The teachers with a reasonably tense profile work mainly in the lower levels of the SSVET. The student population in the lower levels of the Dutch SSVET is even more diverse than in the higher levels. These students have very different starting education levels and background characteristics compared to the students in the higher levels and very specific needs that require a different approach from teachers (Groeneveld & Van Steensel, 2009; Lesterhuis, 2010). Relationship of trust, clear structure and direction are very important for students at these lower levels (Lesterhuis, 2010). Teachers at lower levels have to provide more guidance and direction to their students and are therefore closer to their students, making them more likely to notice and experience the cultural differences.

Professional ethics and stance, previously found to be most common in culturally diverse SSVET (Tielman et al., 2022), is one of the most frequently experienced value-based tensions in all three profiles. This finding confirms that all these teachers, who are confronted with a wide variety of beliefs and value orientations, experience conflicts with regard to their own norms, values and convictions and those of their students on the one hand (Banks, 2004; Leeman, 2006; Veugelers & Kat, 2003), and the standards of the labor market with its own specific requirements for professional ethics and stance as a third party on the other (Tielman et al., 2022). Earlier, Wesselink et al. (2010) noted that these three stakeholder groups (student, teacher, and labour market) are important for the integration of occupation and education but hold different visions of professional ethics and stance. Value-based tensions on professional ethics and stance, as identified by Tielman et al. (2021), could have an additional impact on this process in culturally diverse SSVET. Especially since the labour market with its own professional perspectives is added as an significant other (Pillen et al., 2013). Teachers in SSVET schools have been found to struggle to get students to develop professional ethics and attitudes as part of professional identity, in addition to developing subject knowledge and professional skills (de Bruijn et al., 2006; Glaudé et al., 2011). Consideration of the established struggle of SSVET teachers with professional ethics and stance may help to improve the connectivity between the three above mentioned stakeholders even more in the future. As shown above, the value-based tensions evoked in SSVET are very different from those in general education where the vocational component is not included (e.g., Leeman, 2006; Radstake, 2009; Tielman et al., 2021; Versteegt, 2010).

In contrast to other studies, the present study found that some background and context characteristics did not correlate significantly with the distinguished profiles. Gender and age of teachers were equally divided among the profiles, whereas in previous research the

correlation with experience and value-based tensions by SSVET teachers was found to be significant (Tielman et al., 2022). This is also true for teaching experience. In contrast to the outcome of previous research regarding the experience of tensions by novice teachers (e.g., Meijer, 2011; Pillen, 2013), teachers with certain (lack of) experience in the current study were not identified in a particular profile. Similarly, schools with a more diversified teacher population, which in a previous study correlated with experiencing value-based tensions (Tielman et al., 2022), were not related to any of the profiles in particular in the current study.

4.1   Implications for Research and Practice

First, some limitations are discussed and then the implications of this study. From the data of this questionnaire alone it is not possible to determine whether teachers in the same profile experience the same situations as potentially tense and/or with what intensity they experience the tensions. For further research, a mixed methods approach is recommended with, in addition to the questionnaire, an in-depth interview for more information to further describe and interpret the profiles as well as to determine the possible changes that may take place. Studying the extent to which profiles change over time could provide insight into the development of the value-based tension profiles and their characteristics (cf. Pillen et al., 2013). Furthermore, in-depth interviews may also uncover the extent to which professional ethics and stance tensions, which are most common in almost all profiles, determine teacher behaviour or other aspects of their teaching. For further research, it would be interesting to investigate how internally experienced tensions are expressed/revealed in the interaction between teachers and their students and the students' subsequent response and reflection to enhance their development of professional ethics and stance (den Boer, 2009; Meijers et al., 2006). Experiencing tensions can lead to the development of burnout (Dubbeld et al., 2019). Whether or not the relationship between experiencing these specific values-based tensions and dropping out of teaching or experiencing burnout is apparent, would be very valuable research for teaching culturally diverse SSVET classes in the light of high drop-outs numbers and personnel shortages.

We also suggest that follow-up research should take into account school demographics in a balanced sample. In the current study, we observed some differences between schools that could not be interpreted as a result of a very unbalanced sample, caused by large differences in participation of schools in different parts of the country.

The results of the present study provide empirical support for profiles of teachers with respect to their value-based tensions and determined whether the distinguished profiles are related to their self-perceived competences and their background characteristics. The remarkable findings that teachers in this study with more multicultural skills experienced more tension and that, at the same time, more training also evoked more tension is the subject of

further research. This result shows possible underlying mechanisms and needs further explanation. An interesting question would be to see if the training focused more on skills and less on knowledge of, for example, the different cultural backgrounds.

The distinguished value profiles in this study are summarized with labels and interpretations, making them hopefully easy to understand (Rickards et al., 2005). The fact that all tensions appear in the profiles and that none of them stand out in a particular profile shows that all tensions should be included in the training. Because professional ethics and stance is more common, and respect in some cases too, these are the two tensions that need some extra attention in the training. Furthermore, the results show that teachers in the lower levels experience more tensions, so there should be more intensive training at these levels. Although the profiles have clear benefits for the development of a personalised approach to teacher education and for the professional development of teachers in SSVET, the profiles found in samples may be context dependent, so the profiles and findings of this analysis should be generalised to other populations with some caution. To use the results of profile analyses for designing specific practical interventions, it is more appropriate to examine the profile structure in the local target population (Kusurkar et al., 2021).

For teacher educators, the profiles can be useful as a reflection tool during study and professional development, as different groups of teachers have been distinguished and some groups need extra training in all the tensions. Training should focus on the separate components of competence. Perhaps training could focus first on awareness and next on knowledge and attitude as a basis for further skills development. Awareness should then relate to teachers' own level and experience, as well as the context in which one operates (e.g., vocational context). Teachers should be aware of the differences in values and norms with their students, be aware of their own value, norms and abilities and of values and norms of the labor market. Since the lower SSVET levels involve more stress, perhaps that would be a good context to start with such a training. The profiles and value-based tensions provide a language for such reflection (Pillen et al., 2013) and continuing to discuss them will help raise awareness. Moreover, with the same purpose, these profiles can be used well in SSVET schools where current teachers are often lumped together with respect to experiencing of tensions while three different profiles can be distinguished with specific attention to the professional ethics and stance. The teachers with the different profiles could support each other in the process of coping with the value-based tensions. Vocational education varies internationally from being very much embedded in the vocational context to being more school-based (Rözer & van de Werfhorst, 2020). Depending on the degree of practicality, professional ethics and attitudes will emerge differently. The results of this study may be of general interest to SSVET taking the level of integration with vocational practice into account.

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Biographical Notes

Kennedy Tielman is a teacher educator at the teacher education institute of Fontys University of Applied Sciences and PhD candidate at the chair group Education and Learning Sciences of Wageningen University and Research. His PhD research focuses on teaching in culturally diverse Senior Vocational Education and Training in the Netherlands.

Renate Wesselink is an Associate Professor at the chair group Education and Learning Sciences of Wageningen University and Research. With a background in educational sciences, she studies learning at the micro-level (i.e., teams and individuals) of organizations. She is mainly interested in how to facilitate learning at this level and how this level can accelerate the implementation of sustainable development or responsible innovation.

Perry den Brok is full professor and chair of the Education & Learning Sciences group at Wageningen University and Research. His research interests include learning environments, innovation in education, teacher learning and professional development, interpersonal relationships in education and multicultural education. He also acts as teacher educator and is chair of the 4TU Centre for Engineering Education, a centre for educational innovation of the 4 technology universities in the Netherlands.

Fadi Hirzalla is an assistant professor at the Erasmus School of Social and Behavioural Sciences at Erasmus University Rotterdam. His research interests include citizenship and new media, with a particular focus on intercultural relations and youth. He specializes in quantitative and qualitative methods and methodology.

Changing Skill Formation in Greece and Italy – Crisis-Induced Reforms in Light of Common Institutional Legacies

Fabienne-Agnes Baumann*, Janis Vossiek

University of Osnabrück, Katharinenstr. 26, 49078 Osnabrück, Germany

Abstract

Context: After the Eurozone crisis unfolded a decade ago, comparative political economy has investigated reforms of public administration, labour market, welfare state and economic policy particularly in Southern European nations which were hit hardest by the crisis. However, analyses of skill formation reform, particularly vocational education and training (VET), have been scant, despite a common problem pressure for reforms emanating from stubbornly high rates of youth unemployment and similar legacies of statist VET.

Approach: We investigate VET reforms brought underway in Greece and Italy during and in the aftermath of the crisis, asking how far apprenticeship-like forms of learning within their VET systems were strengthened. Empirically, we base our analysis on primary and secondary sources, having conducted semi-structured expert interviews in Greece and Italy in 2019.

Results: We find that both countries attempted to strengthen the role of apprenticeship and work-based learning, but that politics differed across the two cases in the context of the Eurozone crisis. While in Italy, reforms were 'internalised' and shaped by domestic politics, Greek reforms were largely driven exogenously by the negotiations with the Troika.

Conclusion: Although Italy and Greece have undertaken reforms to reduce the dominance of the state in VET provision by expanding apprenticeships and work-based learning, these

*Corresponding author: fabienne.baumann@uos.de

do not amount to large scale changes to the dominant logic of school-based VET provision. In order to boost their potential in terms of practical learning both countries would need to continue on their reform pathways.

Keywords: Apprenticeship, Economic Recession, Greece, Italy, Policy Analysis, Vocational Education and Training, VET

1 Introduction

Especially since the last decade, dual training systems have featured prominently in international discourses among policy experts and scholars as an attractive option to curb youth unemployment. Among the specific strengths of dual training systems, learning in authentic work processes within firms is found to be an important factor that eases the learning-to-work transition. Moreover, involving firms in the governance of skill formation systems can help to align training content to firms' labour market needs, while the standardisation of learning at the workplace can ensure that the developed skills have labour market value beyond the individual training firm. Well-developed dual training systems can also be a valuable alternative for youths, who do not (want to) enter higher education.

Yet, even among rich Organisation for Economic Co-operation and Development (OECD) democracies, there are few countries with extensive dual vocational education and training (VET) in terms of the number of learners and companies involved. In many nations, apprenticeships had lost significance during the second half of the 20th century and satisfying the coordination needs arising in dual VET, especially among vocational schools, firms and the state has frequently proven difficult (Busemeyer, 2015; Vossiek, 2018). In international comparison, many states opted for the expansion of school-based VET provision instead of shoring up apprenticeships, which led to the emergence of training systems that can be characterised as statist skill formation.

In this paper, we examine skill formation in Greece and Italy as cases of statist skill formation and ask in how far we can detect a revitalisation of apprenticeships and other forms of work-based learning in the last decade in the context of economic crisis. Both countries were hit hard during the external shock of the Eurozone crisis, which necessitated structural economic and labour-market reforms. Italy and Greece constitute extreme cases of youth unemployment in European comparison. For 2020, it was estimated that youth unemployment among those aged between 15 and 29 stood close to 30% in Greece and over 22% in Italy (Tamesberger & Bacher, 2021, p. 4). Against this backdrop, we analyse reforms in Greece's and Italy's skill formation systems. We particularly focus on changes to firm involvement and to the practical component of learning, which are internationally debated as promising factors to improve school-to-work transitions. The more recent developments in work-based

learning were not built from scratch, but upon institutional legacies of apprenticeships in both countries, even if their share in skill provision is not as extensive as the share of school-based VET. Our descriptive case studies cover reform initiatives from the first years after the crisis until roughly 2019[1] and mainly focus on policy outputs, while policy implementation remains a topic for further research. Furthermore, we only shed light on domestic reform programs and do not include European Union (EU) programs such as the European Youth Guarantee of the Alliance for Apprenticeships.

Our two main research questions are first, how different or similar the domestic policy outputs were in cross-country comparison considering similar statist VET systems. Second, we ask how far these reforms were connected to the politics of the Eurozone crisis.

Empirically, we draw our findings from primary and secondary sources, having conducted semi-structured expert interviews with VET stakeholders in Greece and Italy (see Annex 1 at the end of the paper for an overview of the interviews) while also compiling evidence from official documents such as Memoranda of Understanding, and reviewing relevant literature and statistical data. We triangulated these sources to arrive at our findings. The qualitative analysis of the material gathered was structured by two main categories: First, more recent VET reforms towards an increase of firm-involvement and of learning in the workplace in the two country cases, and second, the Eurozone crisis and its repercussions for Greece and Italy in the area of training policies.

The paper is structured as follows. Section two introduces theoretical perspectives on skill formation systems, which act as a framework to situate our cases and to discuss the potential reform options for Greek and Italian VET. Section three then presents our two case studies, outlining the impact of the economic crisis, the state of VET before the crisis and the reforms that were undertaken for each case. Section 4 then discusses how the reforms related to the Eurozone crisis and which factors might hamper their effectiveness in expanding work-based learning. The paper concludes by relating the main findings from our descriptive case studies to debates within the current comparative political economy literature on skill formation and points to questions for future research.

2   Comparative Political Economy and Skill Formation Regimes

Contributions to the comparative political economy of VET have devoted ample attention to collective skill formation systems (Busemeyer & Trampusch, 2012; Emmenegger & Seitzl, 2020), typically found in Germany, Switzerland, Denmark, Austria and the Netherlands. These systems are set apart from other skill formation regimes because the provision, financing, standardization and reform of dual VET are the collective responsibility of employers,

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1   2019 represents the last year before the COVID19-pandemic, which constitutes another external shock that brought about distinct challenges for VET systems across the globe.

their associations, the state and, to a lesser degree, trade unions. Typically, a large share of employers provides training, which often comes in the form of dual apprenticeships and leads to standardised and certified skills, which are fully recognised in national labour markets.

In comparison, statist systems such as Italy and Greece integrate VET into the public education system and offer specific school-based vocational tracks alongside general education, commonly at the upper secondary level. Dual training programs are usually limited to very few sectors and employers. Given the extensive role for the state in funding, regulating and providing skill formation and, consequently, low firm involvement, statist regimes can experience difficulties in updating VET contents to changing labour market demands (Crouch et al., 2004). Moreover, in school-based VET practical learning and applying this knowledge in workplace environments often play a minor role. Hence, the fit between the contents of school-based VET and employers' skill needs in quickly changing product markets is often weak, which can lead to a prolonged school-to-work transition for VET graduates, thereby contributing to high rates of youth unemployment, which have been a long-standing problem in Greece and Italy.

For statist regimes it is thus a crucial question how to get more employers involved in skill formation, while at the same time expanding the role of employers and unions in training governance. While there is no explicit research on the question of how statist systems can be transformed towards collective systems, by now there is a rich literature dealing with the question how collective regimes shore up employer involvement in training in changing socio-economic environments that put the functioning of the training system under pressure (Busemeyer et al., 2022; Di Maio et al., 2019; Thelen, 2014; Unterweger, 2020).

Generally speaking, one way to get more employers to train is by creating new programs that combine general, school-based education with training in the workplace. However, the creation of programs alone is unlikely to be sufficient to generate more employer engagement, necessitating public policies to trigger firm participation. Based on Billett and Smith (2003), we can discern between compelling and encouraging policies in the area of VET. While compelling policies put constraints on firms' freedom to train, for instance by introducing training levies or regulating the requirements for firms to be allowed to train, encouraging policies try to support the voluntary engagement of firms in training, for instance by creating institutions that strengthen the coordination of employers. Busemeyer et al. (2022) point to the relevance of orchestration approaches for achieving this goal in their study of Switzerland and Germany. Faced with apprenticeship crises in the 1990s and early 2000s as manifested by a lack of apprenticeship positions, state policymakers in both countries eventually brought together employers and other stakeholders in institutionalised forums of deliberation, creating employer coordination by involving them more strongly in debates on the systems' future reform options, challenges and long-term goals. Another example of the state's relevance for reinforcing employer coordination in a collective skill formation system

is the introduction of short-term apprenticeships in Switzerland (Di Maio et al., 2019, 2020). Here, the state established two-year long apprenticeships out of the consideration to offer more apprenticeship positions to youth at the lower end of the educational spectrum. Yet, at the same time, the state "delegated key competences in the governance of short-tracks to the employers. For instance, employer and occupational associations decide autonomously if they want to introduce a short-track training programme in their respective sector or occupational field" (Di Maio et al., 2020, p. 17). In contrast to these examples of an active state, governments can also adopt a more hands-off approach to VET by giving employers more discretion in training. In Germany and Switzerland this has resulted in training becoming more geared to the preferences of large employers, pointing to segmentalist tendencies in collective skill formation (Emmenegger & Seitzl, 2019; Thelen & Busemeyer, 2012).

Turning to our case studies, we describe the impact of the financial crisis, the state of skill formation before the crisis and the main reforms that ensued up until 2019. We show that Greek reforms were driven by conditionality in negotiations with the Troika, while Italy rather 'internalised' the pressures emanating from the crisis and point to remaining challenges after the reforms. The final section then compares the reforms regarding employer involvement and work-based learning and points to questions for further research.

3 Skill Formation Reforms in Greece and Italy in the Age of the Eurozone Crisis

In the following sections, we analyse the main reforms within VET that took place in Greece and Italy during and after the Eurozone crisis. In section 3.1 we briefly describe the economic context of the crisis for both cases. Section 3.2 then presents the main characteristics of Greece's and Italy's VET systems before the crisis and section 3.3 highlights the main features of skill formation reforms.

3.1 Greece and Italy: Impact of the Financial and Economic Crisis

Greece

Shortly after the beginning of the global financial crisis in 2008 it became obvious that the state of Greek public finances would become unsustainable in the short term, bringing the country to the edge of bankruptcy. Due to a drop in its credit ratings, Greece became unable to attain fresh money on international financial markets at affordable conditions and turned to the "Troika" of European Commission (EC), European Central Bank (ECB) and International Monetary Fund (IMF) for financial assistance. What ensued is well-documented by the EU (European Commission, 2022) and by research (Featherstone, 2015; Randall Henning, 2017; Sotiropoulos, 2020): In three consecutive rounds of programme negotiation, Greece received

loans from the EU and the IMF in exchange for public and financial administration reform. Inter alia, the latter contained several austerity measures in public spending, fiscal reform as well as labour and product market and welfare reforms. Among the reforms, the reduction of the minimum wage by 32% (to 511€ per months for full-time employees under the age of 25) in 2012 (Kougias, 2019) has direct implications for firms' costs to hire young apprentices, as apprentice remuneration is related to the minimum wage (see section 3.2 below).

In the third round of negotiations in 2015, changes in the Greek education and training system were stipulated as one of the conditionalities that Greece had to meet in order to attain further financial assistance. In a nutshell, Greece had to agree to follow through with ambitious reforms to its VET system under the conditions of a crisis-ridden economy with little financial leeway. Notably, many of the reforms with labour market but also educational implications were carried out without the consultation of the social partners and sometimes met fierce resistance, especially from Greek Unions (Kougias, 2019; GRE-8).

Italy
Italy' predicament centred above all on its high public debt that eventually amounted to a sovereign debt crisis in 2011/2012 due to which Italy became a major worry to the Eurozone (Bull, 2018; Sacchi, 2015). Thus, during the height of the crisis (2011-2013) the goal of fiscal consolidation that has majorly shaped policy-making in Italy.

In the summer of 2011 the ECB demanded measures from the Berlusconi government to achieve a balanced budget by 2013 (Sacchi, 2015; Sottilotta, 2020). While an emergency reform package was passed shortly after, the European Council felt that the measures were not reassuring enough. The European Commission, in "an unprecedented step", then came to assess and monitor planned structural reforms although Italy was not subjected to a Memorandum of Understanding (MoU) (Sacchi, 2015, p. 89). The Italian government, accepting "implicit conditionality", also agreed to surveillance by the IMF as a pre-emptive measure against having to enter a conditional lending program and despite refusing IMF credit (Sacchi, 2015, p. 84).

Having lost credibility due to his handling of the events, Berlusconi resigned in November 2011 and made way for a technocratic Cabinet run by Mario Monti. This change sped up the adoption of structural reforms as Monti declared these a priority (Sottilotta, 2020). Monti's proactive stance on reforms, adopting structural adjustment and austerity measures akin to those demanded from countries directly subjected to MoUs, has been interpreted as an expression of "internalisation" in order to circumvent financial bailout and direct Troika oversight (Morlino & Sottilotta, 2017, 2019; Sottilotta, 2020, authors' captions).

Among the repercussions of the Eurozone crisis in Italy, two stand out particularly. Firstly, there are the much-discussed labour market implications. Italy has long exhibited comparatively high rates especially of youth unemployment, rates then peaked in 2014 at 42.7% and have stayed at 29% or above since then (OECD, 2022). Moreover, since 2010 the percentage

of youths not in employment, education or training (NEETs) in Italy has constantly been above 20% and among the highest in the European Union (Eurostat, 2022).

Secondly, the country has experienced governmental instability due to "[…] a crisis of confidence in Italy's political class" (Sottilotta, 2020, p. 92, citing Bosco & McDonnell, 2012).[2] In Italy, similar to Greece, administrations have been short-lived with five cabinets being assembled and dissolved in the past decade, none of them being able to finish their tenure. In addition, EU scepticism has increased and anti-establishment parties have gained in popularity (Bull, 2018).

3.2   Skill Formation in Greece and Italy Before the Crisis

Greece

Within the Greek education system, one important general aspect is Greek society's long-standing preference for general, academic education over VET (GRE-1; GRE-4; GRE-6; GRE-9). Perhaps consequently, vocational schools constitute the dominant learning venue for VET, while dual offers have been traditionally quite limited.

The two main pathways of secondary VET are EPAL (Eppagelmatiko Lykeio) schools under the responsibility of the Ministry of Education and the EPAS (Eppagelmatiki Schole) scheme run by the OAED (Labour Employment Office) for the of the Ministry of Employment. Studies at EPAL schools usually last three years and entitle their graduates to proceed to higher education. The two year-long EPAS scheme offers work-based learning akin to dual apprenticeship, pupils have two hours of class-based theoretical learning, which takes place after six hours of practical training with an employer. Apprentices are entitled to a remuneration that amounts to 75% of the minimum wage and also counts for social security contributions. While employers are responsible for the content of practical training and the nomination of trainers, financing of the EPAS is mainly public, as the state finances the major part of apprentices' wages, which are either payed directly to the apprentices or to their employers. Moreover, apart from labour market aspects of the apprenticeship contract, training at the workplace has been rather unregulated in terms of learning content and the trainers' qualifications (GRE-3; Lalioti, 2019). One traditional complaint about the EPAS scheme is that its graduates are not entitled to enter into further education within the formal education system. Beyond secondary education, the bulk of post-secondary VET is organised at vocational training institutes (IEK – Institouta Epaggelmatikis Katartisis). Courses at the IEKs usually last two years and entitle their graduates to enter into further or higher education

Looking at participation in VET even before the onset of the economic crisis, the preference within Greek society for general education becomes evident. While the number of

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2 This is not an entirely new phenomenon in Italy, political shake-ups have been happening frequently during the 1990s, too (Afonso & Bulfone, 2019).

students in general secondary education (GEL – Geniko Lykeio) slightly increased from 230,165 in 2002 to 247,441 in 2010, during the same period the number of students attending school-based VET dropped by roughly 44% from 160,451 to 108,933 (KANEP/GSEE, in: Ioannidou, 2019). In 2015, 88,209 students were enrolled in EPAL, 10,500 in EPAS and 61,860 in IEKs (Athanasouli et al., 2016).

In terms of governance, the role of the social partners was quite limited, effectively making the Ministry of Education the dominant actor in VET policy in terms of curriculum development and reforming the system, despite the role for the Ministry of Employment in running the EPAS dual apprenticeship scheme via the OAED.

Italy
VET in Italy is embedded in a complicated institutional structure in which responsibilities are distributed mainly between national, regional or provincial governments and shared, to a certain extent, with individual firms, organised labour market interests and education and training providers. School-based VET pathways and apprenticeships co-exist. The bandwidth of Italian VET spans from the upper secondary to the tertiary education level. Currently, three different types of apprenticeship exist that have been introduced by Legislative Decree no. 276/2003 (Cedefop, 2017):

- Type 1 apprenticeships leading to a professional diploma;

- Type 2 occupation-based apprenticeships;

- Type 3 apprenticeships of higher education and research.

Apprenticeship types cater for different age groups: Type 1 is for those between the age of 15 and 25, Type 2 and Type 3 are geared at adult learners from the age of 18 to 29 (see table 1 for participant numbers in Italian apprenticeships). All three types combine some kind of formal learning with work experience in a company and are based on an apprenticeship contract that assigns the apprentice the status of an employee in the firm, from which social security and insurance rights/duties are derived for the signatory parties (Angotti, 2019). Hence apprenticeships are subjected to the domain of labour, rather than educational legislation (Cedefop, 2017; Rustico et al., 2020).

Type 1 can be offered as a three- and four-year program in the regional or national VET structures at the level of upper secondary education and time spent training in companies varies from 30% to 50% per school year (Angotti, 2019; Cedefop, 2017). Type 2 is mainly based on in-company training and leads to an occupational qualification recognized by collective agreements in the respective sector, and by the employer. There are no requirements for formal recognition at the national or regional/provincial level (Angotti, 2019; Cedefop, 2016).

Type 3 is divided into a subtype for research and another for higher education. The latter subsumes various qualifications ranging from upper secondary diplomas to non-tertiary post-secondary certificates or higher education degrees. Apprenticeships for research do not form part of the public education system and are commonly recognised through collective bargaining agreements. Depending on the mode of regulation (by regional/provincial level governments or collective agreements), Type 3 can be delivered completely in-company or be coupled with formal learning in an education and training institution (Cedefop, 2016).

Table 1: Participation in Italian Apprenticeships

Region/Year Apprenticeship	North (2017)	Centre (2017)	South (2017)	Italy (2017)
Type 1	7.281	1.260	1.996	10.537
Type 2	239.594	102.945	73.767	416.306
Type 3	631	135	216	982
All types	247.506	104.340	75.979	427.825

Note. Participant numbers by region and type of apprenticeship, absolute figures (INAPP, 2019).

School-based pathways of initial VET are run under the aegis of the national Ministry of Education, University and Research (Ministero dell'Istruzione, dell'Università e della Ricerca, MIUR) as technical and professional education (istruzione tecnica e professionale) or by the regional or provincial governments under the name of professional education and training (istruzione e formazione professionale, IeFP). School-based forms of VET vary with regard to time set aside for practical learning based on differences between qualification routes as well as individual schools.

The programs at the level of upper secondary schooling are offered either as five-year diploma qualifications (issued by MIUR) at technical schools (Istituti Tecnici) or professional schools (Istituti Professionali) or as IeFP by way of three-year vocational qualifications or four-year diplomas (see table 2 for participation in Italian school-based VET). In the case of five-year diploma courses, MIUR is responsible for policy-making, curricula development, examinations and funding. For the IeFP courses MIUR's national standards apply, too, but due to political subsidiarity regulations the Italian regions and the autonomous provinces of Trento and Bolzano have some leeway for adapting contents to local requirements and are in charge of planning the IeFP provision. The permanent Conference of the state, the regions and autonomous provinces (Conferenza Stato-Regioni) has a say in defining minimum standards for regional VET which can be offered by regional training centres, accredited non-governmental providers or the national technical and professional schools. Funding for IeFP

comes from the Ministry of Labor and Social Policies (Ministero del Lavoro e delle Politiche Sociali, MLPS) and the regional/provincial governments.

Table 2: Participation in Modes of School-Based VET

Region/Year Mode	North (2018/19)	Centre (2018/19)	South (2018/19)	Italy (2018/19)
IeFP	19.877	7.899	7.943	35.729
Instituti Tecnici	182.153	79.972	197.089	459.214
Instituti Professionali	368.285	141.469	310.216	819.970

Note. Participant numbers by region and mode of school-based VET (MIUR, 2019a).

3.3 Main Reforms of Skill Formation

Greece

Greek VET experienced a very intense reform period between 2013 and 2016, affecting the structure and governance of VET (cf. Cedefop, 2018a), which was partly driven externally by the negotiations between the Greek government and the Troika. One central outcome leading up to a three-year MoU for European Stability Mechanism (ESM) funding in 2015, were five key deliverables within the VET system that had to be enacted by the Greek government (European Commission, 2017): First, to legislate a modern quality framework for VET/Apprenticeships, second, to set up a system to identify skills needs and a process for upgrading programs and accreditation, third, to launch pilots of partnerships with regional authorities and employers in 2015-16, fourth, to provide an integrated implementation plan from the Ministry of Labour, the Ministry of Education, and OAED to provide the required number of apprenticeships for all vocational education (EPAS and IEK) students by 2016 and at least 33% of all technical secondary education (EPAL) students by 2016-2017, and fifth, to ensure a closer involvement of employers and a greater use of private financing. In sum, these commitments signified a large number of legal and administrative changes, that had to be enacted in a swift manner.

However, the first reform initiatives started before the most intense phase of 2015/2016: The Greek government had already taken steps towards reforming the structure of its VET system with law 4186/2013. It introduced an additional apprenticeship scheme to be provided alongside the offer by EPAS by newly created vocational training schools (SEK – Scholi Epaggelmatikis Kartisis) in order to increase the number of apprenticeships and to potentially replace the EPAS pathway of VET (see Bohlinger & Wolf, 2016). However, SEKs only operated briefly until abolished by law 4386/2016 and had no lasting effect on the Greek VET landscape. Essentially the EPAS scheme stayed intact, thus preserving the longest stan-

ding programs of apprenticeships in Greece and preventing the VET system from becoming even more school-based. The 2013 law already included legal provisions to introduce apprenticeships at the post-secondary level of EPAL schools and IEKs as well as modernising VET governance mechanisms in terms of quality assurance, monitoring, skill identification and matching VET provision to labour market needs. Yet, the "operationalisation and implementation of the [2013] law [was] very slow and partial" (Cedefop, 2018a, p. 45), which might not only be traced back to the economic crisis dominating the political agenda and public administration, but also to the fact that VET has traditionally ranked low on the agenda of education policy-making (GRE-1; GRE-8).

Concerning formal educational structures, the most noteworthy development of the reform process is the extension of apprenticeship-like training into the programs of the EPAL and IEKs. Following Law 4186/2013 and being introduced in 2016, graduates of EPAL programs now have the option of a further year of post-secondary training, which is known as the apprenticeship class (Cedefop, 2018a). The law also created a new option of post-secondary VET so that IEKs can organize one among five semesters of their programs in the form of an apprenticeship, effectively complementing the former mode of placing their students in internships. Following a ministerial decision in 2015, IEKs are mandated to organize one practical semester either in the form of an internship or apprenticeship.

The new apprenticeship options at EPAL and IEK are modelled after the EPAS apprenticeships in terms of apprentice remuneration and the rights and duties of learners and companies. For the EPAL apprenticeship year, 28 hours of learning at the workplace alternate with seven hours per school on a weekly basis, while IEKs offering apprenticeships should offer workplace learning that is equivalent to one semester of learning, amounting to 960 hours. The EPAS certificates are situated at level 4 of the National Qualifications Framework (NQF), while graduating from EPALs with one Apprenticeship Year and successfully finishing IEK-programs leads to certificates at level 5 of the NQF. Despite these substantial changes and the upgrading of the role of learning at the workplace in the Greek VET landscape, EPAS graduates can still not into higher education without attending more school-based, general education.

The new quality framework for apprenticeships of 2017 also addressed the regulation of learning at the workplace (i.e. learning agreements, role of company trainers), which only had been loosely regulated before and identified as one weakness of the EPAS apprenticeship scheme (GRE-3; GRE-5). In the future, Greek companies will have to ensure that in-company trainers will attain a training programme, but are not obliged to meet these criteria until 2020. Moreover, the new framework also introduced a new governance architecture, which stipulates a more extended role for the social partners at the central and local levels of VET, in order to tackle the limited input of labour market interests in the design and development of the VET system. Yet, even after the reforms, the decisions of VET-relevant committees,

which have strengthened social partner representation, are not binding for the two main ministries in charge of VET (Ministry of Education, Ministry of Employment) (Cedefop, 2018a). However, one positive side effect of the new role for the social partners was that all important stakeholders have expanded their divisions that are responsible for VET policy (GRE-6).

Italy

While VET has not been an immediate concern for Italy's government during the sovereign debt crisis, its larger national labour market effects eventually led to education and training being addressed in order to counteract youth unemployment and decrease NEET-rates. Particularly the Good School reform (Riforma della Buona Scuola, Law no. 107/2015) and a number of labour policies passed during Matteo Renzi's tenure as prime minister (2014-2016) are prominent measures taken since the onset of the crisis, aiming to increase the level of firm-involvement and degree of practical learning in VET.

Buona Scuola was intended to be a holistic approach to reforming the Italian education and (school-based) vocational system (Capano & Terenzi, 2019). One of its central pillars is the introduction of mandatory hours spent gathering work experience through 'alternation' between school and work (l'alternanza scuola-lavoro[3], ASL) (Capano & Terenzi, 2019). ASL is obligatory for students in the last three years of upper secondary education (i.e., the third, fourth and fifth year), regardless of whether they are in a technical vocational or general education pathway.

Apart from aiming to reform the Italian education system towards more workplace-based learning, the Renzi administration followed its predecessors' initiatives to alter the country's labour market regulations. Consequently, several laws and decrees were passed with some provisions also impacting on apprenticeship schemes.

Law no. 78/2014 (Gazetta Ufficiale della Repubblica Italiana, 2014) (in an earlier version Decree Law no. 34/2014) was passed in order to simplify parameters of employment contracts and to generate employment particularly for youths. Decree Law no. 34 established a new type of open-ended employment contract, the "increasing-protection contract" which is supposed to make permanent employment more attractive for employers by reducing "[…] the costs of dismissals during the first three years on the job, with severance pay that increases with employee seniority" (Lodovici et al., 2019, p. 32). Employers with more than 50 employees have to ensure that during the last 36 months, a minimum of 20% of the total number of apprentices is employed permanently after they finish their apprenticeship, only then can new apprentices be recruited (Article 2). In addition, employees with an apprenticeship contract receive a salary in accordance with the hours worked and it has to be ensured that 35%

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3 This possibility of gathering work experience exists in Italy since 2003 (Law no. 53) (MIUR, n.d.-a).

of the hours worked are set aside for structured training and apprenticeship contracts to be signed with students under the age of 18 (Article 2).

The second part of the Jobs Act is framework Law no.183 of December 2014 that has been implemented by way of a number of legislative decrees. Particularly relevant with regard to VET is Decree no. 81/2015 (Gazetta Ufficiale della Repubblica Italiana, 2015) which introduced changes affecting Type 1 apprenticeships. Firstly, the qualifications obtainable through this type were expanded by adding an upper secondary education diploma and a post-secondary certificate of technical specialization (Article 42, 2(a)). With this, essentially a second Type 1 pathway was created that integrates with the national education system under the supervision of MIUR while the already existing options are part of the regional/ provincial level IeFP. Moreover, responsibility for the regulation of Type 1 was shifted to collective bargaining. The Decree also calls for an individual learning plan for apprentices in Type 1 and Type 3 to be developed jointly by the education provider and the firm, thereby attributing the latter a greater role in determining learning contents (Article 42, 1).

Decree no. 81/2015 also introduced financial incentives for firms. An apprentice's wage category can be up to two scales below that of skilled workers in the same field of qualification (Article 42, 5(b)). Employers are exempt from paying wages for the time Type 1 and Type 3 apprentices spend in educational facilities and cover only 10% of the cost for the hours spent in in-company training (Article 43, 6, Article 45, 2; Lodovici et al., 2019). Further measures in this vein were brought underway by Law no. 232/2016 (Gazetta Ufficiale della Repubblica Italiana, 2016). This legislation introduced three-year-exemptions from social security contributions for firms which recruit on the basis of a permanent contract either students that they accompanied during the ASL scheme or those that apprenticed with them through Type 1 or Type 3 (Cedefop, 2018b).

4   Comparative Discussion

In this section we comparatively examine the impact of Eurozone crisis on VET reforms and discuss which challenges remain after the reforms.

4.1   The Impact of Conditionality (Greece) or 'Internalisation' (Italy)

Greece
Greek VET reform between 2013 and 2016 followed a fast reform pace that left little time for evaluation (GRE-4) and encompassed many aspects of the VET system, leaving one interviewee with the impression that, the "volume of reform was simply too big, while it would have been better to focus on a limited number of key priorities" (GRE-6). Notably, during this period there was little social partner involvement as politics were made under in the context

of the conditionalities negotiated between the Troika and the Greek government. While the expansion of apprenticeship places was made one central condition for financial assistance by ECB, EU and IMF, in fact there were little changes in the general incentives for firms to take on apprentices apart from financial incentives (such as lowering of the minimum wage for young Greeks, financing a large part of apprentice remuneration and social security contributions), which led on interviewee to doubt whether "firms are really interested in apprenticeships, when they are supported to a large degree financially following the policies of the memorandum" (GRE-2).

Italy

Different to Greece, Italy had not been subjected to direct intervention by the Troika during the Eurozone crisis. Instead, the country opted to 'internalise' reforms. While education and training did not feature in the early Italian reform packages geared at crisis-mitigation, they soon became central elements in policies addressing crisis repercussions like youth unemployment and elevated NEET rates.

The tumultuous political situation in the aftermath of the debt crisis derailed the full accomplishment of reforms. This is particularly true for the Renzi government's reformist agenda with its centrepieces Buona Scuola and the Jobs Act, both of which were to facilitate, among others, the hiring of apprentices by firms and increase work-based-learning opportunities for upper secondary students. Ongoing modifications of legislation and incoherence in reforms after Renzi's ousting prompted one interviewee to plead "please no more reforms" (ITA-2).

The most significant modifications include alterations of the Jobs Act framework under the Gentiloni and Conte administrations, that touched on the conditions under which firms could profit from tax exemptions when hiring apprentices, continuing to employ their former apprentices, or participating in ASL (Lodovici et al., 2019).

In addition, on the basis of the Budget Law 2019 and Decree no. 774 of 2019 during Conte's first tenure as prime minister, alternance between school and work was reframed as occupational guidance and transversal skills pathways (Percorsi per le competenze trasversali e per l'orientamento, PTCO) and the hours students are to spend learning in firms were reduced (Cedefop, 2020; MIUR, 2019b).

Hence, Italian internalisation must be viewed in the light of a major fallout of the crisis, that is governmental instability, making it difficult to follow through with reforms vis-à-vis an already complex institutional environment underpinning the country's skill formation system.

4.2   Remaining Challenges After the Reforms

Greece

In how far the reforms have strengthened employer involvement within the VET system in a sustainable way remains to be seen, but it seems probable that the system needs further reform in this respect. Private sector employers largely remain unengaged with the VET system. Among Greek companies, 97% have less than ten employees (OECD, 2020), while public enterprises are usually larger than private enterprises. Already before the crisis, the trend pointed towards sinking engagement of private sector companies in apprenticeships: Since 2009, 66% of all apprenticeship positions are located in the public sector, whereas between 2001 and 2008 66% of all apprenticeships had been in the private sector (Lalioti et al., 2018). Moreover, the total number of apprenticeship positions almost halved between 2000 and 2015: The number of available apprenticeships dropped from its peak of 20,360 between 1999 and 2000 to 10,374 between 2014 and 2015 (Lalioti et al., 2018). This trend might be partially explained by the economic crisis, but also by its side effect that many graduates from Greek higher education could not find a job in their respective field of studies and became available for companies at low labour costs, who chose to hire personnel with higher educational credentials and train them on the job rather than to employ apprentices (GRE-5).

Moreover, sticky and high youth unemployment and high NEET-rates are still evident in international comparison even after more than ten years since the economic crisis hit. Tamesberger and Bacher (2021) estimate that unemployment among 15- to 29-year-old Greeks still amounted to 30% of the active labour market population in 2020, while NEET rates for the same population stood at 18,7% in 2020, which was only surpassed by Italy (NEET rate of 23,3% in 2020) in European comparison. The enduring high level of youth unemployment is even more worrisome, when considering that an estimated 200,000 young, highly skilled Greeks have emigrated during the economic crisis (cf. Kougias, 2019). Despite the recent changes to the formal VET system, many firms still have limited knowledge about the new apprenticeship options (GRE-7) and the link between employers and VET design remains weak (GRE-3; GRE-5).

In general, the insertion of apprenticeship components into the EPAL and IEK programs, which are situated at higher levels in the NQF of the education system, can be seen as an attempt to make VET more attractive to students as EPAL and IEK might have a higher reputation than EPAS apprenticeships. At the same time, no evidence is available how the new programs affect the labour market chances of graduates. However, on the basis of unpublished data of his association, one interviewee pointed out the severe matching problems of apprenticeship graduates in the labour market, when asserting that only 20% of graduates find jobs afterwards, and out of those only 30% find a job in the occupational field that they learned (GRE-8).

Italy

Efforts to increase firm-involvement in VET, as introduced by more recent reforms, have been hampered by several issues.

The realisation of ASL (or PTCO) has proven tricky as the conditions of implementation vary greatly. Implementation of ASL occurred gradually between the school years 2015/16 and 2017/18 (MIUR, n.d.-b). Data gathered by MIUR for the school year 2016/17 shows that regarding ASL differences existed between regions, school types and with regard to the host entities (MIUR, 2018). The fact that most firms in Italy are micro- and small firms is an additional difficulty to overcome when organising the work placements (ITA-1; ITA-2). While in the work placement, students' experiences with the program are very heterogenous in terms of contents, didactical underpinnings, and supervision, despite common guidelines by MIUR. There are also concerns that students in alternance are exploited by firms as cheap or unpaid labour due to the government covering a large portion of the accruing costs for firms (ITA-1; ITA-3).

With regard to the modality of the apprenticeship Type 1 and ASL as compulsory element at upper secondary schools of any type, schools frequently feel that they are left to fend for themselves when it comes to realising requirements (ITA-1; ITA-2). In addition, schools fear that their own status as provider in VET could be undermined if too many youths opt for apprenticeships and therefore are sceptical (ITA-1).

The actual take-up of programs is another key issue. Despite introducing "higher educational value" (D'Agostino & Vaccaro, 2021, p. 13) to Type 1 and Type 3 apprenticeships by coupling them with diplomas at the upper secondary and the tertiary level, respectively, the overwhelming majority of learners remains in Type 2 apprenticeships. Type 2 is governed by collective agreements and does not entail an educational degree, thus, more attractive to firms as no time for schooling needs to be set aside. Firms also rather chose to cooperate in the ASL-schemes than Type 1 apprenticeships, as the latter is less attractive financially and regarding contractual obligations (ITA-1). In addition, there is a lack of awareness among learners about Type 1 and Type 3 apprenticeships (ITA-2).

5 Conclusions and Outlook for Further Research

As we have shown in the case studies, VET policy in Greece became subject to conditionality by the negotiations with the Troika, whereas Italy rather 'internalised' its reforms in the context of the crisis. Both countries expanded pathways of work-based learning and tried to increase employer involvement in their VET systems.

In Greece, plans to replace EPAS apprenticeships by school-based training in SEK-schools were discarded in the aftermath of the Troika negotiations, thus not further expanding state dominance in VET provision. Instead, new apprenticeship components were introduced to

EPAL schools and IEKs. Such new pathways were also introduced in Italy. For instance, the Buona Scuola reform introduced mandatory hours of alternation between schools and the workplace, which are obligatory for students in the last three years of upper secondary education in technical vocational as well as general education pathways. Also, Type 1 apprenticeships were expanded by adding an upper secondary education diploma and a post-secondary certificate of technical specialisation. Following the argument of Markowitsch and Wittig (2020), these changes would not result in more collective skill formation given their classification of Italian apprenticeships of Type 1 and 3 as "school/university education" and Greek EPAS as "public training schemes" being distinct from the "professional education" usually found in collective skill formation systems. However, such an assessment would require a thorough investigation of the changes within the educational content of these skill formation tracks, which is beyond the scope of this paper. Also, we cannot rule out the possibility that the recent reforms will incrementally transform the system towards more professional education.

Apart from the expansion of work-based learning, we also found interesting similarities in the use of encouraging VET policies. In Greece, the reduction of the minimum wage has directly lowered the cost of apprenticeship to employers, while Italian employers also enjoy lower costs for apprentices due to lower wage categories for apprentices, wage exemptions for the time apprentices spend in educational facilities and lower social security contributions and tax exemptions for firms hiring their former apprentices. Moreover, Italian Type 1 and 3 apprenticeships now attribute a greater role to firms in determining the learning content. In comparison, the use of compelling policies is more limited. In Greece, for instance, firms are obliged to provide training for their in-company trainers since 2020. In Italy, firms with over 50 employees must hire a minimum of 20% out of their apprentices in the last 36 months in order to be allowed to hire new apprentices. If the use of such incentives and regulations will be a viable pathway of increasing firm participation in both countries lies beyond the scope of this paper and would necessitate a thorough, quantitative analysis of company participation in training.

In terms of governance, we can detect differences among the two cases. The Italian case exhibits stability in its governance for VET, leaving room for improvement concerning the involvement of social partners. Also, Buona Scola in principle foresees the adaptation of skill formation programs to regional realities, but lacks a national coordinating body that could bridge regional discrepancies, especially concerning funding and infrastructure. In contrast, Greece changed its VET governance in the aftermath of the 2015 agreement with the Troika. The new quality framework for apprenticeships of 2017 gave more importance to the social partners in committees working on the design and development of the VET system, but left the state in the driving seat as committees' recommendations are not binding. However, these changes in formal governance structures can be interpreted as a move akin to orchestration,

creating venues for the exchange between social partners as well as putting VET development more strongly on their agenda, potentially leading to an increase in their capacities to engage in VET politics. What we did not find, is a retreat of the state in training provision and governance by delegating more competences and responsibilities to employer associations or liberalising VET to become more market-based.

In sum, both countries have attempted to boost employer engagement in training by devising new approaches to work-based learning, sometimes adding them to existing programs, and by expanding financial incentives to employers who engage in training, developments which are rather similar despite the fact that Greek policymaking was influenced by negotiations with the Troika, whereas Italy 'internalised' reform pressures emanating from the crisis.

Of course, there is ample leeway for further investigations on VET in these two cases as we mostly focused on policy change and we want to point towards three avenues for future research. First, more evidence is needed on how the changes of VET programs and incentives to employers have really impacted skill provision by firms and the labour market chances of VET graduates. This would not only necessitate a detailed analysis of how firms of different sizes and located in different economic sectors participate in the VET system, but also which pathways lead to stable and well-paid employment for Greek and Italian Youths. Second, and closely related, future research could pay more attention to the interplay between educational, labour market and welfare state institutions in asking which combination of policies could lead to a dampening of youth unemployment and high NEET rates in both cases in light of their commonalities as Mediterranean Market Economies (Amable, 2003). Finally, newer literature within comparative political economy has put a strong focus on the politics of institutional change by investigating, mostly via process tracing, the balance of power between the state and employers, between employers and unions as well as among employers of different sectors and sizes (for examples see: Di Maio et al., 2020; Emmenegger & Seitzl, 2019; Thelen, 2014). Given that Greece and Italy are characterised by multiple cleavages within the camps of employers and unions, strong regional and sectoral differences and frequent government instability, more detailed research on the preferences of employers, unions and governments regarding VET reform is necessary in order to arrive at conclusions about whose preferences prevailed in these reform processes. This would enable researchers to gain a clearer understanding on whether and how the balance between firm involvement and state provision shifts over time in statist skill formation systems and make the cases of Italy and Greece more comparable with findings from newer contributions to the comparative political economy of VET, in which both cases are unfortunately absent so far.

Annex 1: Overview of Interviews

Interviewee Code	Interviewee Organisation/Institution	Date
GRE-1	German-Greek Round Table on Vocational Education and Training	10. 6. 19
GRE-2	OAED	11. 6. 19
GRE-3	German-Greek Chamber of Commerce	11. 6. 19
GRE-4	Ministry of Labour	12. 6. 19
GRE-5	SEV – Employers' Association	12. 6. 19
GRE-6	GSEVEE – The Hellenic Confederation of Professionals, Craftsmen & Merchants	13. 6. 19
GRE-7	Small Employer	13. 6. 19
GRE-8	KANEP-GSEE – Centre for the Development of Education Policy of the General Confederation of Greek Workers	13. 6. 19
GRE-9	Ministry of Education	14. 6. 19
ITA-1	German-Italian Chamber of Commerce	15.10.19
ITA-2	ANPAL Servizi - National Employment Service	16.10.19
ITA-3	CGIL Lombardy – Italian General Conferation of Labor	17.10.19

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Biographical Notes

Fabienne-Agnes Baumann is a doctoral researcher in the Working Group on Vocational Education at the University of Osnabrück, Germany and a consultant at the VDIVDE-IT in Munich. Her research focuses on the international comparison of vocational training systems and training reforms.

Dr Janis Vossiek is a postdoctoral researcher in the Working Group on Vocational Education at the University of Osnabrück, Germany and visiting researcher at the ITB, University of Bremen. His research focuses on the comparative political economy of vocational training systems and training reforms in international comparison.

Sense of Coherence Among Apprentices in Vocational Education and Training in Norway: Exploring General Resistance Resources in Work-Based Learning

Grete Hanssen, Britt Karin Utvær

NTNU Norwegian University of Science and Technology, Department of Teacher Education, NO-7491 Trondheim, Norway

Abstract

Purpose: In the face of constant and rapid development achieving a work–life balance requires highly qualified and motivated professionals who can deal with stress and the demands of the future. In response, by facilitating school- and work-based learning, upper secondary vocational education and training (VET) prepares and qualifies adolescents for professional practice. In relation to VET, two fundamental salutogenic concepts can explain how humans cope with stressful and demanding situations: *Sense of coherence* (SOC), which entails comprehensibility, manageability and meaningfulness, and general resistance resources (GRRs), theorised as resources within individuals themselves (i.e., internal) and/or in their surroundings (i.e., external). Against that background, in our study we aimed to identify and explore which GRRs contribute to SOC among apprentices in VET and how they influence work-based learning.

Methods: Data were collected from 11 VET student in Norway at three time points—at interviews during their final semester of school-based learning (i.e., spring 2020), at interviews during their work-based learning (i.e., spring 2022) and, for register data, following their completion of trade certificates (i.e., autumn 2022). The students' experiences of work-based learning as apprentices formed the basis of this study's analysis. The stepwise deductive–inductive method was used to generate and analyse the data.

*Corresponding author: grete.hanssen@ntnu.no

Findings: The apprentices' GRRs emerged in emotional, cognitive, physical, professional, social, relational, material and cultural dimensions. Identification and utilisation of GRRs were both individually and socially conditioned. The apprentices were able to identify, both consciously and unconsciously, internal GRRs to further identify external GRRs, and vice versa. Each identified GRR appeared to affect at least one, if not all, of the three components of SOC.

Conclusion: Salutogenic VET can provide personal, social, environmental and physical resources (i.e., GRRs) that ensure coherent learning experiences. For that reason, by supporting VET students in identifying GRRs, teachers and supervisors can promote their SOC and work-based learning and thereby prepare them to be highly qualified and motivated professionals.

Keywords: Vocational Education and Training, VET, Apprentice, Work-Based Learning, Sense of Coherence, General Resistance Resources

1   Introduction

In the face of constant rapid development, working life today requires skilled workers who can adequately deal with unexpected situations, stress and the demands of the future. Companies need well-trained, highly qualified, healthy and motivated employees with a strong capacity for restructuring (Bringsén et al., 2012; Dede, 2010; Hilsen et al., 2021; Vaandrager & Koelen, 2013), handling stress and meeting a wide range of job demands (Bakker & Demerouti, 2007). In that context, vocational education and training (VET) has a social mission to ensure the development of skills needed in an array of occupational fields through school- and work-based learning. The VET model differs across countries (Organisation for Economic Co-operation and Development, 2020). In Norway, where we conducted our study, the primary VET model involves two years of upper secondary education, followed by two years of apprenticeship in a training establishment (Lensjø, 2020; Utdanningsdirektoratet, 2020). However, in most of VET models, students must face the school-to-work transition, integrate common core and vocational subjects and combine hard and soft skills. In learning in multiple arenas and from diverse sources, the skills developed need to be purposefully connected and integrated in order to ensure meaningful knowledge and understanding (Sappa et al., 2016).

Research on VET has indicated that students have to not only meet all of those expectations and requirements but also be able to make connections between subject, integrate theory and praxis, and ultimately, experience coherence in order to develop vocational competence, which can be both demanding (Aakernes, 2018; Baartman & de Bruijn, 2011; Gessler, 2017; Hiim, 2020, 2022) and stressful (Govaerts & Grégoire, 2004; Wegner et al., 2021).

Apprentices are exposed to demands and stressful situations just as full-fledged employees are (Duc & Lamamra, 2022). Although demands are not necessarily negative or insufficient coherence decisive for students learning, they may turn into stressors (Antonovsky, 1987). Beyond that, it can be challenging for VET students to grasp the coherence between the theoretical content taught in their vocational education programmes and their practical experiences (Aarkrog & Wahlgren, 2022; Gessler, 2017; Hiim, 2017, 2020). Because the lack of coherence between school-based learning and work-based learning (Hanssen, 2022; Hiim, 2017; Louw & Katznelson, 2019) is liable to create undue demands and hinder learning, cultivating coherence in VET is essential.

Over the decades, several researchers have explored the link between demands, stress, coping, learning and health (Folkman, 2011; Lazarus & Folkman, 1984). Among them, medical sociologist Aaron Antonovsky (1979, 1987), founder of salutogenic health theory, who introduced two fundamental concepts: Sense of coherence (SOC) and general resistance resources (GRRs). Whereas GRRs help to navigate stress, SOC was developed to explore a basic coping disposition in which people orient themselves towards factors of stress and the challenges that they face in effective, proactive ways (Antonovsky, 1987). Although both concepts have been explored in studies related to coherence in professional education and work (e.g., Hanson, 2004; Hatlevik & Hovdenak, 2020; Tartas et al., 2014), to our knowledge they have never been applied as a theoretical framework for exploring learning in VET. Against that trend, we assume that SOC and GRRs are highly relevant for learning in VET.

1.1   Sense of Coherence (SOC)

According to Antonovsky (1987, p. 19), SOC is:

> A global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement.

Following that definition, SOC is conceptualised as a life orientation involving three components: Comprehensibility, manageability and meaningfulness. First, *comprehensibility*, the cognitive component of SOC, refers to the extent to which an individual perceives stimuli as rationally understandable and as information that is orderly, coherent, clear and structured instead of chaotic, disordered, random, unexpected and inexplicable (Antonovsky, 1987). Second, *manageability*, the instrumental or behavioural component, refers to individuals' beliefs that resources are at their disposal and can be used to meet the daily demands and requirements of life. Third, *meaningfulness*, the motivational component of SOC, refers to

the extent to which an individual feels that life is emotionally meaningful, worthy of invest-ment and a source of satisfaction (Antonovsky, 1987). In our study, we understood com-prehensibility to be linked to the participating apprentices' ability to understand work tasks and requirements when developing vocational skills (i.e., cognitive component). Meanwhile, manageability was linked to their mastery of daily tasks and the challenges that they have en-countered in training (i.e., instrumental component). Last, meaningfulness was linked to an inner drive and a desire to put forth effort in order to learn and become skilled workers (i.e., motivational component). Together, the cognitive, instrumental and motivational compo-nents provide the foundation necessary for humans—in our study, apprentices—to move to-wards health and learning (Antonovsky, 1987; Eriksson, 2022; Eriksson & Lindström, 2006; Lindström & Eriksson, 2010). Having a strong SOC enables individuals to view life—in our participants' case, VET—as coherent, comprehensible, manageable and meaningful.

1.2   General Resistance Resources (GRRs)

GRRs are essential to successfully managing tension while coping with a wide variety of stressors and being adaptable in psychosocial, social and cultural spheres. GRRs arise from environmental living conditions and early childhood rearing and socialisation experiences, in addition to idiosyncratic factors and pure chance (Antonovsky, 1979; Eriksson & Lind-ström, 2006). To be clear, a *GRR* is a physical, biochemical, artefactual–material, cognitive, emotional, valuative–attitudinal, macro-sociocultural characteristic of an individual, prima-ry group, subculture or society that is effective in avoiding or combating a wide variety of stressors and thus preventing tension from being transformed into stress (Antonovsky, 1979).

GRRs are categorised as either internal or external. Internal GRRs include self-esteem, knowledge and intelligence, healthy attitudes and being in touch with one's feelings, whereas external GRRs include social relationships, clothing, culture, adequate food and access to artefacts (Antonovsky, 1979, 1987). In either case, GRRs can be regarded as tools that create a precondition for cognition and learning and are the cornerstones in the development of a strong SOC (Eriksson, 2015).

In a thematic analysis of Antonovsky's work and in more recent studies, researchers have identified 15 themes of GRRs: (1) Structure in life, (2) predictability in life, (3) social support, (4) coping strategies, (5) meaning in life, (6) responsibility, (7) comprehension, (8) expres-sion of confidence, (9) challenges worth investing time and effort in, (10) health and illness, (11) future orientation, (12) past orientation, (13) positive, solution-focused outlook, (14) emotional connection and (15) ensuring one's fair treatment. Notably, no resource-related theme has emerged that does not align with the concept of SOC (Griffiths et al., 2011).

1.3   Relationship Between SOC and GRRs

The salutogenic theory assumes that an individual's health depends on how they handle different environmental stressors and demanding situations. The stronger their SOC, the greater their capacity to identify, mobilise and use GRRs. According to Antonovsky (1987), GRRs have a dynamic, reciprocal relationship with SOC (Lindström & Eriksson, 2010). For students, who in VET are mostly adolescents and regularly face demanding situations, cognitive assessments and coping processes play a crucial role in everyday life (Kristensson & Öhlund, 2005). Even so, in Antonovsky's (1987) stated that adolescents with a stronger SOC are better equipped to cope with stressful situations by creating order in chaotic situations. In that light, stressors, as a natural, central part of human development and learning, have a purpose beyond simply needing to be overcome. Indeed, stress can be positive as long as the person experiencing it believes that they possess the resources (e.g., GRRs) to solve the challenges before them (Antonovsky, 1987). An SOC helps people to identify the repertoire of GRRs that are appropriate for specific situations, including individual resources as well as resources available within their networks. For that reason, the resources should be regarded as existing within flexible resource pools, not as rigid response patterns. Because an SOC triggers the brain to send messages to activate appropriate bodily resources and enables people to achieve mastery, both instrumentally and emotionally (Antonovsky, 1979, 1987), a person's ability to master stressful and demanding situations in life depends on their SOC.

1.4   SOC and GRRs Related to Learning and VET

Salutogenesis can be conceived as a constant learning process that supports movement toward health and other desired aspects of an individual's existence (Eriksson, 2022), including the development of competence related to a future profession. The process of relating to others produces learning, and the knowledge gained from practice expands one's area of knowledge (Eriksson, 2022).

The salutogenic theory is backed by evidence showing that people with a stronger SOC more easily cope with stress, seek resources and see solutions in challenging situations (Haugan & Eriksson, 2021; Mittelmark et al., 2017). Studies involving students in upper secondary school have revealed that SOC is also related to performance (Kristensson & Öhlund, 2005; Torsheim et al., 2001). A high SOC correlated significantly and positively with good school grades and success (Kristensson & Öhlund, 2005), a low SOC in childhood was associated with dropping out of vocational education (Winding et al., 2013). Nilsson and Lindström (1998) have described how learning can be regarded as a health-promoting process, not only when health is learned about but also because the learning process itself promotes health. By combining pedagogical theories and the salutogenic theory, the so-called salutogenic school has emerged, the most important elements of which are meaningful

learning situations, clear structures for curricula and schoolwork and committed teachers who support each other, provide adequate support to students and act as good role models.

Because VET consists of both school- and work-based learning, research on SOC and GRRs in the context of working life is central when exploring the salutogenic approach in VET. To date, studies have indicated that health in the workplace depends on everyday technical, social and personal GRRs, as well as employees' capacities to use them. A strong SOC protects individuals exposed to risks at work, including stress and high demands for physical performance (Holmberg et al., 2004; Olsson et al., 2009). Research has also shown that workplaces that encourage employees to develop knowledge and skills, combined with an atmosphere that allows for feedback, discussion and influence, foster internal GRRs associated with open-mindedness and reflective skills. Flexibility and responsibility are other internal resources that promote SOC in the workplace. At the same time, research has additionally demonstrated that social climate is an important external resource in workplaces characterised by a culture of humour, joy and the sharing of responsibilities among employees (Nilsson et al., 2012). Added to that, Bringsén et al. (2012) have identified central GRRs such as control over one's job, the meaningfulness of work tasks and recognition at the individual level, as well as social relations and cohesion at the group level. Implementing a salutogenic approach at work that facilitates those GRRs requires employee engagement and interdisciplinary collaboration (Bringsén et al., 2012). Vaandrager and Koelen (2013) have added that a salutogenic organisation indeed provides personal, social and environmental resources that offer coherent work experiences.

1.5　Research Question

Considering that work today requires, highly qualified and motivated professionals who can deal with the stress and demands and that VET has a social mission to develop skilled workers through school- and work-based learning, the purpose of our study was to identify and explore the importance of SOC and GRRs, both internal and external, among apprentices in VET. Research on the role of GRRs in building SOC remains scarce (Eriksson, 2022), and pedagogy has rarely been encompassed within the salutogenic perspective (Idan et al., 2022; Lindström & Eriksson, 2010). Moreover, there have been calls for studies that apply salutogenesis to fields beyond healthcare (Bauer et al., 2020; Eriksson, 2015). Against that background, we hypothesised that apprentices who manage to identify and use GRRs available to them develop a strong SOC that promotes learning and vocational competence. Further knowledge about the relationship between GRRs and SOC could help teachers and supervisors to provide coherent VET characterised by comprehensibility, manageability and meaningfulness. Therefore, in our study, we sought to answer the following research question: Which GRRs contribute to SOC among apprentices in work-based learning?

2 Methods

Adopting a qualitative approach centred on interviews, in our study we followed Tjora's (2021) stepwise deductive–inductive method to generate and analyse data. The method has six steps: (1) Empirical data generation, (2) raw data processing, (3) empirical coding, (4) code grouping, (5) concept and main topic development and (6) theory development. Each step features an inductive upward process that involves checking empirical data against theory and a downward process that involves checking theory against empirical data.

2.1 Data Generation

In the early spring of 2020, the first author sent an email to vocational teachers at nearby vocational schools to request participants for our study. To be recruited, students had to be participating in basic vocational training and have an apprenticeship contract. Beyond that, the sample was formed in consideration of its representativeness of diverse vocational schools, various vocational programmes, and gender. Overall, we aimed to explore the experience of an ordinary group of young VET students in a variety in programmes and schools. Although our study design does not permit the generalisation of our findings, we wanted to explore GRRs in a breadth of VET programmes and school affiliations in a population of students.

Ultimately, 12 students participated in semi-structured interviews conducted in the late spring of 2020 (Hanssen et al., 2022). Two years later, from January to August 2022, a second round of interviews was conducted with 11 of the 12 participants. By that time, the students were in the final semester of their apprenticeship period at different companies. Those 11 apprentices thus provided the data analysed in our study. They came from nine professions in three sectors: Health, service and technology. An overview of the research participants is described in table 1. Eight of the second-round interviews were conducted in person at the apprentices' workplace or former school or else digitally using Microsoft Teams due to geographical distance. Audio-recorded and lasting 35–47 minutes, the interviews were carefully developed based on two core concepts: SOC and GRRs. The wording of questions during the interviews was also adapted to learning in a VET context. The questions addressed the participants' experiences as apprentices in terms of their motivation, coping and learning in VET. They were also asked about which internal and external resources they considered to be important in acquiring vocational competence. Along those lines, they were specifically encouraged to discuss their experiences when they found the training to be comprehensible, manageable and meaningful. Due to time limits imposed by their workplaces, however, three apprentices provided written responses to the questions; nevertheless, generating written qualitative data via email interviews can work well if the participants are engaged in the topic and give detailed answers to open questions (Tjora, 2021).

The 11 apprentices were again contacted in the autumn of 2022. At that time, they were asked to report whether or not they had completed trade certification and become skilled workers within the standard timeframe.

Table 1: Description of the Research Participants

School	Upper secondary level 1	Upper secondary level 2	Designation	Gender	Age (in years) at second interview	Interview code
School 1	Restaurant and food processing	Cookery and waiting	Cook	Man	20	A-1
	Restaurant and food processing	Cookery and waiting	Cook	Man	20	A-2
	Sales, service, and tourism	Sales and tourism	Salesperson	Man	20	A-3
	Sales, service, and tourism	Service, safety, and administration	Office and administration worker	Woman	20	A-4
School 2	Healthcare and childhood and youth development	Health work	Health worker	Woman	25	A-5
	Electrical engineering and computer technology	Electrical power	Electrician	Man	20	A-6
	Electrical engineering and computer technology	Electrical power	Electrician	Man	20	A-7
	Electrical engineering and computer technology	Electrical power	Power-supply fitter	Man	21	A-8
School 3	Technological and industrial production	Motor vehicles	Heavy vehicles mechanic	Man	21	A-9
	Technological and industrial production	Motor vehicles	Light vehicles mechanic	Woman	22	A-10
School 4	Building and construction	Construction techniques	Carpenter	Man	20	A-11

2.2 Analysis

To process the raw data, we listened to the audio files several times, transcribed them verbatim and translated the transcripts into English. For empirical coding, the transcripts were read sentence by sentence and coded by making marks in the margins, which provided a

guide while identifying statements in the apprentices' stories that could be described as GRRs that promote SOC. The codes were formulated as both words and phrases and described the apprentices' thoughts, feelings and experiences in VET. The codes were also related to their everyday practice, including "understanding", "finding solutions" and "thinking self". In grouping codes, we compared the codes to determine whether the meaningful content could be grouped into fewer codes for further categorisation and deductively compared with the theory of GRRs and SOC. For example, the three abovementioned codes were categorised as a GRR labelled "solution-oriented", whereas the codes "being spontaneous", "meeting new people" and "adapting" were labelled as "flexible". As we progressed from inductive to abductive analysis, the core concept of GRR became increasingly prominent. Afterwards, the code groups were re-examined to determine which ones could be categorised as internal and external GRRs based on their meaning. Overall, 37 code groups representing the major internal GRRs were reduced to 10, while the 12 representing external GRRs were reduced to 6. In developing the concepts and main topic, the latter, formed based on the code groups and the study's theoretical perspective, was determined to be "GRRs that support apprentices in work-based learning". To consolidate our work, we developed a model (Figure 1), which brought us closer to achieving Step 6—that is, developing theory from a future-oriented perspective.

2.3   Ethical Considerations

Approval for processing the students' personal data was obtained from the Norwegian Centre for Research Data (NSD; Ref. No. 715305). All participating students provided their informed consent after receiving written information about the study's purpose and being told that they could withdraw from the study at any time, that their names would be anonymised and that the researchers would ensure confidentiality. The audio files and transcribed interviews have been stored in compliance with the NSD's guidelines.

3   Findings

This section reports the findings of our analysis. The findings are summarised in Figure 1 to illustrate the relationship between the GRRs and the three components of SOC.

3.1   Internal GRRs

In this part we will present the key internal GRRs that emerged from the data.

3.1.1 Professional Interest

All of the apprentices said that being interested in the chosen profession was crucial for their desire to put forth effort in the short and long term. Professional interest promotes the joy of learning and engagement and is thus an essential GRR for promoting the meaningfulness component of SOC, which is linked to motivation. For example, the apprentice light vehicles mechanic stated: "If you like the thing that you'e started, then you'll learn"(A-10), while the apprentice electrician said, "It has an impact on motivation, having found what you want to do" (A-7). All apprentices, except the one working with heavy vehicles, applied to upper secondary school based on their interest in a specific field. By contrast, the apprentice heavy vehicle mechanic, who underwent two years of general education before choosing a vocational track, stated that his motivation for learning increased when he became interested in mechanical subjects. Professional interest was also mentioned as arousing a curiosity for knowledge. As the apprentice health worker indicated: "I'm going to be a health worker, so I want to learn everything" (A-5).

3.1.2 Utilitarian Value

Viewing their tasks from a future-oriented perspective increased apprentices' desire to learn and their joy of learning. They also identified learning as useful, even at the moment. When asked what brings meaning in VET, the apprentice power-supply fitter stated: "Right now, there's more than finishing tasks. From a longer-term perspective, it's to get the certificate of apprenticeship and then get a position in the company" (A-8). Some apprentices found working with the competence goals set by the curriculum to be useful for their motivation to learn, which is important for experiencing meaning from a future-oriented perspective. The apprentice office and administration worker said: "It's important that the competence goals have been covered so that I'm prepared for the trade examination. It's also important for my further education" (A-4).

Assisting others provided meaningfulness and a sense of usefulness, for the apprentices stated that caring for others and helping people with practical tasks was motivating. For example, the apprentice health worker said: "I like to help older adults or people who need help; that has motivated me" (A-5). Even for those in technological subjects that do not involve human encounters in their primary tasks, meaning was found from helping others. The apprentice light vehicle mechanic displayed that sentiment:

> At work, it's so meaningful to fix a car because there are others who need my help. It's always fun to help people. I see that clearly. On my own car, I do nothing because I'm the only one who will drive it. It's a lot more fun when I can assist others (A-10).

3.1.3 Professional Pride

Most apprentices appeared to have high morale at work and were proud of their choice of profession. The apprentice power-supply fitter said: "Be happy with what you're assembling and don't rush through the work to get it done quickly. Take your time to get the best out of it. There's pride in being professionally good" (A-8). Being ambitious was also a characteristic of other apprentices. One of the apprentice cooks stated: "I hate failing. So, when I see things being served that don't look good, I get annoyed and dissatisfied. I hate it. I want to do a good job" (A-1). Thus, thoroughness and accuracy were emphasised by the apprentices in several professions and are thus important GRRs in promoting the SOC components of manageability and meaningfulness.

3.1.4 Work Capacity

Being able to handle work- and time-related stress was identified as not only a central skill in VET and professional life but also an important GRR for promoting manageability. The apprentice power-supply fitter discussed deadlines in relation to contracts, the apprentice electrician discussed overtime when the company had deadlines, the apprentice cooks discussed long workdays due to shift work, and the apprentice health worker mentioned extra night shifts due to illness among other staff. Maintaining a sense of calmness in such demanding situations is challenging, and the apprentices indeed described complex learning situations in which many processes were occurring all at once. One of the apprentice cooks compared his apprenticeship period to his experience with military service and described how demanding the training could be. He sometimes experienced more stress than he could handle: "The workdays were extremely long and hard, with a lot going on. There was a lot of stress. Woefully high standards were set, and I was unable to meet them" (A-2).

Nevertheless, pressure at work was described as being both negative as well as positive. Some apprentices wanted to have a tighter schedule and a lot of work because quiet days made them lethargic. Working efficiently supplied them with a good feeling later on and a sense of mastery. The apprentice cook mentioned above described the feeling: "I'm glad that I feel that kind of stress and that kind of workload. I know how much chaos there can be when you have several different things happening at the same time" (A-2). The apprentice carpenter also underscored the importance of having a high capacity for physical labour in order to handle the workdays: "I'm quite happy working with my body; it's important to becoming physical strong" (A-11). Mobilising the body for action in physically demanding occupations thus requires good physical health.

3.1.5 Willpower

The apprentices considered having courage and a whatever-it-takes attitude, even when training was perceived as a challenge, to be an important GRR for managing VET. Past struggles with motivation and mastery were not regarded as obstacles to success. Several apprentices shared stories about their growth from being the least motivated in school to being among the brightest in their classes. Learning through practice at both school and companies was described as an indication of their willingness to work hard and master the challenges that they had previously faced.

The apprentice office and administration worker discussed the importance of repeatedly giving oral presentations on vocational subjects in upper secondary school. Despite finding them to be a challenge, she gave several presentations: "That created a drive and a desire to learn" (A-4). Similarly, the apprentice electrician was discouraged from pursuing a career as an electrician by his middle school counsellor but was driven by a will to prove that he could succeed.

3.1.6 Flexibility

The apprentices described having to constantly adapt and demonstrate flexibility. Some discussed how they have needed to relate to different people (e.g., colleagues, customers, patients and relatives) during the workday, while others had to move between places, depending on their work assignment, and still others had various work hours (e.g., shift work and overtime). The apprentice power-supply fitter, who works in the construction industry, stated the following:

> You have to be spontaneous because you never know where you're going. I've been called many times on Sundays. I have no idea where to go on Monday morning. You have to like going to new places, meeting new people and such (A-8).

Flexibility is thus an important GRR for handling the unforeseen work environments that apprentices encounter. Although the apprentices had supervisors who oversaw their training, they also had different colleagues who acted as supervisors, performed tasks and guided the apprentices in different ways. As one apprentice cook said: "You have to learn to work differently based on whom you're working with. I think that that's a good thing because then I learn more ways to do one thing—a broader perspective" (A-1). Adaptability in relation to how one relates to different supervisors is therefore also an important GRR that strengthens the manageability component of SOC.

3.1.7 Social Competence

Interacting with people and communicating with colleagues, managers, supervisors, customers, patients and relatives were considered to be central requirements for understanding and managing VET and future careers. Our analysis revealed that communication skills are an important GRR in all professions and comprise both informal and professional skills. According to the apprentice electrician, being able to talk to customers has been a central part of the services that he has performed in other people's homes. Furthermore, the apprentices appeared to use social competence and communication skills when dealing with stressful situations. The apprentice electrician found it to be particularly stressful when customers watched him work over his shoulder. To avoid feeling monitored, he engaged in "small talk" to shift the customer's focus. Meanwhile, the apprentice health worker reported having to have relatively difficult conversations:

> For example, if someone dies at a nursing home, I find it difficult if relatives come to visit. It's hard because we're not allowed to tell them that their loved one has passed because it's the next of kin who has to inform the family (A-5).

Collaboration in life at work occurs at the personal and professional levels. The apprentice health worker, cook and office and administration workers were trained in that skill during their vocational education, whereas those in technological fields were not. For example, the electrician apprentice stated: "We [my classmates and I] didn't work as a team at school; we each got our own station where we did our installations. (…) Since I started as an apprentice, I've experienced that working in teams and collaborating are central" (A-6).

Companies have different cultures with formal and informal norms for apprentices. As a case in point, the apprentice heavy vehicle mechanic described the use of jargon among employees: "When you start as an apprentice, everything is new; you have to retreat slightly and get to know the culture and create experiences" (A-9). He added, "Finding your place and being recognised in the corporate culture is important to thrive" (A-9). Social competence in the form of communication skills and understanding the corporate culture seem to be important GRRs that promote the SOC components of comprehensibility and manageability.

3.1.8 Being Guidable

The apprentices also considered being able to accept supervision as an important GRR for increasing vocational competence. Being aware of one's own competence and having the courage to ask for help when needed are crucial to learning, for they affect the SOC components of comprehensibility and manageability. For instance, the apprentice electrician stated: "If I don't have a leg up on what I'm doing, then I'll call all kinds of colleagues whom I know,

those who know the most and those who probably did it before"(A-6). Constructive criticism was also considered to be important. When asked about experiences with positive feedback, the apprentice office and administration worker stated the following:

It's important, but constructive criticism is also important. Once, I gave a presentation to someone from the communication department. Afterwards, she told me how I could improve my presentation, and it helped a lot. I think that it's nice to get constructive criticism. I'm very receptive to that as long as it makes me better at my job (A-4).

3.1.9 Reflexivity

While the apprentices considered practice to be the most important aspect of becoming a skilled worker, they also emphasised the importance of theoretical knowledge. The apprentice cooks relied on theoretical knowledge to offer healthy meals in consideration of nutritional and potential allergic reactions. Meanwhile, the apprentice light vehicle mechanic used theory to understand elements that are not visible:

If you have a theory in mind and discover a leak in the engine, then you start thinking, *What is this? Where is the leak coming from? What could be causing the leak?* Then, you need theory. Not everything in an engine is visible, so you have theory to tell you what's going on inside (A-10).

The ability to implement theory in practice and to transfer knowledge appeared to be related to the awareness and application of experience via reflexive processes. For example, the apprentice heavy vehicle mechanic said:

I have experience from the past that I can compile together to create knowledge, maybe not knowledge exactly relevant to the area of the job I'm going to do, but I have experience with something relevant that I can somehow compile together (A-9).

Cognitively and practically, reflecting on experience was considered to be crucial for developing vocational competence and is thus an important GRR for strengthening the SOC component of comprehensibility. Experience with practical training strengthened the apprentices' handiness, a skill that several mentioned as an important GRR for their development of competence. One of the apprentice cooks said:

You get the job with your hands; you learn motor skills using your body instead of sitting and reading a book. I've been told that you can read as many books as you want, but you can never learn the technique by reading. By actually implementing the technique, you learn it. Then, you manage to do it faster and better every time you do it (A-2).

3.1.10 Solution Oriented

A significant part of everyday work in VET involves problem-solving. The apprentice power-supply fitter stated, "You have to find solutions all of the time. There's always something to devise, and that's quite fun". When under time pressure or lacking equipment, the apprentices found it important to be able to improvise by rethinking situations and considering new responses, and such creative problem-solving requires both cognitive understanding and practical creativity in performing work. All of the apprentices also considered being responsible and working independently to be important GRRs for learning by developing the SOC component of comprehensibility. Their understanding increased when they were challenged to solve tasks on their own, as represented by what the apprentice heavy vehicle mechanic stated:

> For example, if you're alone at work on Saturday and you don't have anyone to help you with two-person work, then you just have to do it [yourself]. For that, you have to be solution oriented. Being solution-oriented is really the most important skill to have (A-9).

3.2 External GRRs

In this part we will present the key external GRRs that emerged from the data.

3.2.1 Various Supports

Support from others when facing professional challenges was considered to be a central GRR for understanding and coping and thus affects the SOC components of comprehensibility and manageability. Such support includes guidance in professional work as well as mental and social support. The apprentices referred to bosses, supervisors, colleagues, employees in training offices, other apprentices, former teachers and peers as people who can provide support. An apprentice cook said: "I'd say that I've had excellent vocational teachers in school, and I'm working with very good chefs now. It's important to have supporters around me who can help me with what I need" (A-1). With respect to mental and social support, interest and supportive feedback from family and friends were important motivating factors in continuing education. For example, the apprentice electrician said: "A lot of what's been important to me is the support that I get in private. The fact that family and friends show interest in what I do and that I get support to follow my own path is particularly vital" (A-7).

3.2.2 Digital and Material Aids

Currently, in most vocations, digital and material aids are central GRRs for understanding and mastering a professional practice. All participants in our study reported using digital training books during their apprenticeship as a means to work towards achieving the competence goals in the curriculum and diverse artefacts. Ones in the technological professions described using various wiring diagrams, applications and assembly instructions. Digital and martial aids are therefore necessary GRRs that promote the SOC components of comprehensibility and manageability. The apprentice light vehicle mechanic shared the following experience from a training course:

> Although they [the supervisors] offered an explanation, you're trying to think about what's going to be done and what it looks like, but you don't really have a clue. When the car app is used, a concept becomes much easier to understand. You can see what it looks like. So, the app is an important tool (A-10).

The apprentice health workers and cooks also identified digital online resources, including the National Digital Learning Arena, textbooks, procedures, manuals and the encyclopaedia, as necessary tools. Access to materials and updated equipment, including proper workwear, tools and good-quality raw materials, was also considered to be important for doing a good job.

3.2.3 Work Community

The apprentices additionally emphasised the importance of good work communities, which include safe, positive school and work environments, as well as academic environments in which they can learn from experienced colleagues. The work community is a GRR that seems to affect all three components of SOC and can be related to both daily tasks and official as well as unofficial meetings involving evaluation and planning. For young apprentices living away from family and friends, it is important that such communities extend support beyond work hours. Common professional interests can lead to long-lasting friendships and life situations. Furthermore, interactions with older, more experienced colleagues allow apprentices to learn quickly and socialise better. For example, one of the apprentice cooks highlighted, "If we're done with what we have to do early, then we try to figure out what we can do together in the afternoon. We've also developed good bonds outside the kitchen" (A-2).

3.2.4 Professional Role Models

Professional role models can demonstrate or explain new topics to apprentices. Although the apprentices in our study were aware that tasks could be solved in different ways, they wanted explanations for how to perform new tasks. For example, the apprentice health worker had wanted a demonstration on how to replace wound bandages on patients. Skilled colleagues who are knowledgeable and possess a high degree of professional pride can provide inspiration for learning and professional development. Professional role models are therefore a GRR who promote the SOC components of comprehensibility and meaningfulness. The apprentice heavy vehicle mechanic stated the following:

> Those who know are skilled in their profession; I find that inspiring. The person who is really good at what they are doing, someone everyone in this company knows and the person you go to whenever you have questions: I want to be that person (A-9).

3.2.5 Network and Competence Gained From VET

Although the curriculum's competence objectives govern the professional vocational competencies that the apprentices seek to develop, schools and companies also have their own interpretations of those competencies. Vocational competencies are linked not only to individual coping levels but also to what is prioritised in vocational education, which can influence the SOC components of comprehensibility and manageability. One of the apprentice cooks said, "I've noticed since becoming a second-year apprentice that the first-year apprentices and I have received different forms of schooling. Things I can do and am sure of, they don't understand, and vice versa" (A-1). That apprentice's company was decisive about the work tasks given to apprentices. Meanwhile, the apprentice electrician considered being employed in a small local business as being central to developing broad competence. By contrast, the apprentice power-supply fitter, who was working in a massive national company, said that larger companies offer diverse possibilities and opportunities. By working closely with other teams, apprentices developed interdisciplinary competence and networks.

3.2.6 Upbringing Environment

Vocational experiences while growing up were considered to be beneficial in fostering the apprentices' vocational interest. The apprentice light vehicle mechanic recalled how spending time at her family's car repair shop had piqued her interest in mechanics, whereas both apprentice cooks discussed how various dining experiences during childhood had sparked their passion for food. Meanwhile, the apprentice salesperson emphasised that his family had been important in developing his competence: "I grew up in a family that has worked in a

shop. I have learned a lot about the sales profession from them and their employees" (A-3). The apprentice power-supply fitter discussed how practical skills were recognised during his upbringing: "I always screwed around with everything when I was a kid. During my adolescence, my buddies and I screwed around on mopeds. This fellowship has been important for me. Today, all of us are going for a practical profession" (A-8). Thus, an upbringing environment where children and adults participate in practical occupational tasks and are recognised for them can influence comprehensibility, manageability and meaningfulness in VET.

Last, we found a close relationship between apprentices' internal and external GRRs, all of which were identified inductively during analysis. Figure 1 depicts the dynamic relationship between the 10 internal (i.e., inner circle) and 6 external GRRs (i.e., outer circle) and the 3 components of SOC (i.e., middle circle). In addition, the code groups in the inner and outer circles are presented in bold, while the dotted lines in the middle indicate the flow between the apprentices' GRRs and the three components of SOC. The main theme "GRRs that promote apprentices' SOC in VET" is reflected in the text of the figure.
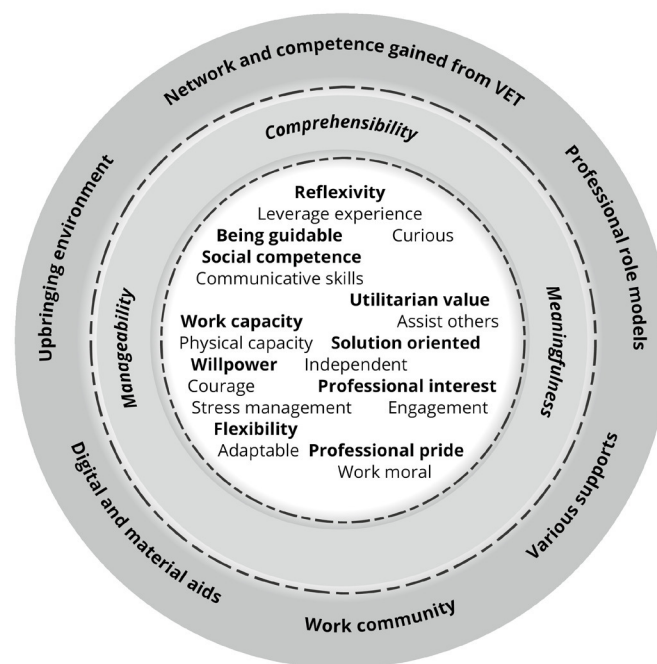

Figure 1: The Dynamic Relationship Between Internal and External GRRs That Promote SOC Among Apprentices in Work-Based Learning (own compliation)

4 Discussion

Following Antonovsky's (1979) salutogenic theory that GRRs are foundational in the development of a strong SOC, in our study we explored VET students' GRRs and SOC in relation to work-based learning. From the salutogenic perspective, learning is a health-promoting process (Nilsson & Lindström, 1998), and organisational learning in particular can increase individuals' capacity for action by augmenting their knowledge and understanding (Vaandrager & Koelen, 2013). The following subsection illustrates how the GRRs that we identified, whether emotional, physical, social, cognitive or material in nature (Antonovsky, 1979), may have contributed to the participating apprentices' SOC and development of competence. The relationships between the various GRRs and the components of SOC in the context of vocational learning are also addressed.

4.1 Importance of Internal GRRs in Relation to SOC in VET

This study shows that apprentices who identify emotional resources find meaning in VET. Identifying the utilitarian value of learning is one of the emotional resources highly associated with finding joy in learning. Previous studies involving VET students have shown that both intrinsic motivation and identification of the utilitarian promote the perceived meaningfulness of studying both common core and vocational subjects (Hanssen et al., 2022; Utvær, 2014). Moreover, professional interest, another central GRR that inspires joy in learning and academic engagement, can drive motivation and increase the SOC component of meaningfulness. Such interest is thus important in creating meaning, even if the goal is not imminent or visible.

Assisting others also creates meaning, as is well-known among health professionals, for whom the opportunity to provide care is considered to be a motivational resource (Nilsson et al., 2012). By extension, our study's apprentices, even if in technological industries, perceived the value of helping others, including the apprentice light vehicle mechanic who found joy in repairing customers' cars. Thus, assisting others beyond providing care and nursing creates meaning. Another emotional GRR identified is professional pride. Most of the apprentices expressed pride in their vocational choices as well as the intention to perform well at their jobs and succeed instead of getting frustrated and dissatisfied, as was reflected in their strong work ethic, appreciation of accuracy and ambitions. Those findings align with what Nilsson et al. (2012) have pointed out: that being satisfied with one's work and having professional pride are important resources for finding meaningfulness in one's job. That component of SOC seems to be strongly associated with the apprentices' emotional GRRs, and Antonovsky (1987) indeed linked the component to such GRRs.

The apprentices also reported regularly having to manage stress and pressure resulting from long workdays and deadlines. To that end, having a high capacity for work seems to be a central physical and cognitive GRR at work in order to meet the demands of the job. At the same time, a high work capacity can also be regarded as an emotional GRR, for handling tight timelines and schedules and completing jobs were found to give the apprentices a feeling of the manageability of their work. According to Antonovsky (1979, 1987), the ability to manage stress is the core element in developing a strong SOC and helps to moderate and even prevent stress in school (Torsheim et al., 2001) and at work (Holmberg et al., 2004; Olsson et al., 2009).

Along with work capacity, willpower was also identified as a GRR, for the apprentices considered having courage and a whatever-it-takes attitude to be important. The GRR of willpower involves not quitting despite difficulties, an attitude that can be both a cognitive and an emotional resource. For example, one of the apprentice electricians was driven by a strong will to achieve his long-term goals, both to succeed and to exceed his middle school counsellor's expectations. Meanwhile, the apprentice office and administration worker who had worked to develop more confidence in their oral presentation skills said doing so had "created a drive and a desire to learn"(A-4). Therefore, a commitment to training fostered by willpower is a key GRR that promotes manageability.

Other GRRs related to manageability that we identified include flexibility, spontaneity and adaptability. Those skills are related to the management of people, tasks, time schedules and work processes, among other things. Past studies have indicated that flexibility is indeed important in promoting manageability (Antonovsky, 1979; Eriksson, 2015; Nilsson et al., 2012), because it allows people to choose strategies to solve problems that give them stress (Antonovsky, 1979), including the unpredictable workdays that apprentices often encounter. Being flexible and adaptable are thus important resources for getting the job done and facing a constantly evolving professional life (Dede, 2010).

We also identified social competence and communication skills as other central GRRs, ones that the apprentices considered to be important in all professions. Similar to the GRR of assisting others, those skills are common in health and service industries; even so, apprentices in technological professions also emphasised the importance of communication skills for their success and social skills for stress management. For example, an apprentice electrician engaged in small talk as a means to deal with customers in stressful working situations, a tactic also used by the apprentice heavy vehicle mechanic who respected different cultures and norms by being aware of and behaving respectfully during interactions with colleagues. If employees have common values, a distinct group identity and clear normative expectations, then the atmosphere at work can be characterised by internal coherence, established by way of common symbols and a common language (Antonovsky, 1987). Those examples

corroborate the findings of Eriksson (2015), who identified flexibility and social skills as important GRRs for coping with unpredictability and countering stress.

Another GRR important for learning and developing competence in VET is the ability to take guidance. Being aware of one's own strengths and limitations makes it easier to ask questions and reflect on advice from supervisors and colleagues. In promoting both comprehensibility and manageability taking guidance is a cognitive and social GRR. The apprentice office worker, for instance, considered constructive criticism central to her development. Because having the courage to acknowledge a lack of competence when performing certain work tasks requires self-confidence, being guidable can also be characterised as an emotional GRR. According to Eriksson (2015), self-esteem, a concept similar to self-confidence, ranks among the most central GRRs, for believing in one's resources can enable a person to handle challenges in life. Beyond that, being responsive to guidance can positively impact whether VET students continue their education and avoid dropping out when they face educational difficulties (Aarkrog et al., 2018).

The core of learning a vocation is understanding the connection between theory and practice (Aarkrog & Wahlgren, 2022; Sappa et al., 2016). Although the apprentices considered practice to be the most important facet of becoming skilled workers, they were also conscious of the importance of theoretical knowledge. According to Antonovsky (1987), people rarely experience a high degree of manageability and meaningfulness combined with a low degree of comprehensibility. In our study, the apprentices did not always need to understand in order to learn, for they found it possible to learn techniques and perfect practical skills during training. For example, an apprentice cook said: "You get the job with your hands; you learn motor skills using your body instead of sitting and reading a book" (A-2). Nevertheless, professional skilled workers also have to leverage their experience, be able to transfer knowledge in work situations and be innovative in meeting the demands and expectations in their professional lives. Integrating theory and practice, the cognitive dimension and reflectivity is important for comprehension (Nilsson et al., 2012).

Last, we identified the importance of being solution-oriented, which the apprentice heavy vehicle mechanic stated was the most vital resource in VET. Being solution-oriented requires apprentices to have a high degree of autonomy and independence, which can be characterised as physical, emotional and cognitive GRRs that affect all three components of SOC.

4.2 Importance of External GRRs in Relation to SOC in VET

We identified internal GRRs by exploring the resources used by individual apprentices in our sample. Learning not only involves individual processes but also occurs during interactions with others (Antonovsky, 1979, 1987), as we describe in what follows by elucidating the external GRRs identified among the apprentices.

In most cases, external GRRs affected multiple components of SOC, and the relational GRR of experiencing a variety of support proved to be central. As an apprentice cook pointed out, the availability of people who can provide support is important during workdays: "It's important to have supporters around me who can help me with what I need" (A-1). Beyond that, receiving explanations from others helps to increase comprehensibility (Antonovsky, 1987).

At the same time, though apprentices indeed need support to understand and master their tasks, family and friends are also important motivating factors in whether and, if so, then when and how they complete their education. Per our findings, having various forms of support is an important GRR that affects all three components of SOC.

Being part of a work community is another essential GRR in learning and developing vocational competence, one that also provides a sense of being part of a community of practice. In vocational contexts, a *community of practice* is a developed community that represents a set of values, knowledge and skills (Lave & Wenger, 1991). Antonovsky (1987) pinpointed three important aspects of such communities: social relations, balance in the distribution of work tasks and the ability to participate in decision-making. Furthermore, having good role models who are proud of their profession promotes meaning and influences apprentices' professional pride, an internal GRR. Thus, a work community with inspiring role models promotes positive emotions, including a desire to learn and commit (i.e., motivation and meaning). Along those lines, past studies have shown that former teachers who serve as role models are important in the development of SOC among students (Nilsson & Lindström, 1998).

Networks, including those maintained from school-based learning in VET, are also valuable resources. For example, the power-supply fitter apprentice had accepted help from both former classmates and teachers when needed. Added to that, artefacts—the participants mentioned computers, wiring diagrams, proper workwear and good raw materials—were considered to be important GRRs for understanding and performing different tasks. The annual apprenticeship survey revealed that the apprentices considered updated equipment and tools in VET to be important for further learning and the development of competence in their respective companies. Having updated equipment and tools in schools, as well as VET teachers with insight into what is expected of them during an apprenticeship, fosters the comprehensibility of the curriculum and prepares apprentices for the trade examination (Utvær & Wendelborg, 2020). Thus, having artefacts in school- and work-based learning seems to create coherence. By contrast, the absence of certain GRRs, including a lack of relevant equipment, can become a stressor (Antonovsky, 1979).

Last, experiences during one's upbringing are also important GRRs. The competencies and professional support that the apprentices received while growing up were found to be strongly connected to their chosen professions or to strengthen their professional interests and skills. Thus, GRRs can be established based on preferences shaped by life experiences,

which in turn foster a strong SOC (Antonovsky, 1987). Beyond that, being recognised by the social circle of one's vocation promotes a good feeling, which in turn improves motivation, willpower, professional pride and the sense of meaningfulness. GRRs indeed arise from environmental conditions and early childhood rearing and socialisation experiences, in addition to idiosyncratic factors and chance. By identifying and using GRRs, individuals can influence the impacts of stressors (Antonovsky, 1979; Eriksson & Lindström, 2006).

5 Conclusions

Overall, we found that apprentices' internal GRRs include motivation, attitudes and values, mental and physical capacity as well as social, theoretical and practical skills, whereas external GRRs include personal and professional relationships, the learning environment and culture in schools and companies, materials and equipment and the environment of one's upbringing. Many of the GRRs identified are emotional in nature, which aligns with Antonovsky's description of the emotional dimension as central to dealing with stressors and demands and developing a strong SOC. In fact, each GRR that we identified affected one, two or all three components of SOC. Furthermore, the apprentices managed to identify resources quite well, even if some did so subconsciously. They had also deployed internal GRRs to make use of external GRRs, and vice versa, and the identification and exploitation of GRRs were both individually and socially conditional. Mere access to those resources is insufficient, however, for people have to be able to identify those resources in themselves or in their surroundings and apply them in ways that promote learning and competence in VET. Therefore, it is important for teachers and supervisors in companies to support VET students in identifying GRRs and thereby promote their SOC and work-based learning.

Strengths and Limitations
Empirical research on GRRs in the context of VET has rarely been conducted. Against that trend, we sought to expand upon such limited research by exploring internal and external GRRs among apprentices. The GRRs that we identified following interviews with the participating apprentices contributed to their trade certification based on their experiences with their work's comprehensibility, manageability and meaningfulness, which underpins the supportive role of the GRRs learning.

Even so, our findings have some limitations. First, we have both worked in VET, which might have affected our preconceptions and thus our results, even if we sought to remain cognizant of that fact. Second, from a methodological standpoint, three of the participants wanted to answer the questions in writing, which prevented us from asking them to elaborate on answers and/or to confirm or deny any interpretations. Third, our list of internal and external GRRs is not exhaustive, for our study was an initial exploration of such

resources in relation to apprentices' learning in VET. Fourth, although VET consists of many programmes for a variety of professions, our sample included a limited number of apprentices and professions. Moreover, all apprentices were 20–25 years old, and their experiences with and perceptions of GRRs likely contrast with those of older students. For example, peers can be more important for younger students, whereas a stable economy can be more important for older ones. Age may have indeed influenced the findings shown in Figure 1. Fifth and finally, Antonovsky's questionnaires were not integrated into our semi-structured interview guide; nevertheless, the guide was carefully developed based on two core concepts—SOC and GRRs—and the wording was adapted for learning in a VET context.

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Biographical Notes

Grete Hanssen is a PhD candidate in vocational pedagogy at the Department of Teacher Education at NTNU in Norway. She has comprehensive experience from teaching and guidance in VET. Her research focuses on coherence and interrelations between school- and work-based learning in VET, as well as healthy learning and career guidance.

Britt Karin Utvær, PhD, is an associate professor in pedagogy at the Department of Teacher Education at NTNU in Norway. She coordinates the master's program in vocational didactics, where she also teaches and supervises. Her research focuses on the interrelations between health, school and learning in VET and professional education, often in relation to students' school motivation and peer and teacher support.