



The vocational teacher, an inventor in special needs education: A study on Swedish vocational programmes

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Abstract

Upper secondary vocational education and training (VET) in Sweden has been subject to frequent educational policy reforms which have resulted in reduced numbers of students and student groups comprising many students with special education needs (SEN). These changes can be assumed to have resulted in increasing demands on VET teachers' work with special needs education (SNE). The purpose of this study is to contribute knowledge about VET teachers' conditions for, and work with, SNE in Swedish VET programmes. An analysis of interviews with 15 teachers from eight VET programmes revealed the following themes: 1) Framework factors in the learning environments affecting teaching and learning, 2) The schools' organisation of special educational competence and the VET teachers' application of special needs education, 3) Communicative teaching for increased knowledge of students' strengths and needs, 4) Adaptations at individual and group level, 5) Integration of theory and practice, and 6) Reconsidering teaching approaches through follow-ups. The analysis, based on Skrtic's theory, reveals a dichotomy in the VET teachers' conditions for, and work with, SNE. In the schools, a bureaucratic approach is applied where overriding goals are attributed high value, while the VET teachers strive for an adhocratic approach where the teaching is based on their students' needs. Based on Ainscow's theory, the analysis shows that the VET teachers take an interactive learning environment-related approach, which means that, based on their understanding of the students' difficulties, they develop adaptations to stimulate their students' learning and development.

Keywords: vocational education and training (VET), special needs education (SNE), upper secondary school, vocational teacher, special education needs (SEN), special educator



Introduction

This paper is about vocational teachers' conditions for, and work with, special needs education (SNE) in upper secondary school vocational programmes in Sweden. In this study, SNE is defined as a pedagogical school activity where special educational functions are practiced by various actors in or outside the classroom (Pettersson, 2017; Ström & Linnanmäki, 2017; Tangen, 2012).

However, after the most recent upper secondary school reform in 2011, the purpose of which was to improve the education quality in order to meet the competence requirements of the labour market and the higher education sector (Gymnasieutredningen, 2008), the number of vocational students has decreased to just over 100,000 and student throughput remains at a low level, about 70% (Skolverket, 2021b).

The 2011 reform marked a stricter demarcation between vocational education and training (VET) programmes and general education programmes, resulting in the vocational content being increased in VET programmes at the expense of upper secondary foundation courses (Larsen & Persson Thunqvist, 2018). Thereby, vocational students' eligibility for higher education was abolished and a vocational degree was introduced (c.f. Helms Jørgensen, 2018). Follow-ups of the reform by the Swedish Government (Gymnasieutredningen, 2016) and the Swedish National Agency for Education (Skolverket, 2017) showed that the quality deficiencies identified before the reform were greater after the implementation of the reform. For example, shortcomings were identified regarding vocational teachers' pedagogical and special education competencies, the collaboration between vocational teachers and special educators, and the quality of the resources allocated to developing learning environments and teaching methods. These identified shortcomings can be linked to some of the common challenges identified in the Nordic VET systems, namely, how to address the low esteem of VET teaching and how to meet the overall goal of social inclusion, that is, to increase the number of students who start and complete their upper secondary studies (Helms Jørgensen, 2018).

The prioritisation of social inclusion in the Nordic countries' youth education systems has resulted in VET educating an increasingly socially differentiated student group than before, including young people with social and mental problems (Larsen & Persson Thunqvist, 2018). This, in turn, has contributed to the fact that students' need for SNE in VET has increased over time (Gymnasieutredningen, 2016). In Sweden, vocational teachers usually have a basic vocational training and many years of professional experience before they begin working as teachers. Many become qualified teachers after studies on vocational teacher programmes, which include minor special education elements, but the proportion of unqualified vocational teachers remains high, 50% (Skolverket, 2021b).

Furthermore, the government follow-up report states that student support measures seem to be designed on the basis of traditions, rather than on students' needs, and that the reasons behind the high drop-out rate can primarily be attributed to individual students' shortcomings instead of deficiencies in the upper secondary school's educational mandates, organisation and teaching. This view needs to be problematised, not least in the light of international agreements in the field of SNE. In 1994, Sweden signed the Salamanca Declaration (UNESCO, 2006), which was considered a breakthrough for inclusive education. In the Declaration, it is advocated that students should meet in inclusive learning environments (Nilholm, 2019).

The educational policy ambition in Sweden regarding SEN is stated in the Education Act (Skollag, 2010), the Curriculum for the Upper Secondary School (Skolverket, 2021a) and in regulations from the Swedish National Agency for Education (Skolverket, 2014). For example, the Education Act (Skollag, 2010) emphasises all students' right to education and development, which means that they must be given the opportunity to reach stated knowledge goals to the extent possible. In addition, a general goal for the upper secondary school is to promote the development of all students through adequate and equal learning environments. Thus, the upper secondary school has both a knowledge-oriented and a social educational mandate, which should be considered in SNE teaching (Tangen, 2012). Furthermore, the special educators, that is, qualified teachers with special education training, have duties which are described as twofold: 1) to act as 'qualified dialogue partners' to all teachers in the school and 2) to provide advice to teachers (Skolverket, 2014).

This assignment is often carried out via special education consultation provided by special educators. Idol (2006) defines such consultation as a form of indirect special education service delivery where the consulting special educator supports teachers who have students with SEN in their classrooms.

Teachers' professional and relational work in SNE is based on a holistic view of learning where knowledge and education are integrated. Trusting and caring relationships are seen as fundamental to students' learning and development (Aspelin & Persson, 2011). SNE is also described as an area of knowledge where research contributes to knowledge-building (Ahlberg, 2009). Similarly, researchers in the field of SNE, such as Ainscow (1998), Fischbein (2007), Ström and Linnanmäki (2017), Tangen (2012), and Westling Allodi (2007), claim that the overall goal in the school's educational mandate is that all students should be given the opportunity to learn and develop. Thus, the school actors, including school management officials, teachers, and special educators, are responsible for ensuring that their school's learning environment is conducive to all students' learning (Ström & Linnanmäki, 2017). If the students are not given the

opportunity to have extra support, Fischbein and Österberg (2003) argue that this can have a negative impact on students' self-esteem and study motivation.

The study's focus on vocational teachers' work with SNE in VET is justified for the following reasons: As described earlier, deficiencies have been identified in the wake of recent education reforms as regards the conditions and implementation of SNE in VET programmes (cf. Hirvonen, 2012; Larsen & Persson Thunqvist, 2018; Skolverket, 2017). An additional motive is that research in this area of knowledge is largely lacking. A Nordic review of SNE in upper secondary vocational programmes (Björk-Åman et al., 2021) shows that very few studies have been carried out in Sweden, in comparison with, for example, Finland, which suggests that this research area needs to be further explored. The connection between SNE and VET is therefore highly relevant and in line with Ahlberg (2007, 2009), who emphasises the importance of researchers in the field of SNE needing to create new mergers of previously unconnected knowledge and study objects. Such mergers can contribute to the development of context-related special and vocational educational theories that benefit both the scientific community and school stakeholders and actors.

The purpose of this study is to contribute knowledge about vocational teacher's work with special needs education in the learning environments of Swedish vocational programmes. The purpose is specified in the following research questions:

- What are the conditions for vocational teachers' work with SNE in VET programmes?
- How do teachers work with SNE in VET programmes?

Previous research on vocational education and special needs education

A review of previous research on VET shows that it is extensive, that it spans different levels in the public as well as the private sector, and that VET is contextualised in many different ways in different countries (Billett, 2011). The extent and diversity of VET research is demonstrated in Mulder and Roelofs' review (2012), in which they identify the following themes: organisation and leadership, learning and teaching, workplace-based learning and apprenticeship, and assessment. On the theme of learning and teaching, Kilbrink et al. (2021) show that the vocational subjects have many similarities, such as the interplay between theory and practice, the use of many different tools, problem-solving activities, and the complexity of interacting critical aspects. A review of current international empirical research on SNE in VET shows that such research is primarily conducted in Finland and, to some extent, also in Sweden (cf. Björk-Åman et al., 2021).

In a Finnish study, Hirvonen (2012) shows that SNE in vocational programmes has evolved from segregating forms of teaching to more flexible inclusive learning environments. However, the author claims that the vocational teachers' special educational knowledge needs to be developed and that the support structures for the teachers need to be improved. In addition, Pirttimaa and Hirvonen (2016) argue that SNE should be seen to a greater extent in relation to the vocational students' future occupations. However, Rosenblad et al. (2022) argue that the individualised, competence-based, and managerially governed focus in VET becomes a social divider where self-governing students are offered a fast track to the labour market, which distinguishes them from fellow students in need of learning support. This 'go-forward' engine limits the idea of equal learning of citizenship for all students, in favour of competence-based qualification measurements that are attributed a future economic value.

Ryökkynen et al. (2002) found that interaction between teachers and students in Finnish vocational education takes place primarily in teaching situations, in personal dialogues in connection with the planning of students' individual development plans, and in informal meetings between teachers and students. The importance of interaction in SNE in VET is corroborated also by Ryökkynen and Rätty (2022), who point to the importance of involving the entire learning environment in order to ensure a secure and including environment where students dare to ask questions and express their needs, which is also important in their future working life. In the research field of SEN in the Swedish upper secondary school, Yngve (2020) shows that there is a clear connection between high school absence, attending a vocational upper secondary school programme or having a neuropsychiatric diagnosis and students' perceived need for support in several school subjects. The results show that students experienced limited participation in most school activities and rarely received satisfactory adaptations, and that the need for student support was greatest in the upper secondary school foundation subjects, especially among students on vocational programmes. Thus, one of the study's conclusions was that vocational students' need for support requires even more attention. On the theme of school absence among students in upper secondary schools, Forsell (2020) shows that the school staff, by developing a close relationship with the students, can function as an important bridge-builder between the students' different learning environments, thus contributing to higher school attendance. The results of the study emphasise that teachers' teaching and assignments are of key importance for the students' social and learning development.

In a study of students' and teachers' experiences and perceptions of relational pedagogy in VET, Gidlund (2020) shows that it promoted the learning atmosphere and the students' participation, commitment, and motivation in school.

Forsell's and Gidlund's studies are current examples of relational pedagogy, which in recent decades, has emerged as a reaction to the increasingly market-driven and individualised approaches to teaching and learning in schools. In this pedagogical focus, the importance of analysing, understanding, and thinking about education as a meeting place is emphasised, a place where students grow, develop and learn in relationships (Aspelin & Persson, 2011).

A review of Nordic studies on SNE in VET in upper secondary school shows that 20 such studies were conducted during the years 2010 to 2018 (Björk-Åman et al., 2021). Fifteen of the studies focused on the learning activities level, and the identified themes were Teachers' work and role, Teaching and learning, Student transition, and Student dropout. The remaining five studies focused on the organisational level with themes such as Changes to vocational policy documents and educational practices, and School organisation and its implementation. Most of the studies were conducted in Finland and only three in Sweden. The Swedish studies show that SNE was mainly conducted outside the regular classroom and with a focus on the subjects Mathematics, English, and Swedish (Ramberg, 2013, 2016, 2017). The review concludes that further studies are needed to increase knowledge about SNE in VET.

Overall, current vocational education research reveals several similarities regarding the teaching of the vocational programmes and students' extensive need for support. Within special education-oriented research, where the importance of relationship-building efforts, teachers' knowledge of SEN, and their access to support structures is emphasised, there are calls for more research on VET teachers' work with SNE.

Theoretical perspectives

In this section, the two complementary special education perspectives that were used to analyse the study's results are presented. Ainscow's (1998) and Skrtic's (1991b) theoretical perspectives on SNE share certain similarities as they both claim that development and learning can be advanced, regardless of biological or mental conditions. They also have a similar focus on students' learning and development through social interactions, where support, challenges, and experiences in the learning environment constitute important elements. There are also some differences between the two theoretical perspectives, which are described below.

Skrtic's organisational theoretical model is based on the understanding of the human as a social being (Skrtic, 1991a, 1991b, 2005; Skrtic et al., 1996), and he criticises society's shortcomings in meeting students' varied needs. Skrtic's perspective is useful for understanding students' SEN in school contexts, as well as the wider social, political, and organisational processes and how they affect

SNE in schools. Thus, Skrtic argues for shifting the focus from only applying to the individual's conditions to considering the entire learning environment's need for development. Skrtic claims that a school organisation can be either bureaucratic or adhocratic, and that both orientations have consequences for SNE in the schools.

A characteristic of the bureaucratic school organisation is a high level of trust in overriding decisions and regulations, such as education acts, curricula, guidelines, and pre-given solutions. When policy documents and plans are given a high value by school actors whose main focus is on fulfilment of overarching goals, the understanding and prioritising of students' needs may suffer. Such an organisation risks overlooking students' diversity and differences and instead strive for homogeneous groups of students. The bureaucratic organisation objectifies the shortcomings and diagnoses of the individual student, which can lead to classification and division of students based on their shortcomings (Skrtic, 1991a, 2005). Thus, there is a risk that teachers will focus on students' weaknesses and shortcomings, rather than on their strengths and the learning environment.

As a contrast, Skrtic (1991a, 1991b, 2005) describes the adhocratic school organisation as a flexible and supportive organisation which to a larger extent adapts to students' needs. In this kind of organisation, communication between school actors and students is central and aimed at increased participation and co-determination. Knowledge about students' needs, learning, and development can be made visible in professional informal or formal dialogues, which give the teachers opportunities to solve problems in a flexible way. When flexible working methods are promoted, the teachers' willingness to try new teaching methods and cooperate with other school actors is likely to increase. A flexible and problem-solving organisation lays a good foundation for supporting students' development and learning. This organisation is also characterised by the fact that school management officials have a high level of trust in the teachers' professional skills and responsibility for students' development and learning and encourage them to develop their professional collegial ability to work together (Skrtic, 2005).

The interactive learning environment-related perspective (Ainscow, 1998, 2002) complements Skrtic's theory by its focus on interactions and relationships in SNE. Rather than focusing on aspects that can be defined objectively, systematically observed, and measured accurately, this perspective highlights the teachers' and students' participation in learning situations (cf. Ainscow, 1998, 2002). Thus, in this perspective, SNE is seen as an activity where the students' different needs for support and the learning environment's adaptation to meet these needs are each other's prerequisites (cf. Ainscow, 1998; Fischbein, 2012; Tangen, 2012).

The study's two research questions that concern SNE both from an organisational perspective and an interactive environmental perspective justify the use of the complementary theories. Skrtic's organisational perspective (1985, 1991a, 1991b) has been used to deepen the understanding in terms of the conditions for and implementation of SNE in a school and VET programmes context, while Ainscow's interactive and environment-oriented perspective has been a support in the analysis of the vocational teachers' interaction with their students in the learning environments.

Method

This section presents the methodological aspects of the study, i.e., its study setting, participants, data collection methods, procedures, and data analysis.

Study setting

The Swedish upper secondary school comprises 18 programmes, of which 12 are vocational programmes. About a third of the students, just over 100,000, study on a vocational programme and some 8,000 vocational teachers are involved in VET, half of whom lack teacher training (Skolverket, 2021b). The participants in the study were vocational teachers who teach one or more vocational subjects to students usually aged 16–19. As vocational teachers, they teach both theoretical and practical modules. The teaching is carried out in workshops, practice rooms and traditional classrooms in groups of 8–16 students and teaching sessions often last two to four hours. VET teachers are also responsible for students' workplace learning by coordinating their placements and creating good conditions for the integration of theoretical and practical professional knowledge and skills in both the school-based and workplace-based parts of the education (Gustavsson & Persson Thunqvist, 2018). The vocational teachers participating in the study work at three upper secondary schools located in three municipalities in the northern part of Sweden.

Participants

The study's selection criteria were that the participants should be practicing vocational teachers and have at least five years of teaching experience from one of the 12 VET programmes. All 15 participants met these requirements, all of whom were qualified vocational teachers. Eight vocational programmes were represented, namely Building and Construction (BA, two teachers, teacher one [T1] and teacher two [T2]), Child and Recreation (BF, T1), Electricity and Energy (EE, T1), Health and Social Care (VO, T1, T2, T3), Hotel and tourism (HT, T1, T2), HVAC and Property Maintenance (VF, T1), Industrial Technology (IN, T1), and Vehicle and Transport (FT, T1, T2, T3, T4). Eight women and seven men

participated in the study, most of whom were more than 50 years old and had more than 10 years of teaching experience.

Data collection methods

In view of the research questions and their open-ended nature, semi-structured interviews were considered the most appropriate data collection method, as they allow the respondents to describe and reflect on their in-place experiences in more detail (cf. Kvale & Brinkmann, 2009). Based on their many years of teaching experience, the vocational teachers were asked to describe and reflect on 1) the conditions for working with SNE in their VET programmes, and 2) their work with SNE with VET students.

Procedure

An invitation to participate in the study was sent to 25 vocational teachers in three municipalities offering several VET programmes. The attached cover letter provided information about the purpose of the study, the research questions, and the selection criteria. Furthermore, the teachers were informed that their participation was voluntary, that the study was part of a research project and that the collected data material would be treated in accordance with ethical guidelines for scientific studies (Vetenskapsrådet, 2017). Of the 25 invited teachers, 15 chose to participate. The interviews, which lasted between 45 and 80 minutes, were carried out via video link, recorded, and transcribed verbatim.

Data analysis

Inspired by Braun and Clark (2006), a thematic analysis of the empirical data material was carried out consisting of several steps. Initially, readings and re-readings of the data material were carried out to obtain an overview and to note preliminary ideas about the content of the teachers' narratives. In the next step, the entire data set was coded systematically, which involved compilation of relevant data which then formed initial codes. Examples of codes were 'Group size and teaching time' with data extracts such as 'I have a small class where I am close to the students [...]', and 'Physical learning environment' with extracts such as 'We have many students in the same classroom and the learning environment is very noisy'. In the third step, the codes were sorted into potential themes which, in the next step, were brought together in a thematic map and tested against coded extracts and the entire data set. For example, the above-mentioned codes could be merged to form the theme 'Framework factors in the learning environment that affect teaching and students' learning'. In the fifth step, the specifics of the identified themes were refined, named, and sorted on the basis of the study's research questions (cf. Braun & Clark, 2006).

The thematic analysis of the data material then generated an understanding of the choice of theories to be used in the further theoretically driven analysis (cf. Braun & Clarke, 2006; Bryman, 2016). Skrtic's and Ainscow's perspectives on SEN were judged to be useful for deepening our understanding of the data material. Thus, Skrtic's organisational perspective constitutes the overall theoretical framework, while Ainscow's interactive, environment-related perspective, supports the analysis related to the second research question.

Findings

This section presents the findings. The first part deals with the vocational teachers' perceptions of the conditions for working with SNE in VET programmes and the second concerns their work with SNE.

Conditions for special needs education in vocational programmes

In the teachers' reflections on the conditions for SNE in their VET programmes, two themes can be identified: 1) Framework factors in the learning environment that affect the teaching and students' learning opportunities, and 2) Organisation of special needs education, including access to special education consultations.

Framework factors in the learning environments that affect the teaching and students' opportunities for learning

In this theme, the identified framework factors are group size, teaching time and the physical learning environments.

Group size and teaching time. All teachers point to the importance of the teaching being framed by smaller groups of students and longer teaching sessions. Together, these frame factors contribute to teachers having time to pay attention and communicate with all students, thereby increasing the understanding of their strengths and need for support. The teachers claim that these opportunities constitute a basic prerequisite for them to be able to adapt the teaching to the students' theoretical and practical needs. One teacher describes these opportunities as follows: 'I have a small class where I am close to the students, which means that I know exactly how I can adapt my teaching in the best possible way' (HT, T1). Most teachers state that they work with student groups comprising 8-16 students and that the lesson sessions often last about 3 hours. Many teachers point to this framework as being important, as it allows them to use specific equipment in workshops in an optimal way and to divide students into smaller groups with a view to individualising the teaching, for example through follow-ups of previously taught content.

Physical learning environment. Most teachers express that the physical learning environments limit their teaching opportunities to some extent, and thus the students' opportunities for learning. Many of them describe that their teaching takes place in school buildings lacking satisfactory noise reduction and group study rooms. 'I would like to develop the learning environments by adding more flexible group study rooms. [...] We have many students in the same classroom and the learning environment is very noisy' (FT, T2). According to the teachers, these shortcomings result in difficulties in adapting the teaching, not least for students who need a quiet environment to be able to concentrate on the lesson content.

The schools' organisation of special educational competence and the vocational teachers' application of special needs education

The teachers provide a uniform picture of how the special educational competence is organised in their schools. It is gathered in student health teams (in Swedish *elevhälsoteam*, EHT) made up of special educators and student counsellors who, in collaboration with teachers and principals, identify students' needs and develop various forms of learning support. However, the VET teachers express divided opinions as to whether the special educational competence provides support for students' learning in the vocational subjects. Only two of them state that they have a well-functioning collaboration with the special educators which facilitates concrete adaptations being made to the teaching of the vocational subjects. One teacher describes the collaboration as follows: 'We have a fantastic special educator. She helps us a lot and gives us tips and tools that can support our students' learning' (HT, T2). However, a large majority of the teachers claim that students' SEN in the vocational subjects are to a large extent marginalised compared to their needs in the upper secondary foundation subjects such as mathematics and Swedish. The consequence of these priorities is that the VET teachers' access to special educational consulting in the vocational subjects is limited. For example, many of the teachers interviewed state that information about SNE does not seem to reach them, and that their needs for support in the vocational programs are not considered by the school management. Two teachers describe the situation as follows: 'EHT have meetings about students' needs, but we, VET teachers, do not receive any information from these meetings' (IN, T1). 'We try to make students' needs in vocational subjects visible to the school management, but in the general student support workshop with special educators, there is no time for those needs' (FT, T4).

As a result of this marginalisation of SNE in VET, the teachers describe how they have set up their own informal vocational learning support workshops which students can attend to get extra support, for example with course content

that they have missed due to absence, or theoretical content or practical elements they need to review to be able to move on to the next module.

We have our own support workshop where we see students in small groups when we have a gap in our work schedules and where we can work individually with them. This is made possible by using time intended for planning, preparation of premises and equipment and recovery. (FT, T3)

The quote exemplifies how these teachers, in their quest to support students in SNE, take on a responsibility for their learning that extends beyond their formal teaching responsibilities.

Vocational teachers' work with special needs education in vocational programmes

In the teachers' reflections on their work with SNE, the following themes can be identified: 1) Communicative teaching for increased knowledge of students' strengths and needs, 2) Adaptations at individual and group level, 3) Integration of theory and practice, and 4) Reconsidering approaches through continuous follow-ups with students.

Communicative teaching for increased knowledge of students' strengths and needs

All teachers emphasise the importance of clear and continuous dialogues with the students in order to be able to support their learning. Through such dialogues, which are initiated already at the beginning of the programmes, the teachers gain valuable knowledge about the students' strengths and needs at an early stage, which enables them to plan for long-term learning together with their students.

We have continuous dialogues with the students, an overall study plan and an individual study plan which provide the students with good opportunities to think about what is going well and what can be improved. (IN, T1)

Furthermore, several teachers describe how they strive for clarity in their oral and written communication with the students as they have found that this benefits all students' learning. 'When I am clear in my communication, it benefits all students' (VF, T1). 'We have weekly planning schedules so that the students know exactly what they are supposed to do, and this creates clarity and security' (BA, T1). Other examples of the teachers' dialogue-oriented approaches can be identified in their task instructions and introductions of new teaching elements, where they try to engage in dialogues with the students in order to identify any ambiguities that may lead to misunderstandings.

It is important that I have time to spot and deal with ambiguities that may hamper their understanding. Sometimes when I get a very strange answer to a question, I

realise that I have not reached all students. Then I pause the teaching and discuss any ambiguities with the whole class. (BF, T1)

Some teachers also reflect on the importance of focusing on students' strengths in the dialogues in order to identify long-term development strategies. 'It is as [my colleague] says, the dialogues with the students are important, and it is also important to constantly highlight their strengths' (BA, T2).

Adaptations at individual and group level

The teachers provide many examples of how they use different adaptations at individual and group level to support the students' learning. In the analysis, three categories of adaptations can be identified, namely Multimodal teaching, Language support, and Organisation of teaching as support for all students' learning.

Multimodal teaching. All the vocational teachers describe how they continuously assess their students' different strengths and needs for support and therefore use different kinds of learning resources in their teaching. For example, they state that their students often prefer varied ways of learning new knowledge and skills and that they need different amounts of time to complete different tasks. To meet these needs, traditional oral and written elements are supplemented with other supportive and complementary teaching activities.

In almost all modules, we use a video, a lecture, a written text and a practical element. We try to mix different types of learning resources because different students learn differently. We want to give them more opportunities for review and more chances to learn. (EE, T1)

This quote is one of several examples of how these teachers use a variety of learning resources and teaching methods in order to adapt their teaching to all students' learning.

Language support. VET programmes have their own specific professional terminology that students must acquire to learn the necessary professional knowledge and skills. Some of their students have Swedish as their second language and several other students are in need of reading and writing support activities. To facilitate these students' learning, many of the teachers use the 'Reading Service', whereby written teaching materials is made available in the form of downloadable audio files. Several teachers also state that they supplement written instructions with oral instructions to ensure that all students understand how they are expected to perform a particular work task. 'I very often adapt my teaching by providing oral instructions to students with language difficulties' (VO, T1).

Organisation of teaching to support all students' learning. All teachers point to the importance of organising teaching so that available teacher resources and

teaching frameworks can be used to create optimal conditions for their students' learning. For example, it may be about using the teachers and equipment to enable the formation of smaller student groups working in parallel with different practical activities. Two teachers describe some typical ways of organising the teaching: 'We divide the student groups so that half the group do their practice driving with my colleagues, while I have a theoretical lesson in the classroom with the other half' (FT, T2). 'We have added more hours so that one of us is always available when the students have self-study time' (FT, T1). These quotes show that organisational tasks aimed at adapting the teaching to the needs of all students are a central part of the teachers' work. Based on the prevailing structural and material conditions in their programmes, they develop alternative teaching arrangements which benefit the communication between teachers and students. The teachers' commitment to the work of organising the teaching is also evident in their narratives, as exemplified by this quote: 'We have to stretch our resources to the absolute limit to succeed in the organisation of the teaching' (EE, T1).

Integration of theory and practice

According to the VET teachers, the integration of theoretical knowledge and the practical application of vocational skills are crucial for students to be able to develop in their vocational learning. In similar ways, all teachers describe that their teaching usually begins with theoretical lectures followed by practical application exercises, and that the transition between these activities constitutes the most critical learning situation. In these situations, the dialogue with students is crucial for determining what support the students need. 'In practice driving with a student, there are many elements of SNE. In these learning situations, we can deepen our dialogue, and I get direct feedback on whether they have understood my instructions' (FT, T2). A further example of the integration of profession-specific knowledge and practical implementation is that students, must also develop their social competence in meetings with new people. Many teachers claim that it is very important to highlight this aspect of the profession prior to the students' periods of workplace learning (APL).

My job, in addition to teaching them what they need to learn, also includes the social aspects of working life. How to behave towards customers, for example that they must be punctual and that they should not be using their phone during working hours. (BA, T1)

Reconsidering teaching approaches through continuous follow-ups

All teachers describe the follow-up of the teaching as very important to make students' strengths and shortcomings visible in the teaching, in APL and in the students' learning in relation to programme goals. The teachers largely agree that the main goal of their teaching is that all students should reach the knowledge

goals, and therefore the teaching teams have follow-up dialogues, sometimes with the support of special educators. 'We do the follow-up in our teaching team and our goal is that all students should pass the course from year one' (BA, T2). 'Our special educator participates in the follow-ups, and we discuss how the students are doing and how we can move forward' (HT, T2). In the follow-ups, individual adaptations to the teaching are discussed, and also suggestions from the student groups regarding changes in SNE.

Course evaluations show that our students want to do the practical parts as soon as possible, they do not want to have a theory lesson and then do the practical part two weeks later. We have tried to change our teaching to accommodate these views. (FT, T4)

The follow-ups are also seen as very important in relation to the course objectives. The follow-up work requires extensive documentation, but the teachers seem to agree that this provides a clear view of the students' knowledge progression, which is also seen as positive by the students.

We have three different follow-up and documentation mandates relating to the students' development of knowledge and skills: from the transport industry, the Swedish Transport Agency, and the National Agency for Education. The positive thing is that the students keep a close tab on their own performance. (FT, T2)

Follow-ups of the students' APL constitute another important part of the teachers' work, which is sometimes hampered by poor communication with the workplaces. 'Sometimes it is difficult to get feedback from supervisors in the workplace about their students, especially when a student has several different supervisors' (VO, T2). However, the feedback from the workplaces is seen as crucial for the teachers to be able to find workplaces that will suit the students' strengths and needs. 'If I get feedback from the workplace, it is easier for me to find suitable APL placements for my students' (HT, T2). Taken together, the teachers' narratives show that they put a lot of effort into identifying students' strengths and needs, making substantive structural and material adaptations to their teaching and that, through follow-ups of teaching activities and APL periods, they strive to achieve further improvements that can benefit all students' learning. However, many of the teachers point out that this extensive work is worth the effort, as they see that it benefits both the students and themselves in the long run. As one teacher put it: 'We work more than we have done before with the students, but that is positive. It feels as if we are doing less work but have more time with the students' (VF, T1).

Analysis and discussion

The analysis reveals a dichotomy as regards the conditions for SNE in VET. Despite the obvious need for SNE in the VET programmes, it turns out that most of the teachers lacked access to consulting from special educators. To increase the knowledge about this dichotomy, Skrtic's special educational organisational theory is used to visualise both aggravating bureaucratic factors and adhocratic enabling factors. Ainscow's interactive environment-related perspective is used to further clarify the results. The analysis highlights two central themes: a) Barriers to special needs education – lack of special educational consulting, and b) The VET teachers' views on the students' vocational learning and development are reflected in their work with SNE.

Barriers to special needs education – lack of special educational consulting

This study clearly points to the VET teachers' lack of special educational consulting. Only a few teachers indicated that they have access to relevant consulting from the school's special educator. As stated in the National Agency for Education guidelines, such access is to be provided for VET teachers (Skolverket, 2014), but the analysis shows that this is largely missing in the studied VET programmes. This identified shortcoming confirms the results of earlier analyses (Hirvonen, 2012; Skolverket, 2017). The lack of special educational consultation also contributes to VET students' difficulties in vocational subjects rarely being discussed and analysed. In the long run, we therefore see an obvious risk that vocational students' right to learning support in VET will be increasingly disregarded, despite what is shown in previous research (see e.g., Fishbein, 2007; Ström & Linnanmäki, 2017) and what is stated in the national guidelines (Skollag, 2010). According to Skrtic (1991a, 1991b, 2005), this lack of special educational support means that the school's bureaucratic system is in place and does not benefit the needs of VET students and teachers. In other words, when fulfilment of overriding goals take precedence over the teaching and the students' learning, there is an obvious risk that both teachers' and students' needs are made invisible.

Furthermore, it is shown that the lack of special educational support contributes to the fact that most of the VET teachers consider the EHT competencies to be a resource that is only available in the academic subjects. According to Skrtic (1991a, 1991b, 2005), this circumstance can be seen as a result of the school's organisation overlooking students' differences and varied needs of support in VET.

However, it is also evident from this study that many teachers on the VET programmes, in line with Skrtic's adhocratic approach (cf. 1991a, 1991b, 2005), invent and design programme-specific SNE activities as a support for VET

students' learning. This support is based on an approach to learning and development resting on an interactive environment-related perspective (cf. Ainscow, 1998, 2002; Fishbein & Österberg, 2003; Forsell, 2020). However, the teachers' support seems to be carried out under the radar, which means that the VET students' needs continue to be invisible to school managements and special educators (cf. Skrtic, 1991a, 1991b, 2005).

The VET teachers' work with SNE

Most of the teachers consider the design of learning environments to be particularly important when it comes to adapting their teaching to students' needs (cf. Ainscow, 1998, 2002; Skrtic, 1991a, 1991b, 2005; Ström & Linnanmäki, 2017). This approach is prominent in their reflections on teaching methods and supporting resources, where extensive consideration is given to their vocational students' learning needs. This means that different teaching adaptations are carried out in parallel to support students' different needs (cf. Pettersson, 2017; Skrtic 1991a, 1991b, 2005).

The mutual dialogues between VET students and teachers are made possible by the fact that the VET programmes in Sweden have smaller student groups and longer teaching sessions than the academic programmes. These conditions seem to facilitate the VET teachers' professional, adhocratic teaching (cf. Skrtic 1991a, 1991b, 2005) and the implementation of relational teaching methods (cf. Aspelin & Persson, 2011). Through in-depth and recurring dialogues, the VET teachers become aware of the students' needs, and what SNE adaptations and support may be needed. The students' needs constitute the focus of their teaching, and the entire learning environment is used as a resource to promote the teachers' design of SNE (cf. Ainscow, 1998, 2002). There is no doubt that the VET teachers in this study position themselves within the relational and interactive learning environment-related perspective, albeit to slightly varying degrees (cf. Ainscow, 1998, 2002; Ryökkynen et al., 2020; Westling Allodi, 2007). This does not mean that all teachers are aware that they conduct teaching within the SNE framework (cf. Ström & Linnanmäki, 2017). Instead, most of them would probably describe their teaching as being necessary to support the VET students' learning. From Skrtic's perspective, this is particularly clear in the teaching of several teachers who appear to strive to understand the students as social beings and therefore see the need to adapt the learning environment so that they feel safe and comfortable in learning situations. This approach is also shown in the teachers' professional interaction with the students (cf. Ainscow, 1998, 2002; Gidlund, 2020; Ryökkynen & Rätty, 2022; Tangen, 2012) where they not only try to acquire knowledge about the students' varied needs, but also translate the knowledge into customised long-term sustainable solutions.

The teachers' long-term teaching strategies also indicate that they do not expect rapid changes in the students' school performance, as their experience is that many students often have had negative school experiences in the compulsory school (cf. Skrtic, 1991a, 1991b, 2005). The teachers' work of organising teaching so that vocational theoretical content is integrated with practical applications in school and in APL constitutes a particularly central part of their strategies to adapt their teaching to the students' knowledge in the long term. The analysis shows that the teachers base these strategies on their experience that the students' learning and development benefit from integrated teaching (cf. Forsell, 2020; Skrtic, 1991b, 2005; Yngve, 2020). However, our analysis indicates that, in order to facilitate long-term strategic development work with SNE in VET, many schools need to redesign the organisation of EHT (cf. Skrtic, 1991a, 1991b, 2005).

Conclusions and implications

The following conclusions can be drawn from this study:

SNE, as it is conducted in the studied VET programmes, can be described as bureaucratic systems, which is manifested in a lack of access to SNE support in the vocational subjects and a lack of communication between principals, EHT, and VET teachers regarding the vocational students' need for support. Despite the fact that previous research has identified challenges regarding social inclusion in VET, and although the right of all students to learning support is clearly outlined in national and international guidelines, this study shows that the need for support in the vocational subjects are marginalised, with the consequence that vocational students' learning opportunities risk being limited. Thus, the school's goal of supporting the students' development as far as possible cannot be considered to have been fulfilled, which inhibits many students' personal and professional development, and in the long run also hampers the recruitment to professions with a high demand for educated labour, for example in industry and healthcare.

Based on these identified conditions for SNE in VET, the study shows that the VET teachers, to varying degrees, 'invent' and develop programme-specific ad hoc and interactively-oriented SNE activities, where the students' needs, dialogues, and adaptations of the learning environments are at the centre of their work. This involves extensive relation-building work where the VET teachers identify the students' strengths and needs for support and then adapt the teaching through extensive teaching and organisational efforts. However, the development of the SNE activities in VET programmes identified in this study is often carried out under the radar, which means that school management officials and EHT are often neither aware of the needs of students, nor of the adaptations

made in vocational subjects. Therefore, clear communication channels should be developed between school management teams, EHT, and subject representatives at the local school level, as well as dissemination mechanisms that can promote the spread of knowledge of SNE in VET between VET programmes, schools, and regions.

This study is limited in terms of the number of participating vocational teachers and schools, which means that more studies need to be done to develop knowledge in the field of SNE in VET. Students' experiences of SNE in VET programmes, and the work of special educators in VET are some examples of research areas that need to be deepened.

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