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Vocational Teacher Education: Learning at the Heart of the Workplace

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Abstract

This study examines how relocating a one-year full-time practical pedagogical education programme (PPU-Y) for vocational student teachers to a local upper secondary school impacts students' readiness for the teaching profession. A development project was initiated to move campus-based theoretical teaching to an upper secondary school, with the aim to reduce this gap and offering more authentic, experience-based learning. Using a qualitative pilot design, data were collected through focus group interviews with seven student teachers. The findings suggest that early presence in the practice field reduced practicum shock, supported the students' professional development, and deepened their understanding of teachers' daily work. The school functioned as a boundary object, fostering integration between theory and practice, with teacher educators acting as boundary workers. Moreover, the school setting created a 'third space' that enabled informal learning and professional socialisation, allowing student teachers to connect theoretical knowledge with everyday teaching practices. This study concludes that such an organisational approach may enhance the relevance and coherence of vocational teacher education by bridging institutional and practical learning contexts.

Keywords: vocational teacher education, boundary crossing, boundary object, practicum shock, situated learning, professional development, third space

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Introduction

Today's teacher education programmes are frequently criticised for the significant gap between theory and practice (Ramsaroop et al., 2024). Student teachers (hereafter referred to as STs) often report a lack of professional relevance and coherence between theoretical teaching delivered in campus-based settings and the experiences they gained in the practical field (Canrinus et al., 2017; Granborg & Aakernes, 2024; Raaen & Thorsen, 2020). STs report encountering two distinct learning contexts in their education and stated that it is their responsibility to integrate the theoretical knowledge acquired from campus-based teaching with the realities they face in schools (Andreasen, 2023; Klette & Hammerness, 2016; Korthagen, 2001). Hatlevik et al. (2020) also indicate that theory and practice should be integrated, including the campus-based component of teacher education; however, this integration is not always achieved, which can adversely affect the quality and coherence of the educational process (Darling-Hammond, 2006).

STs entering teacher education often experience a form of adjustment shock as they transition into new professional roles (Grossman et al., 2009). One specific manifestation of this is practice shock, which refers to the dissonance between expectations formed during training and the realities encountered in the field. Within this broader category, practicum shock describes the challenges STs face during their initial practicum periods, when theoretical knowledge often fails to align with practical classroom experiences (Grossman et al., 2009). The literature extensively documents how such discrepancy can leave STs feeling inadequately prepared for the demands of teaching (Amdal, 2019; Amdal & Willbergh, 2020; Veenman, 1984). Research also shows that when expectations and reality do not align, STs may struggle to adapt, leading to professional uncertainty (Schulz, 2005). Such misalignment between theoretical preparation and practical experience can result in STs feeling overwhelmed and underprepared when confronted with the complex realities of practicum placements (Beck & Kosnik, 2002).

Considering these challenges, several countries have implemented measures to reduce practicum shock and improve completion rates in teacher education programmes. Since 1995, for example, an ongoing nationwide project in the Netherlands has addressed the issue of ST dropout during teacher education and at the beginning of their careers (Stokking et al., 2003). The project has found that moving the practicum period to the end of teacher education has reduced practicum shock and improved completion rates. However, such a model would be difficult to implement in shorter teacher education programmes, such as PPU-Y, due to the timeframe.

Another study from the Netherlands combined 360-degree videos of experienced teachers in classroom situations with theoretical lectures to provide STs with a more authentic learning experience that afforded them the opportunity to observe teaching practices and explore relational dynamics (Theelen et al., 2022). The study's findings support a proactive approach to teacher education. By preparing student teachers for practical teaching situations early in the programme, this approach may help reduce both dropout and burnout. This is especially important in light of the current decline in applications to teacher education programmes and the ongoing teacher shortage in many countries, including Norway.

Most universities are undertaking substantial efforts to assist STs in transitioning to teaching practice. To prepare STs, meetings are held to clarify roles and expectations between practicum coordinators, university teacher educators (hereafter referred to as TEs), school-based practice

teachers and STs. Further, universities provide handbooks (Oslo Metropolitan University, 2024; University of Agder, 2025b) that detail the content, role clarification and assessment criteria for STs' teaching practicum placements. Additionally, TEs teach pedagogy and vocational didactics in preparation for the practicum period, and TEs engage in reflective discussions with STs about the forthcoming practicum. Despite these comprehensive efforts, STs frequently provide feedback indicating that they do not feel adequately prepared for their first practicum (Canrinus et al., 2017; Granborg & Aakernes, 2024; Raaen & Thorsen, 2020). Shaping students' experiences by embedding theoretical teaching within the practical school context offers a concrete strategy for bridging the theory-practice divide. This approach enables students to contextualise abstract concepts through direct observation and interaction, thereby fostering coherence in their professional learning.

Based on the experiences of the teacher educators involved in this development project, we argue that preparedness for the teaching profession and the prevention of STs dropout begin with sufficient preparation for the first practicum period. This aligns with findings from Amdal and Willbergh (2020), who emphasise the importance of early support in the transition from teacher education to professional practice. To better prepare student teachers for their first practicum, the teacher educators involved in the programme relocated theoretical instruction from the university campus to a local upper secondary vocational school. The aim of the project was to find out how education conducted in the school environment influences vocational STs' perceptions of their overall readiness for the teaching profession, including practicum placements. The first practicum was seen as especially important for building student teachers' confidence and sense of mastery.

Development Project on Practical Pedagogical Education for Vocational Teachers

The development project was started up in the spring of 2021 by three TEs teaching in full-time PPU-Y programme. To assess the project's feasibility, the TEs contacted the school's administration, who responded positively and attended an exploratory meeting to establish the project parameters. It was agreed that the school would provide classrooms for teaching, but the responsibility for planning and implementing the project remained with the TEs involved. Arrangements for classroom and workshop observations, as well as contributions such as guest lectures and presentations of staff roles, were made directly with individual vocational teachers at the school. These were not the designated practicum supervisors, but subject teachers who voluntarily contributed to the learning environment. The relocation to a nearby upper secondary school ensured continued access to university resources such as the library and academic support services. Additionally, the STs engaged in sporadic teaching days at the university to provide a basis for comparison.

The project included seven STs and two TEs responsible for didactic and pedagogical teaching. The TEs and the school administration clarified how staff would be involved and what learning opportunities would be available for the STs. In addition to classroom teaching, the STs had opportunities to observe vocational teachers in practice and engage with them during lunch breaks.

The development project aligns with the 2025 National Strategy for Quality and Cooperation in Teacher Education (hereafter the National Strategy), which emphasises the need for collaboration between schools and teacher education programmes to enhance education quality and relevance (Norwegian Ministry of Education and Research, 2017). Granborg and Aakernes (2024) argue that development projects in vocational teacher education can strengthen the coherence between campus-based theoretical instruction and practicum learning. While their main focus is on interdisciplinary development projects carried out by student teachers during their third practicum placement, they also highlight the importance of collaboration between teacher education institutions and schools. Such partnerships can facilitate the integration of different forms of knowledge in teacher education (Andreasen, 2023) by acting as bridges between the two contexts (Barnes & Smagorinsky, 2016; Norwegian Ministry of Education and Research, 2017).

We reflected on how a physical presence at the school might facilitate both planned and spontaneous interactions with STs and staff, thus creating opportunities for activities, such as observing pupils, that are not feasible on the university campus. While some aspects, such as classroom observation, were planned in advance, we also aimed to remain flexible and adapt plans as opportunities emerged during the semester. Additionally, we concurred that teaching topics and content could be adjusted or shifted to maintain the flexibility needed to take advantage of any opportunities that arose from both STs and TEs being present at the school. In the subsequent implementation of the project, two TEs were involved.

By shaping students' experiences through early exposure to the vocational school environment, the project aims to support a smoother transition into the teaching profession, reducing practicum shock and fostering professional identity development. The collaboration with the upper secondary school was initiated in spring 2021, and the theoretical teaching activities began in autumn 2021, continuing throughout the academic year 2021–2022. STs attended theoretical teaching at the school 2–3 days per week, with the number of hours varying depending on the topic and availability. The first practicum period took place in weeks 41–44 of 2021, meaning that students had already spent several weeks in the school environment before entering formal practicum. The theoretical teaching was guided by a tentative plan but remained flexible to allow for spontaneous learning opportunities. For instance, informal events during breaks or unplanned conversations with staff were often integrated into the teaching themes. In addition, both planned and spontaneous visits from school staff were arranged to share their professional experiences. Classroom and workshop observations were also part of the programme. Students were given specific observation tasks related to ongoing themes, such as classroom management or relational competence. These observations were followed by reflective discussions, often linking the observed practices to theoretical concepts. This approach is intended to support the integration of theory and practice and contribute to the development of students' professional understanding.

This pilot study examined STs' perceptions of an alternative organisation of the PPU-Y programme. We explore whether presence at a vocational school during campus-based theoretical teaching can reduce the theory-practice gap, improve preparation for practicum placements and add value to the programme by moving the campus-based component of the education to an upper secondary school. Specifically, we sought to answer the following research question:

How does relocating campus-based theoretical teaching in Practical Pedagogical Education for Vocational Teachers (PPU-Y) to a local upper secondary school shape students' experiences with the practical field?

Practical Pedagogical Education for Vocational Teachers (PPU-Y)

In Norway, vocational teacher education is offered both through a three-year bachelor programme (YFL) and a one-year practical pedagogical education programme PPU-Y (The Education Union, 2024). The PPU-Y programme qualifies STs to teach at levels 8–13 (Norwegian Ministry of Education and Research, 2023; University of Agder, 2025c). The full-time PPU–Y programme spans one academic year and includes three practicum periods: four weeks at an upper secondary school in the autumn, two weeks at a lower secondary school in the same semester, and six weeks at an upper secondary school in the spring. Due to the short duration of the programme and the need to coordinate practicum placements across multiple teacher education programmes, it is not feasible to move all practicum periods to the end of the year. This structural constraint helps explain why the model proposed by Stokking et al. (2003), which involves postponing practicum to reduce practicum shock, cannot be applied in this context. Both educational programmes aim to equip STs with both theoretical and practical foundations of the knowledge required to support professional competence (Amdal & Mastad, 2022). Traditionally, theoretical teaching has been provided by TEs on campus, while practical training has been conducted by practice teachers in the field.

To complement campus-based theoretical teaching, STs participate in three separate practicum periods for a total of 12 weeks (University of Agder, 2025a). These practicum periods offer STs the opportunity to gain hands-on experience in the teaching profession, observe experienced practitioners, receive guidance and become acquainted with various learning environments and school cultures. Therefore, teacher education programmes in Norway emphasise a shared responsibility between higher education institutions and practicum schools. TEs and practice teachers play crucial roles in this collaborative effort (Elstad, 2020; Sandal et al., 2014). This partnership underscores the importance of bridging the gap between the distinct learning contexts of campus and practicum settings (Barnes & Smagorinsky, 2016; Norwegian Ministry of Education and Research, 2017).

Learning Across Contexts

The process of boundary crossing in vocational and professional education has received significant attention, especially regarding the integration of learning across different contexts (Akkerman & Bakker, 2012; Engeström, 1987; Øgård, 2024; Øgård et al., 2025). This research employs the following definition of boundary crossing in the learning context: boundary crossing is defined as 'the efforts by individuals or groups at boundaries to establish or restore continuity in action or interaction across practices' (Bakker & Akkerman, 2013, p. 225). This process includes negotiating and combining elements from various contexts to facilitate holistic learning. Boundary crossing encompasses incorporating skills, knowledge and experience from diverse learning environments, often with the support of others. Others, in this context, could be TEs

and practice teachers. Accordingly, boundary crossing requires connections between different learning contexts to ensure that learning becomes active and applicable in various situations.

In vocational teacher education, boundary crossing takes place primarily between two learning contexts: campus-based instruction and school-based practicum placements. Integrating knowledge from both contexts is crucial, as it enables STs to connect theory with practical application. Thereby, fostering professional growth and reflective practice and, hence, represents a significant learning opportunity (Bakker & Akkerman, 2019). This integration is particularly significant because it encourages STs to critically examine their assumptions, adapt to real-world complexities, and develop a more nuanced understanding of teaching and the role of the teacher. The differences between these contexts, such as the emphasis on abstract pedagogical theory and structured learning at university, versus the unpredictable, fast-paced nature of classroom teaching, highlight the limitations of campus-based education in preparing STs for the realities of the school environment. These differences mentioned can serve as a driving force for learning (Akkerman & Bakker, 2011a). STs frequently meet differing expectations: TEs may prioritise critical reflection and theoretical grounding, whereas practice teachers often value practical competence and classroom efficiency. These contrasting demands can challenge STs' perceptions of the teaching profession by exposing tensions between idealised and pragmatic approaches to teaching. To address this, relocating campus-based theoretical teaching to an upper secondary school aims to make theoretical learning more immediate and contextually grounded, allowing STs to experience and reconcile these differences firsthand. In this context, boundary objects and brokers are often utilised to mediate understanding and facilitate learning across boundaries.

Boundary Objects and Brokers

Boundary objects, whether abstract concepts, theoretical frameworks, or physical tools, serve as mediators between different learning contexts (Akkerman & Bakker, 2011a), such as campus-based theoretical teaching and school-based practicum placements. Their purpose is to support the integration of knowledge across these contexts by enabling shared understanding and collaboration. Star and Griesemer (1989) described boundary objects as adaptable and flexible, capable of being interpreted differently by various groups while still maintaining a common identity. These objects gain significance through the interactions they facilitate, creating what is referred to as a 'third space' for learning (Gutierrez, 1995; Gutiérrez et al., 1999), an intermediary zone where diverse perspectives can be negotiated and synthesised.

In addition to boundary objects, brokers play a vital role in facilitating boundary crossing. Brokers are individuals who participate in multiple learning communities and help coordinate activities, translate knowledge, and introduce new perspectives (Akkerman & Bakker, 2011b; Tuomi-Gröhn, 2003; Wenger, 2000; Øgård et al., 2025). In vocational education, TEs often act as brokers by guiding STs through the transition between theoretical and practical learning environments. For example, when campus-based instruction is relocated to an upper secondary school, the physical location can become a boundary object supporting this brokerage role. This boundary object meets STs before and after their practicum placements and serves as a means of integrating the different experiences they have during practicum placements. STs themselves

may also act as brokers, as they navigate and contribute to both university and school-based communities.

The effectiveness of boundary objects and brokers depends on how intentionally they are used to support learning. Riis and Brodersen (2021) emphasise that these roles are dynamic and context-dependent; brokers must actively engage with both settings to identify opportunities for integration. The learning outcomes are shaped by the choices of both TEs and STs, who must work to synthesise the distinct insights gained from each environment (Øgård & Hillen, 2025). These insights may include, for instance, recognising the gap between pedagogical ideals taught at university and the practical constraints of classroom teaching, or understanding how institutional norms influence teaching practices.

The concept of boundary crossing is also central to situated learning theory (SLT), developed by Lave and Wenger (1991). SLT posits that learning occurs through participation in social practices within communities of practice. Newcomers, such as STs, gradually move from observation to active involvement as they interact with more experienced practitioners. These communities serve as sites where knowledge is socially constructed and assumptions are challenged. Wenger's (1998) concept of communities of practice provides a valuable lens for understanding how student teachers gradually move from peripheral participation to fuller engagement in the professional community. This perspective complements the boundary crossing framework by emphasising the social and relational dimensions of learning in authentic contexts.

However, SLT has been critiqued for its reliance on informal learning, which can lead to inconsistencies in the types of tasks and experiences STs encounter. In response, Billett (2001) argues for a more structured approach to practicum learning. He suggests that while spontaneous learning is valuable, it should be complemented by deliberate planning and preparation to ensure meaningful engagement. Billett (2008) further advocate for the use of STs' experiences as learning resources, emphasising the importance of systematic reflection and guidance.

Boundary objects, such as practicum locations, can support this structured approach by making transitions between learning contexts more coherent (Akkerman & Bakker, 2012; Arts & Bronkhorst, 2020). When used intentionally, these tools help STs connect theory with practice and develop what Billett (2008) refer to as a more realistic 'subject theory', that is, a personal, experience-informed understanding of the teaching profession that integrates both conceptual knowledge and practical insight.

Methods

The aim of this study was to examine how relocating campus-based theoretical teaching in the PPU-Y programme to a local upper secondary school shaped STs' experiences in the professional field. To achieve this aim, the study employed a qualitative pilot study design based on the perceptions of STs.

Research Design, Data Construction and Analysis

This qualitative pilot study included STs as participants. All the STs participating in the development project expressed interest in being included in the study; therefore, all were invited to participate. Because of the small number of STs involved in the project, background information was withheld to protect participant anonymity.

The TEs (first and second author) informed prospective participants about the study and instructed those who wished to participate to contact them via email or orally. STs who contacted the TEs to express their interest in participation were subsequently sent an information letter and consent form.

All participants in the focus group interview knew each other, which Brinkmann and Tanggaard (2012) highlighted as potentially positive in an interview situation; however, this familiarity can also be burdensome if individual participants feel expected to stand by all of the statements after the interview. Therefore, the TEs were conscious of their role as the facilitators of a social interaction. They led the conversation with the goal of avoiding biases by using open-ended questions that encouraged participants to share their experiences freely. The TEs also avoided loaded or suggestive language. In doing so, they aimed to ensure that all voices were heard (Halkier, 2012). An interview guide was developed in advance. The questions were presented one at a time, allowing the group to discuss each topic collectively. The TEs were prepared to intervene if the conversation stalled or if one participant dominated the discussion, but this was not necessary. All participants contributed actively, and the TEs refrained from steering the discussion beyond introducing each question.

Data were collected through semi-structured focus group interviews during which the TEs enquired about the participants' experiences and perceptions of the changed learning context, surprising elements and the advantages and disadvantages of campus-based theoretical teaching (Grønmo, 2016). The focus group interviews provided participants with the opportunity to reflect collectively and compare their experiences (Halkier, 2012). The focus group interviews produced detailed insights into the participants' experiences of being physically present at the school as well as their interactions with teachers and peers.

Two focus group interviews were held at different locations: one at the upper secondary school and the other at the university. The first interview was conducted shortly after the initial practicum period (weeks 41–44, 2021), while the second took place in May 2022, following the final practicum. This timing allowed for reflections both early and late in the programme, capturing a broader range of student experiences. The interviews lasted 47 and 59 minutes, respectively. To ensure accuracy, the focus group interviews were recorded using a digital audio recorder and then transcribed by the two TEs individually.

The analysis commenced during the transcription process, and the TEs continued to read each other's transcribed materials to familiarise themselves with the data. A third external researcher participated in the analysis (third author). The two TEs and the external researchers reviewed and roughly sorted the data before meeting as a group to conduct additional analyses together (see description related to the researcher's role below). According to Eggebø (2020), this approach is understood as a collective qualitative analysis. The joint analysis was conducted in two rounds to view the data with fresh eyes and to consider the findings individually. The data were then sorted into three main themes, using a spreadsheet to organise the quotes, codes and themes (Table 1).

The data obtained from the interviews thoroughly illuminated the research question by providing rich, detailed descriptions of the participants' experiences with the changed learning context. These insights were not only relevant but also varied, reflecting a breadth of perspectives that contributed to what Malterud et al. (2016) described as having high informational power. Informational power refers to the idea that the more relevant and nuanced the data are in relation to the study's aim, the fewer participants are needed to achieve meaningful results.

In this study, the participants were directly involved in the development project being investigated, which ensured a strong alignment between the sample and the research question. Furthermore, the focus group format allowed for interaction and reflection among participants, which deepened the data and revealed shared as well as divergent experiences. This richness and relevance of the data support the assessment of good construct validity, as the findings closely reflect the concepts and phenomena the study aimed to explore (Malterud et al., 2016). Within the framework of a pilot study, this strengthens the credibility and trustworthiness of the results.

Table 1: Example of the analytical process

Meaningful quote/data	**Code**	**Theme**
Being at school and seeing pupils all the time gives you a sense of it. It feels more real. This is what I will be doing. I've already begun smiling and greeting pupils when I enter the school. It probably would have been very different if you were at university all the time.	Daily interactions with pupils clarify what you should be doing.	From observation to identification
There's something about sitting at the back of the class, too. When you're at the front, you miss much of what the pupils actually do. It's about keeping in mind that 'I think maybe some are doing something else. You gain those experiences and learn how to work with them.	The observations offered insights into the challenges faced in the classroom.	

Researcher Roles and Ethical Considerations

The three researchers involved in the study had distinct roles that influenced the research. Two were TEs with insider knowledge of the programme and direct involvement in the development project. While this experience is a strength that allowed them to link the empirical data to the project context, it also presents certain ethical challenges. Høie (2001) highlights the risk of 'house blindness', in which internal researchers may seek to validate the study's positive aspects. Challenges may also arise when interviewing STs with whom one already shares a relationship (Thagaard, 2009). Specifically, the STs may provide the answers they believe the interviewer wants to hear. This concern was actively considered during the analysis by paying close attention to patterns of agreement or hesitation in the transcripts, as well as inconsistencies or overly polished responses that might indicate social desirability bias. The researchers also discussed their own potential influence on the data in joint analysis sessions, using reflexivity to critically assess how their relationship with the participants could have

shaped the responses. This reflective approach helped to identify and mitigate possible bias in the interpretation of the data (Alvesson & Sköldberg, 2017).

To mitigate researcher bias, the third researcher did not participate in data collection but contributed to the analysis and writing process. Her outsider perspective, without prior involvement in the project or relationship with participants, enabled a more critical and independent stance, which strengthened the study's reliability and contributed to validation through joint discussions. This division of roles not only addressed ethical concerns related to proximity and bias but also enhanced the analytical depth by combining contextual familiarity with critical distance. This insider–outsider composition (Kvernbekk, 2005) provided complementary perspectives, fostering critical dialogue and enhancing the overall quality of the analysis.

To further enhance the analytical process, the theory of reflexive methodology was applied to interpret the data (Alvesson & Sköldberg, 2017). This approach emphasises the importance of critically reflecting on the researchers' positions, assumptions, and influence throughout the research process. The preparation of this manuscript followed the checklist for consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007).

Discussion of findings

Following Braun and Clarke's (2022) approach to thematic analysis this section integrates theory and prior research into the analytic narrative to contextualise and interpret the findings. Thematic analysis resulted in the identification of three themes: from observation to identification, mapping the terrain and understanding school dynamics. Each theme is discussed in light of the research question and relevant theoretical frameworks, particularly boundary crossing theory (Akkerman & Bakker, 2011a, 2011b; Bakker & Akkerman, 2013) and situated learning theory (Lave & Wenger, 1991).

From Observation to Identification

The results of the study indicate that the ST found value in being present at an upper secondary school from the start of their vocational teacher education. Several STs expressed surprise at how young the pupils appeared and noted that observing and interacting with them early on helped them become more familiar with the age group they would be teaching during their first practicum period. This theme captures how STs moved from passive observation to an emerging sense of professional identity through early and repeated exposure to the school environment.

In this way, their perceptions concretised the school's function as a boundary object that provided an opportunity to bridge the theory-practice gap (Grossman et al., 2009), thereby reducing the potential degree of practicum shock. One ST described how early exposure to the practicum field helped adjust the expectations by providing a more realistic understanding of the pupils, compared to what they might have experienced without prior presence in the school before the practicum period:

> I believe the shock would have been greater. Now I have seen a bit of how the pupils are at school. They are not as old as we think they are or as mature as one might have felt at that age.

> You gain a more profound understanding of how the pupils are doing and what their starting point is, as well as how they behave and who they are. (ST 1)

This excerpt illustrates how direct observation of pupils challenged STs' preconceived notions about pupil maturity and behaviour, formed through theoretical teaching. STs recalibrated their expectations by encountering pupils in a real-world setting and developed a more nuanced, experience-based understanding of the classroom context (Bakker & Akkerman, 2013). This reduced the practice shock they experienced during their first practicum period.

Furthermore, presence at the school highlighted the diversity and individuality of pupils, which supports the principles of situated learning theory (Lave & Wenger, 1991) through gradual acclimatisation to the practicum field. As one ST expressed: 'You get close. You see the pupils, the teachers, the principal, and how it is structured, how everything works and fits together' (ST 6).

This comprehensive overview of the school context helped bridge the different learning environments STs encounter in their education, a key aspect of boundary crossing (Akkerman & Bakker, 2011b; Bakker & Akkerman, 2013).

Although STs were given the opportunity to observe classroom practices and school structures, the depth and focus of their observations varied. Some STs demonstrated the ability to notice subtle classroom dynamics and reflect critically on what they observed, while others offered more general impressions. This variation suggests that without explicit guidance, STs may struggle to identify pedagogically relevant aspects of the school environment.

One ST reflected on how their position in the classroom influenced what they were able to observe:

> There is something about sitting at the back of the class as well. When you are standing in the front, you miss out on a lot of what the pupils are doing. It's something to keep in mind: 'I think maybe some are sitting and doing something else'. (ST 3)

This comment reveals an emerging awareness of classroom dynamics and the limitations of the teacher perspective. Even seemingly superficial observations can serve as entry points for deeper pedagogical reflection, if followed up with structured support (Billett, 2001). Another ST described how informal interactions contributed to their professional orientation:

> Entering the school and seeing pupils regularly gives you a sense of it [being a teacher]. It becomes more real. This is what I will be doing. I have already begun to smile and greet pupils when I arrive at school. It would likely have been very different if you had been at the university all the time. (ST 5)

This illustrates how repeated exposure to pupils in authentic school settings helped STs move from a theoretical understanding of teaching to a more embodied and relational perspective. The act of greeting pupils signals an emerging identification with the teacher role, marking a transition from their previous professional identity to that of a teacher.

Overall, this theme demonstrates that early presence at an upper secondary school offers several advantages for STs by minimising practicum shock and supporting professional identity development. However, to ensure optimal learning outcomes, structured observation tasks and reflective guidance are essential (Billett, 2008).

Mapping the Terrain

Presence at the school gave the STs a unique opportunity to familiarise themselves with 'the terrain' throughout their studies and created a basis for comparison with the theory they encountered in traditional instruction. In this context, 'the map' refers to pedagogical theories and models introduced during campus-based instruction, while 'the terrain' represents the lived realities of the school environment. The STs' ability to observe teachers in various formal and informal situations contributed to this. For example, the STs' observations of the teachers' classroom management provided valuable insights into how theory can be translated into practice. One ST noted: Teachers are just people like everyone else. They are as diverse as people are, so it has been good to lower the guard and see that teachers and our new colleagues are ordinary people (ST 6).

This quote illustrates how STs began to humanise the teacher role and recognise the diversity of teaching styles, which helped them reconcile theoretical ideals with practical realities (Bakker & Akkerman, 2013; Billett, 2008). Vocational teachers played an important role as boundary workers by using observations and events in teaching, which eased STs' experiences of boundary crossing (Tuomi-Gröhn, 2003). Another ST reflected: 'From different teachers, you can learn how to handle different situations' (ST 2). This comment highlights how exposure to multiple teaching styles enabled STs to compare and contrast different approaches, thereby supporting boundary-crossing learning (Akkerman & Bakker, 2011a).

Informal conversations with teachers during breaks were also described as meaningful: 'Sitting and chatting with them; hearing a bit about what they think and how they work' (ST 1). These spontaneous interactions created a 'third space' (Gutierrez, 1995; Gutiérrez et al., 1999). This zone allowed diverse perspectives to be negotiated and synthesised, significantly contributing to the STs' professional development. Practice teachers played a crucial role in these informal settings, providing insights and guidance that enriched STs' understanding of teaching practice. While TEs played an important role in facilitating these exchanges and helping STs connect theory with practice (Riis et al., 2019; Øgård et al., 2025), their role was more prominent in general observations within the school environment rather than in these informal settings.

Even negative experiences, such as initial difficulties with administrative systems, were used as learning opportunities: 'It shows that we can be flexible and that sometimes situations arise that our teachers are also unfamiliar with, things that happen in the school day' (ST 5). This quote exemplifies the adaptability of boundary objects (Star & Griesemer, 1989), as the school environment allowed STs to experience both structured and unpredictable elements of teaching. Similarly, bridges were built between different learning contexts, which ensured that learning became active and applicable (Andreasen, 2023; Engeström, 1987; Øgård, 2024; Øgård et al., 2025). In these moments, STs also acted as brokers, drawing on both theoretical and practical knowledge to interpret and respond to emerging situations, thus actively learning through their boundary-crossing role.

However, the approach also had limitations. One ST noted: 'It was challenging to get in touch with the teachers.' (ST 4). This quote highlights the dependency on TEs' availability, engagement and their ability to act as social bridge-builders within the school environment. Teachers in the school environment introduced new opportunities for understanding by sharing their experiences and perspectives with the STs (Riis et al., 2019). However, without sufficient social

and professional guidance from TEs, STs' learning may become fragmented (Billett, 2001). Active support for reflection and systematisation is therefore essential to ensure meaningful learning outcomes (Billett, 2008).

Understanding School Dynamics

The third theme highlights how sustained presence in the school environment allowed STs to gradually internalise the social and cultural norms of the teaching profession. Through informal interactions, particularly during breaks and in the staff room, STs gained access to the unwritten rules of school life, relational dynamics, and everyday routines that shape professional practice. One ST shared: 'I feel it is mostly during breaks that you get the benefits of being here. That's when you get close to teachers and pupils' (ST 2).

Another ST added: 'I think you can more easily see yourself in the job and what it entails. You see how other colleagues interact during lunch. You overhear conversations, and you manage to pick up quite a lot' (ST 3).

These statements show how informal settings contributed to STs' understanding of the social fabric of schools and helped them imagine themselves as future teachers. ST 2 and ST 3 illustrate how informal arenas, such as breaks and having lunch in the staff room, functioned as important learning spaces. This can be interpreted as a form of situated learning (Lave & Wenger, 1991), where learning occurs through participation in a community of practice, even if that participation is peripheral. Wenger's (1998) elaboration on communities of practice further highlights how identity formation and professional socialisation are shaped through engagement with experienced practitioners. This suggests that the staff room functioned as both a physical and symbolic boundary object, enabling reflection on the daily life as a teacher and workplace culture (Bakker & Akkerman, 2013).

STs also commented on the contrast between the university and school environments:

> You can see the classroom we are sitting in now. The desks have taken some wear and tear; the wallpaper is peeling. You see that you encounter other things, it might be boredom. At the university, there are very nice, proper classrooms. Here you see a bit of what the teacher has to work with, or struggle with, or the challenges one faces. (ST 1)

One ST added: 'It is a completely different setup, a completely different environment. You have a completely different focus. At the university, it is much more academic; this is practical pedagogical education' (ST 6).

These reflections highlight how the physical and material conditions of the school environment rendered the teaching profession more tangible and grounded in everyday realities. Student teachers appreciated the opportunity to engage in the practical aspects of teaching from the outset. This observation corresponds with findings by Lyckander and Spetalen (2022), who noted that student teachers value teacher education that is both realistic and relevant. Serving as a boundary object, the school setting enhanced the authenticity of the learning experience, in contrast to the university's more abstract and academic environment. Through this exposure, student teachers became increasingly aware of the everyday constraints faced by teachers, such as worn-out facilities and limited resources, conditions seldom encountered within university settings. This contrast fostered a deeper, experience-informed

understanding of the teaching profession, integrating conceptual knowledge with practical insight (Billett, 2008).

'I think it is motivating that we are here where we should be. When it is practice-oriented, that it is proper' (ST 4). Another ST added: 'I don't really know if I could see myself going back to the university. It is here that I feel I should be' (ST 7). These final quotes underscore how the school setting not only supported learning but also fostered a strong sense of professional belonging. This early and sustained presence in the school environment enabled STs to observe and gradually participate in the social and professional culture of the school (Lave & Wenger, 1991; Bakker & Akkerman, 2013). Over time, the STs began to internalise norms, routines, and relational practices that are central to the teaching profession. By integrating theoretical ideals with everyday realities, the STs development of a more realistic and experience-informed subject theory (Billett, 2008).

Final Discussion and Conclusion

In teacher education programmes, STs often express concerns about the limited professional relevance and the lack of continuity between campus-based theoretical teaching and practicum placements (Canrinus et al., 2017; Granborg & Aakernes, 2024; Raaen & Thorsen, 2020). Despite TEs' efforts to prepare STs for practicum, many still feel unprepared for the realities of teaching and experience what is often referred to as practicum shock. This perceived lack of coherence refers to the disconnect between theoretical knowledge, such as pedagogical models, classroom management strategies, and curriculum planning taught on campus, and the practical demands, routines, and contextual challenges in real classroom settings. This misalignment hinders STs' ability to integrate theory into practice, which in turn significantly impacts the overall quality and effectiveness of teacher education (Darling-Hammond, 2006).

This study found that early exposure to the school environment supports vocational ST's transition into the profession, particularly through the development of professional identity, navigation of the school terrain, and understanding of school dynamics. The shaping of students' experiences through early and sustained presence in the school environment appears to be a key mechanism in facilitating their transition into the teaching profession. This experiential grounding helps students internalise professional norms and expectations, thereby bridging the gap between being a student and becoming a teacher.

Such early exposure may mitigate practicum shock and integrate theoretical learning with practice placements (Canrinus et al., 2017; Granborg & Aakernes, 2024; Raaen & Thorsen, 2020). The shaping of experience through situated learning in the school context not only supports professional transition but also addresses the persistent challenge of integrating theory and practice in teacher education. In this context, an upper secondary school played the role of a boundary object. STs reported that observing and interacting with pupils before their first formal practicum allowed them to contextualise theoretical concepts, such as classroom management, differentiation, and relational competence, within authentic school contexts. These findings support the development of what Billett et al. (2008) refer to as a more realistic 'subject theory', a personal, experience-informed understanding of the teaching profession that integrates conceptual knowledge with practical insight. Beck and Kosnik (2002) discuss how students are often overwhelmed and unprepared when meeting the complexities of practice, and closer

collaboration with the practicum could help them meet this challenge. Our findings suggest that boundary-crossing learning, where STs move between theoretical and practical areas, can boost confidence, deepen understanding of teaching complexities, and enhance the ability to critically reflect on and adapt theoretical models to classroom realities. Nonetheless, it is important to recognise the pivotal role of TEs and to find a balance between systematising learning and situated learning experiences. By creating a third space (Gutierrez, 1995; Gutiérrez et al., 1999), TEs open up a dialogic arena where STs can reflect on their situated experiences (Lave & Wenger, 1991) in light of theoretical perspectives. This third space enables boundary crossing (Akkerman & Bakker, 2011b), allowing STs to negotiate meaning across different contexts. Through this process, TEs support the integration of diverse forms of knowledge and foster professional development.

While the sample size in this study was small, insights from the two focus group interviews provided valuable perspectives. Although a larger sample might capture a broader range of opinions, our methodology ensured that discussions were grounded in previous studies to enhance the credibility of our findings (Akkerman & Bakker, 2012; Bakker & Akkerman, 2013; Riis et al., 2019; Øgård et al., 2025). Thereby, we argue that our findings are transferable to other contexts.

Future research could examine how ongoing school-based instruction across diverse contexts and cohorts impacts long-term professional development and retention in vocational teacher education. Additionally, comparative studies across different teacher education models could further clarify the mechanisms that support effective boundary crossing.

Summary of key findings

This study highlights three key findings. First, early and sustained presence in the school environment helped STs transition from observation to professional identification, reducing practicum shock and fostering a sense of belonging. Second, the integration of theoretical teaching within the school context enabled STs to map pedagogical theory onto real-life classroom dynamics, enhancing their ability to connect abstract concepts with practical realities. Third, informal interactions with teachers and pupils in everyday school settings contributed to STs' understanding of school culture and professional norms. Together, these findings suggest that relocating theoretical teaching to a vocational school can strengthen the coherence of vocational teacher education and support the development of a realistic and experience-informed professional identity.

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