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What constitutes a conducive learning environment in VET?

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Abstract

Based on a review of international research, this article summarises the key factors identified as shaping a conducive learning environment at vocational schools. The factors are exemplified with data from an empirical study conducted at 13 Danish VET schools.

We distinguish between curricular factors, i.e., the organisation, form, and content of teaching and training, and social factors, i.e., students' relationships and social interactions with peers and teachers.

Key curricular factors include giving students authentic, vocationally relevant tasks where they play an active role in and share responsibility for their own learning. Other important factors include that teachers tailor training to the individual, convey positive expectations concerning student performance, help students to set and achieve realistic goals, and offer regular feedback. Likewise, it has impact on the learning environment that the teaching is practice-related and that the teachers work closely with trainers at workplaces offering apprenticeships.

Key social factors include teachers establishing positive relationships with their students, acting as role models. Furthermore, it is important that teachers nurture a positive social environment among students. As such, a well-functioning learning environment requires teachers to have not only the relevant vocational skills but also a range of social and personal competences.

Keywords: learning environment, curricular factors, social factors, authenticity, student-teacher relations, role model

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Introduction

The article presents the results from a review of research concerning conducive learning environments in the school-based parts of dual vocational education and training (VET). In the article, we illustrate the findings with examples form an empirical study on learning environments at different Danish VET programmes. A conducive learning environment has been defined as a learning environment that improves student learning outcome and well-being and reduces dropout rates (Rambøll, 2018; Epinion & DPU, 2020). Based on this definition, in this article, we study the following research question: *Which are the central factors contributing to a conducive learning environment?*

We define learning environment as the context or setting in which VET takes place, which includes the form and content of education and training provided at vocational schools as well as learning processes during workplace-based training such as apprenticeships.

Method

The findings in the article are based on a review of international research of the factors shaping the learning environment in VET schools.

The literature review included sources from a previous mapping (Rambøll, 2018) that was supplemented by a search in the database ERIC and in three specific journals: *International Journal for Research in Vocational Education and Training*, *Nordic Journal of Vocational Education and Training*, and *VETNET Proceeding*. The search in ERIC has applied the following search threads: 'VET' OR 'vocational education and training' or 'vocational education' or 'vocational training' or 'vocational school' AND 'learning environment' or 'education environment' or 'school environment'. In the three journals, we have chosen all articles conceptualising in the title or keywords 'learning environment' or 'teaching environment' or 'training context' or 'context'. Based on the article abstracts, we have selected the articles for analysis. The review includes all articles containing empirical findings about conditions shaping a learning environment. In accordance with the criteria, we have included articles about training in the workplace as part of the dual VET training programmes, because the workplace-based training or apprenticeship-based training has an impact on the school-based education and training as well as consequences for considerations about classroom management.

Based on the literature review, several factors were identified influencing the learning environment. The factors were categorised according to principles in a previous mapping of factors in a VET learning environment (Wahlgren, 2015). However, in the current research we found articles dealing with another aspect

of the learning environment that was not included in the previous categorisation, namely authenticity of the training, including the relationship between theory and practice. Thus, the mapping in this article comprises two main categories, each including two subcategories: *Curricular factors* including the following subcategories: 1) authenticity including the relation between theory and practice, and 2) structure of the training process including clear goals, academic support, and feedback; and *social factors* including two subcategories: 1) teacher–student relations including mutual respect and trust, and 2) relations among students.

In the review, we have not included the physical factors, not because we do not perceive these factors as essential, but because in the current review we have not found articles dealing with the impact of these factors.

Based on the review, an empirical study was conducted on teachers' and students' perception of a conducive learning environment. The main purpose of the empirical study was to locate the various factors found in the literature review at different schools within different subject areas and in different phases of the educational process. The aim of this study was to generate proposals on how the learning environment could be improved at the schools. These results and proposals of the study have been accounted for in the report *Conducive practice for learning environments in vocational education* (Epinion & DPU, 2020) and are *not* included in this article. For writing *this article*, we revisited the data from the empirical study. We went through the responses from the students and the teachers to questions concerning the learning environment and factors that constitute a learning environment, and we chose statements that illustrated and exemplified the different factors found in the literature review.

The data base for the empirical study was generated to make sure that the results could be generalised and useful to the vocational training system. Thus, the study included 13 schools and 24 study programmes representing the four main areas within Danish VET: agriculture, commercial, social and health care, and technical programmes. The study included interviews with 91 students and 41 teachers; half of the interviews were individual, and half group interviews. The themes in the interview guides were based on the findings in the literature review. The interviews began with open questions about how the respondents perceived a conducive learning environment. The respondents were asked to give examples of situations shaping a conducive learning environment.

In this article, we use the interview statements as examples of the various factors shaping a learning environment. The interview statements are used as ostensive definitions exemplifying how the teachers and students experience the factors. Furthermore, the interview statements are used to confirm that the factors from the literature review can be found in a current context at various Danish vocational schools.

Consequently, in this article, we have selected the interview excerpts that exemplify and clarify how teachers and students experience the factors and their importance for the learning environment. The purpose is to give a more detailed and differentiated understanding of how students and teachers perceive and reflect on a conducive learning environment. The choice of statements aims at providing the most obvious illustration of the relation between the theoretical concepts and the current teaching and training practice.

The students' and teachers' statements shape a relation between the general findings from the literature review and the current teaching and training practice, making the results meaningful to apply in praxis.

Including statements from teachers and students implies ethical considerations. However, since the respondents already accepted the use of their statements in relation to the previously mentioned study and published report (Epinion & DPU, 2020) in the current article we do not perceive any ethical problems in the use of data. Furthermore, the statements are not directly connected to recognisable persons at the different training programmes.

Results

The results are presented under two main categories, curricular factors, and social factors, and under the subcategories presented above.

Curricular factors

We define curricular factors as relating to the content and form of teaching and training. In general, the review of the international literature shows that there are a large number of curricular factors that play a role in constituting a (conducive) learning environment. Moreover, these factors are interrelated and sometimes overlapping. The following examples from three studies illustrate this complexity.

A German study of factors influencing the learning environment identified several vital indicators. The study concluded that 'powerful' learning environments are characterised by authentic and challenging tasks, training methods that encourage students' active participation (collaborative learning and problem-based training), differentiated training, and guidance that focuses on the student's professional development (Placklé et al., 2014, 2018, 2020, p. 224). An Italian study found a similar complexity, summarising 13 factors that influence VET learning environments, with the most important being promoting students' autonomy and sense of responsibility, as well as simulating the work context (Perini & Pentassuglia, 2018). A study from Malta indicated that a 'powerful learning environment' should be founded on a clear vocational identity and include a high degree of student participation and reflective

learning, with teachers providing comprehensive differentiated guidance and nurturing students' motivation for self-directed learning (Said, 2018, p. 42).

Among the complex patterns of factors influencing VET learning environments identified in the review of the international literature, two subcategories of factors can be constructed: 1) authenticity, and 2) structure of the training process.

Authenticity

The term 'authenticity' encapsulates different factors that contribute to a conducive learning environment. A study (Rambøll, 2017) shows that in a conducive learning environment, the students perceive the training as coherent, with a clear connection between the programme's theoretical (knowing that) and practical elements (knowing how) and between the curriculum and a future job. This coherence contributes to the students' experience of meaningfulness, which is essential for a conducive learning environment (Aarkrog & Wahlgren, 2022). It is important that the students perceive the different elements of the training as part of a coherent whole – and, not least, that they are able to see how this training relates to the intended occupational field (Rambøll, 2017). A study based on an experimental design showed that practice-based training had a favourable impact on the learning environment (Rambøll & NCK, 2017).

A Norwegian study shows that *practice-based teaching* where students solve realistic tasks and consider how these tasks relate to future jobs improves motivation. At school, being presented with examples from the world of work in the relevant vocational field is essential to students' learning and motivation to learn. Students in all areas of VET highlight the importance of access to authentic tasks (Høst, 2015). Likewise, a Norwegian study of vocational training in media production points to the importance of task authenticity – particularly at the beginning of the training programme. The authenticity of the tasks enhances the relevance of the training in the eyes of the students (Aakernes, 2018).

The importance of *authenticity* of tasks can be illustrated by the following three quotes from the empirical study showing that authenticity of task makes sense for the students and motivates them:

> We enjoy when the teachers make it [the training] relevant. When about pigs, it is 'thumbs up'; when about differential calculus, it is 'thumbs down'. In that case the teacher has lost us in advance. (Female student, agricultural education)

One of the important aspects of authentic tasks is the physical sensation of the work:

> I think it is most motivating, learning about perfumes or health products in the room for products. We have the products in our hands, and we can smell them. Having something in your hands makes you understand it. (Female student, retail training)

Another aspect of dealing with authentic tasks is that it is tied up with the feeling of professional pride:

> The teacher should exude professional pride. Excitement. Commitment. Lots of technical terms. It makes a butcher proud. I praise the students every time they do the same. It should be cool to be a butcher. And every time a student expresses professional pride, I praise it. We pay tribute to the profession and what the profession can do. (Teacher, gourmet-butcher)

Simulation is used as a tool for creating authenticity. A study of the use of simulation in healthcare education showed that students gain a better understanding of theoretical knowledge when they have the opportunity to test it in simulated practice. Thus, simulation as one form of practice-based training can help establish closer links between theory and practice – thereby creating a more coherent study environment (Aarkrog & Puge, 2019). However, teachers may find it difficult to carry out practice-based training, with an Australian study arguing that teachers must be trained to link theory and practice in authentic contexts, to base training on students' prior learning, and to employ realistic evaluation methods (Downing, 2017).

Apprenticeships or *workplace-based training* give students an opportunity to obtain a clear and coherent picture of their future occupation and have been shown to have a positive impact on students' motivation during school-based training, contributing to a conducive learning environment (Nielsen et al., 2013). The alignment of school-based education and training, and training in workplaces, can be improved through collaboration between schoolteachers and workplace trainers. To this end, a Danish study shows that a well-functioning relationship between teachers and trainers can promote students' experience of coherence. The challenge is to create a systematic working collaboration between teachers and apprenticeship trainers in workplaces and to utilise this relationship to make clear to students that the training they receive at school and during apprenticeships are interrelated (Louw & Katznelson, 2019).

A Swedish study shows that VET teachers with strong relationships with the local labour market are better able to guide and help students than teachers without such relationships. Thus, it is important that teachers are not only knowledgeable about the subjects they teach, but also about local companies and trainers (Mårtensson et al., 2019). This is confirmed in another study, which concluded that teachers' contact and relationships with local companies are important for the learning environment (Høst, 2015).

The empirical study shows that students point to the importance of creating a *close link between theory and practice*. The link should be close in terms of both time and content. The following quotation shows that the student prefers a frequent alternation between learning theory and working in the workshops:

> Concretely, learning about materials includes going through what makes the material break. Afterwards, in workshops we study the material in reality. A bad day is just sitting in the classroom all day. It is easier to remember when you have had it in your hands, when you have seen it in real life. (Male student, blacksmith training)

Another quotation illustrates that the classroom-based education serves as a break to the – at times – monotonous practical work tasks:

> I like the alternation between theory and practice, because sometimes you get tired of just cleaning the same area day in and day out. And to obtain more knowledge about why we do things the way we do, why we use this cleaning detergent on this floor. In the classroom you can reflect on what you have learned in the practical situations. (Male student, service assistant)

Close collaboration between schools and companies providing apprenticeships is vital. Such collaboration can also help ensure that students and workplaces alike enter apprenticeships with realistic expectations – failure to meet such expectations is a frequent reason for dropout (EVA, 2017b). Others have highlighted the importance of taking care of students during apprenticeships (Dyssegaard et al., 2014a). One study emphasises the need for positive interactions between the school and workplace learning environments, with students expressing that their way of learning at school changed after participating in an apprenticeship. Their practical experiences in the workplace made the school-based learning environment more meaningful for the students. This study highlights the importance of teachers encouraging and stimulating such reflections among their students (Baartman et al., 2018).

Structure of the training process

Not only the content but also the form of teaching and training affects the learning environment. The empirical study shows that according to the students, the teaching and training must be clearly structured in a way that students consider meaningful:

> There is a plan for the day, things are under control. You are in safe hands. There are fixed boundaries and a clear goal. I can see the end of it all and how it all relates to the profession. Every day you get a plan for what your work. For example, a case will be presented, followed by group work, and eventually a recap. It is important to have a clear structure for the day and for the week. You can see what you must do and why. (Female student, social and health care assistant training)

As part of a clear structure, this student emphasises that it is important that the teachers line up the plan for today's class:

> The teachers are very good at informing us in time about what we must learn in the new course and what we will do. They inform about things well in advance, so that you always know what you are heading towards. (Male student, carpentry training)

Related to this, research shows that three factors can be identified: the correlation between programme objectives and the content of training, teachers' feedback to students, and differentiated academic support.

The clearer the students' understanding of the *correlation between the programme objectives and the content of training*, the better the learning environment. A Danish study shows that when students are able to set and stick to individual goals during training, it has a positive effect on their motivation to learn and to complete the programme. Thus, it is important that teachers guide their students in formulating such goals (Mariager-Anderson et al., 2019; Aarkrog & Wahlgren, 2022). To maintain and strengthen students' goal orientation, another study argues that schools should nurture students' own interests and abilities in relation to their choice of education (Becker et al., 2018). Not least in relation to vulnerable students, it is important that counsellors and teachers help students to identify and pursue individual goals (Martínez-Serrano et al., 2019). As such, the challenge for schools and teachers is to guide students in formulating goals that are both motivating and realistic (Cedefop, 2016). Others have underlined the importance of being able to discuss goals and career paths with students (Draaisma et al., 2018).

By conveying positive expectations regarding students' performance and providing relevant *feedback*, teachers can have a positive influence on students' learning and on the learning environment (Rambøll, 2018). A study shows that when teachers provide regular feedback, assess students' development, and convey positive expectations in class, the students become more confident and achieve better results (Helaire, 2014). A Danish case study of a carpentry programme demonstrates the importance of teachers making it clear to their students what is expected of them, what regulations and norms they should follow, and the criteria for assessing their performance. The challenge is to communicate educational rules and norms to students in such a way that they take ownership of them (Louw, 2013).

According to a Norwegian study, introducing a self-assessment tool called 'station training' has resulted in an increase in student engagement. Station training structures training as a series of stations (subtasks) that the students visit in turn. The students are assessed by teachers but also assess their own performance in solving the various subtasks, which gives them a sense of progress and improvement. An important element in this regard is the teachers' continuous provision of academic, technical, and pedagogical feedback to the students (Stousland & Witsø, 2015).

The teachers' ability to provide personal and *differentiated academic support* strengthens the learning environment. Individualised support and differentiated training have a positive effect on students' well-being (Rambøll, 2016). The extensive heterogeneity among VET programmes makes differentiated training

one of the most important factors in the learning environment (EVA, 2014, 2016b, 2018). The following three quotations show that students agree on the importance of differentiation, including handling the challenges related to the students' different prerequisites. The quotations also show that differentiated teaching not only include using different material or methods of asking. Differentiation is also based on the teacher knowing the students:

> I think my teacher is good at treating us differently. For those who finish fast, he has made some extra tasks. I also like when he gives constructive criticism and challenges us. So, you get something out of the training. (Male student, baker training)

> Wanting that everyone reaches the same level, we are challenged by having different prerequisites. I am one of those who learn things relatively quickly. Sometimes we get stuck in the same thing because there are some classmates who must hear it many times before they understand it. (Female student, horticultural education)

> Some find it easier to learn than others. I mug up on the stuff, but that doesn't mean I can remember it. However, the teachers are good at finding different ways to ask us. So, they are really, really good. (Female student, waiter training)

The best teachers are considered to be those who have work experiences from the relevant vocational sector, who can support the students' self-confidence, and who can offer students personal support (Høst, 2015).

A literature study on quality in digital learning processes shows that the relationship between teacher and students is crucial. A high-quality digital learning environment requires the teacher to be able to identify their students' prerequisites, provide clear instructions, and give feedback (EVA, 2017a). In digital learning environments, the teacher must be able to interact with the individual student. As such, digital learning is best suited in courses for relatively small groups of students (EVA, 2019a). Meanwhile, digital technologies can be used to support differentiated training and feedback, to motivate students, and to link theoretical and practical elements of VET programmes (EVA, 2017a). The empirical study shows that teachers must be aware of the student's specific competencies to properly support digital learning processes, as one teacher explained:

> It requires that the teachers have a profound knowledge of the students' competences to know which students can solve the tasks themselves [only] assisted by a video and which students need help. This knowledge provides a potential for differentiated training, giving the teacher a little more time for those who need it. (Teacher, agricultural school)

Using digital technologies in training can strengthen retention. Thus, the results of a development project indicates that video-based simulations of practice-oriented projects and of systematic guidance strengthen the learning environment and reduce dropout (Salvà et al., 2018).

The social factors

We define the social learning environment as the social relationships between teacher and students and among students. A study shows that interaction between teachers, students, guidance counsellors, and school leaders has a positive impact on retention in education, as well as on the development of a conducive learning environment (Dyssegaard et al., 2014b). In general, students' level of satisfaction with the social learning environment depends on whether they are involved in developing and evaluating the environment and whether they experience mutual trust in their relationships with teachers and other students. According to the students, going to school should be fun and school life should extend beyond academic learning and incorporate other aspects, such as nurturing students' social skills (EVA, 2016a).

Teacher-student relations

Forms of training that encourage active participation, such as project work, support students' self-directed learning and have a positive effect on students' relationships with their teachers. The more teachers involve their students in decision-making processes, the greater the students' motivation and sense of responsibility for their learning (Rambøll, 2016). An Australian study identifies several factors as important for engaging students in training, including ensuring students' well-being, establishing positive teacher–student relationships, and an overall goal of strengthening students' belief in their abilities and in themselves more generally (Murray & Mitchell, 2016). A Spanish study shows that when teachers believe in and challenge students to fulfil their potential, supported by constructive evaluation and feedback, it has a positive impact in terms of preventing dropout. In addition, the teachers should establish confident relations with the students and be accessible to them (Pinya et al., 2018).

Negative relationships may develop when students do not treat their teachers with respect, or if the teacher favours some students while excluding others. On the other hand, having a friendly and caring teacher who is both professionally and personally supportive has a positive impact on students' well-being and retention in education. These kinds of relationship are promoted when schools reward teachers who seek to establish positive teacher-student relationships (Krane et al., 2016).

> It means a lot, knowing that your teacher is there for you in difficult times, not just school-wise. My teacher has a high tolerance for absences, if you are open about the fact that it may be due to some difficulties or personal problems. (Female student, butcher training)

A study shows that relational work requires certain socio-emotional competences of teachers, including exhibiting a sensitivity and responsiveness to students' emotional needs and a willingness to acknowledge and support students'

emotional development (Aspelin, 2019). Furthermore, an Australian study demonstrates that it is important that teachers are aware of their own impact on students' engagement and, ultimately, whether or not they complete the VET programme. According to one study, teachers should establish positive relationships with their students that are characterised by respect and inclusiveness, and which support the students' diverse needs. Students should feel valued and respected by their teachers (Dutschke, 2018). This is illustrated by the following quote from a student:

> I like that if you try out an answer, the teacher does not say 'no', but 'saves' you instead. As a result, you are not scared to participate in the training. (Female student, business college)

A study of VET teachers' relational competence – i.e., their ability to establish relationships with and among students – finds that relational competence has an impact on student dropout. The study's definition of relational competence includes teachers' ability to relate to students as individuals, knowing their names, and greeting and encouraging them, as well as their ability to understand each student's situation and the difficulties the student may face in and outside school. This study also indicates that teachers' relational competence can be increased through teacher training (Wahlgren & Mariager-Anderson, 2017), which has been further supported by the empirical study:

> It is important that the teacher can interact with students 'on an equal footing'. For the students, this means being treated as equals and with respect by teachers, in the same way as the students respect their teachers. They [the teachers] do not feel better or greater than the rest of us. You feel good about being on an equal footing. (Male student, landscape gardener training)

The empirical study shows that students notice attention and care from their teachers. Many students tell stories about teachers, principals, or support staff who remembered their names and hometown, forwarded an application for an apprenticeship, or asked them about how the adult VET students' children were doing or how a sporting event had gone that weekend. For students, such things signal the teacher's genuine commitment and interest (Epinion & DPU, 2020).

A pivotal aspect of teacher–student relationships is that the teachers serve as role models for the students. A German study demonstrates that students' encounter with professional practice and role models within their chosen vocational field enriches the learning environment within VET. Role models reflecting the students' wishes strengthens career guidance of the students (Neuenschwander et al., 2018). Another study shows that VET students are more engaged in workshop-based practical training at the vocational school than in theory-centred instruction in classrooms. One reason is that the students perceive the workshop trainer as a role model, while this is not the case for other teachers

(Nielsen et al., 2013). Three excerpts from our empirical study point to the importance of having teachers who act as role models. The excerpts show that the students do not ask the teachers to be role models for the vocation that the students train for, e.g., carpenter. The students want the teachers to be role models as teachers:

> The most important thing for a student at school is that the teacher shows that he wants to teach; that the teacher shows some energy, speaks loudly in a way you can understand, and is engaged in what he is showing you. We had one last week who was very engaged in showing us how to cut up a pig. (Male student, butcher training)

> Committed teachers, they make me really pleased with the training. I can feel that they are passionate about things and that it is important that we think it is interesting […] The teachers are so committed to what they do; they really do their best for us. (Female student, retail and trade training)

> There is a good chemistry between the students and the teachers. The teachers have a good 'culture'. You are greeted with a hello, a good morning, you smile at each other. You are at eye level. (Group of students, landscape gardening)

Relations among students

Working with their fellow students encourages students' active participation in their own learning process (Dyssegaard et al., 2014b). Postponing streaming of the students also has a positive effect on retention and the learning environment (Munk et al., 2015). One study in initial vocational education finds that establishing an innovative learning environment based on 'community of learners' makes the students collaborate. The learning process is shared, meaningful, reflective, and transfer oriented (Boersma et al., 2016).

A positive self-image is important if students are to have rewarding relationships with classmates (Mariager-Anderson et al., 2019). A Swiss study emphasises the importance of both the learning environment and the students' self-perception for academic progress. Self-perception is measured by three factors: self-efficacy, self-esteem, and degree of negative emotions. The study shows that a conducive learning environment helps strengthen students' self-image (Lüthi & Stalder, 2018, 2019). A Finnish study shows that having friends that support them (peer support) has an impact on students' sense of (in)security, level of commitment, and career choices, in particular during the early stages of a VET programme. The researchers therefore recommend that time be set aside during lessons for establishing such relationships (Niittylahti et al., 2019). If students from the beginning of the training programme feel that they belong and if teachers establish positive relationships with and among their students it improves the learning environment (EVA, 2017b). To create a secure learning environment, it is important that the school is aware of early signs of possible dropout and a lack of wellbeing among students (Cedefop, 2016; EVA, 2017b; Mariager-Anderson et al., 2019).

Our empirical study showed that – regardless of age, gender, and kind of educational programme – positive relationships and strong bonds between students are important motivational factors for school attendance. The following two excerpts from the empirical study illustrate this. The first excerpt shows that the social relations are important to keep the student going; the other illustrates the importance of tolerance among the students.

> A good team spirit is one of the most important things at school, because it makes you want to stay. At the same time, if you have a bad day, your friends can cheer you up again. Personally, it is what keeps me going on the bad and boring days. (Male student, horticultural training)

> Essentially, it's about giving each other space. Obviously, there are great differences between individuals, but as long as everyone is given space, then I can't ask for more. A well-functioning group is a breeding ground for many other pleasant things – learning, communication, etc. (Male student, horticultural training)

Discussion

Our findings and conclusions should be seen in the light of certain methodological limitations. Firstly, the scope of the literature review is limited. Including other data bases could have elaborated the findings by including other factors with an impact on a conducive learning environment, e.g., physical factors. We cannot conclude that studies concerning the physical environment do not exist. We can only conclude that we have not found such studies in our review. Likewise, we cannot exclude other factors having an effect. However, we can conclude that the factors that we have found in our study have an impact on the learning environment.

Secondly, our conclusions are based on studies across national contexts and different types of educational institutions providing somewhat broad and general conclusions that do not take into account specific contextual factors. The strength of this approach is that the factors have proved to have impact across different contexts. Thus, the results from our study correspond to the result found in the comprehensive German study (Plancklé, 2014, 2018, 2020). The weakness is that the approach only tells a little about the effect of the national differences. A further limitation is that the chosen method only allows us to identify various factors proved to influence VET learning environments, however, not to assess their relative importance aor how the different factors in the learning environment interact.

Thirdly, the specific examples and statements that we have included are all drawn from a study of Danish VET. Thus, the results do not include how the factors are perceived in other national and educational contexts.

Selecting empirical statements to exemplify the factors found in the literature study raises problems concerning reliability and validity.

Having not conducted an intersubjective test of the reliability of the selection of examples, it cannot be ruled out that other researchers would have selected other empirical statements from the data to exemplify the factors that promote a conducive learning environment. However, since the purpose of the chosen statements is to show that the current factors could be identified in the Danish data material, it is not important which statements are chosen. What matters is that the statements can be found in the data. In the analysis, we have not counted how often the various factors appear in the various educational contexts, this analysis requiring a different data collection method. However, such an analysis could be the focus in future research.

Are the choices of the exemplifying statements valid? Are the selected statements valid expressions of the factors they are supposed to exemplify? By reproducing the statements in the text that allows the individual statement to be interpreted in relation to the current factor, others will be able to assess the validity of the statements. Another aspect of validity is whether our choice of examples misrepresents the conditions and circumstances related to the learning environments at the VET schools by merely selecting statements that confirm the importance of the various factors in the literature review. Should we have included statements showing that the students or teachers do not recognise the current factor or do not perceive it as important? In our analysis we do not argue that the factors in question are recognised by everyone, only that they are recognisable, that they can be found, and that they are significant for some respondents.

Showing that our use of data is reliable and valid also points to the limitation of the method and the conclusions. Thus, the empirical data do not permit us to relate the factors to more specific background factors in the individual VET programmes. Nor do the data render permit us to comment on the inter-relationship of the factors. What the method renders possible is to document that the various (internationally) found factors can also be localised in a national (Danish) vocational education context. The specific statements from teachers and students contribute to understanding the content of the theoretically developed concepts in a specific (national) context.

Based on the localised factors, further research should focus on assessing the relative importance of the factors in different VET contexts and on clarifying the interrelation of the factors contributing to a conducive learning environment.

Summary

Based on a review of existing studies, we have identified several factors that have an impact on the learning environment within VET. We have categorised the various factors into *curricular factors* and *social factors*.

The curricular factors include that students perform authentic tasks related to their future occupation as skilled workers. It is furthermore shown that if students perceive the training process as having a clear structure, including differentiating in accordance with the students' prerequisites, and if they perceive the training as meaningful, it will improve the learning environment. Yet another vital factor is that teachers give students continuous feedback and convey positive expectations concerning the individual student's performance. Cooperation between teachers at VET schools and the apprenticeship trainers in workplaces has also a considerable impact on the learning environment at the school.

To summarise the social factors that strengthen the learning environment, the results from research show that it is important that teachers prioritise establishing positive relationships with their students. This includes being role models inside and outside the classroom. Furthermore, research shows that it is important that teachers encourage positive relationships among students by establishing professional and social communities. The social factors shaping a conducive learning environment are conditional on the teacher's social and personal competences.

In summary, in this article we have identified several factors that, individually and together, have been shown to influence learning environments within VET. However, precisely how and to what extent is dependent on the educational and cultural context.

Didactical consequences

Overall, the studies show – perhaps not surprisingly – that conducive learning environments are significantly tied up with teachers as persons, trainers, and professional inspirators. Based on our study the teachers' professional considerations include reflections on the curricular and social aspects of the learning environments.

To support the development of a conducive learning environment the teacher should choose topics which the students perceive as authentic. Furthermore, the students should be supported in identifying and sticking to clear goals throughout the VET programme. Related to that, it is vital that the teacher can give individual feedback and differentiate the training in accordance with the individual student's learning progression. Likewise, it is vital that the teachers function as personal and professional role models for the students.

A conducive learning environment requires teachers who possess the necessary skills to successfully implement the various factors.

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Notes on contributors

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