Pedagogic practices in healthcare placements

Unravelling the dynamics of facilitating workplace learning

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Promotores:
Prof. dr. E. de Bruijn, Open Universiteit
Em. prof. dr. A.F.M. Nieuwenhuis, Open Universiteit

Copromotor:
Dr. A.E. Khaled, HAN University of Applied Sciences

Leden beoordelingscommissie:
Prof. dr. S.A.J. Beausaert, Universiteit Maastricht
Prof. dr. P.G.C. Van den Bossche, Universiteit Antwerpen
Em. prof. dr. C.R.M.G. Fluit, Radboudumc
Em. prof. dr. F.P.C.M. de Jong, Open Universiteit
Prof. dr. M. Vermeulen, Open Universiteit

INHOUDSOPGAVE

1. General introduction

A supervisor named Wendy works as an experienced physiotherapist in a hospital and is challenged to supervise students alongside daily work activities.

> When Wendy was unexpectedly scheduled in the morning for other activities, she was not able to do a joint start-up with her student. She made sure she carried a phone and could be reached: "If anything happens, the student can always call me. That's the idea, that I'm always accessible."

Another supervisor, Amy, works as an experienced nurse in a psychiatric care institution and explained how supervising is a collective practice in her work setting.

> Amy stated: "Indeed, the student receives a lot of feedback from different co-workers. (..) And therefore, I am inclined to ask my colleagues every now and then: 'do you have any further details about this student, or something that we need to pay attention to, (..) and, do you agree with me that things are going well?'."

These citations show glimpses of the empirical studies, which are at the heart of this dissertation. They exemplify the complex nature of pedagogic practices in placements, illustrating supervising workplace learning embedded in daily work activities and interactions. In healthcare education, supervisors like Wendy and Amy play vital roles in shaping the learning experiences of undergraduate students. Wendy faces the challenge of balancing her daily clinical duties with supervising students. Despite her hectic schedule, she ensures her availability, even when unforeseen circumstances disrupt the planned interactions with students. Amy sheds light on the collaborative nature of supervision within the psychiatric care institution; feedback for students is provided by various colleagues. Amy actively interacts with her co-workers, seeking diverse perspectives to comprehensively support the student's learning processes. These supervision practices, embedded in the daily work processes of healthcare practitioners, illustrate pedagogic practices in healthcare placements. This dissertation delves into the processes of facilitating workplace learning, unravelling the layers of pedagogic practices in healthcare placements.

1.1. Healthcare placements

Healthcare placements, also referred to as clinical internships, provide students with opportunities for hands-on learning in authentic patient care situations. The clinical setting stands out as an example of a complex learning environment to promote learning and

development (Barman et al., 2023; Dornan, 2012; Ten Cate & Billett, 2014). The diversity of patient cases encountered in healthcare settings, ranging from routine check-ups to critical emergencies, offers students a comprehensive and diverse learning experience that is unmatched in traditional educational settings. My view on learning is that students are not passive recipients of information; they are afforded work experiences, actively engage with patients, healthcare professionals, and the healthcare system itself.

Healthcare and educational systems train students for vocations; in becoming and remaining successful practitioners (Billett, 2001). Furthermore, healthcare placements expose students to the challenges of teamwork, interdisciplinary collaboration, and ethical decision-making, preparing them for the multifaceted nature of the healthcare field (Amir et al., 2017; Brennan et al.,2010; Weurlander et al., 2019). Therefore, learning needs to take place as a part of everyday work and, at the same time, high-quality healthcare needs to be delivered (Cuyvers et al., 2021).

Supervisors are challenged with a multifaceted role, that requires them to be a healthcare practitioner performing quality patient care, and a supervisor guiding students, promoting their comfort and making judgments regarding their learning progress (De Vos et al., 2023; Fluit et al.,2010; Noble et al., 2023; O'Connor et al., 2019). For facilitating students' workplace learning, supervisors utilize their expertise in both clinical and supervisory aspects, making use of the opportunities available within the healthcare setting (Noble et al., 2023). The complex responsibility of supervisors in facilitating workplace learning raises questions about potential conflicts and challenges inherent in fulfilling this important role within healthcare placements.

1.2. Workplace learning

In healthcare education, students develop their vocations largely by learning through practice (Dornan, 2012; Teunissen, 2015). Learning at workplaces has a centuries-old tradition of practical education through placements, internships, apprenticeships, or clerkships (Guile & Griffiths 2001; Tynjälä 2008, 2013; Wenger 1998). Workplace learning is personally shaped and arises through student participation in activities and interactions (Billett et al., 2018; Scribner, 1985), and plays an essential role in preparing students for their future careers as healthcare practitioners. The purposes of workplace learning vary from vocational orientation, to the acquisition of competences, and participation in vocational communities (Nieuwenhuis et al., 2017). Workplace learning offers students a wide range of valuable opportunities to gain insights into their chosen vocations by observing, learning from experiences and participating in daily tasks and responsibilities. Furthermore, workplace learning enables students to develop practical

skills and competences essential to their field. By actively participating in the process of belonging, becoming and being (Chan, 2019; Colley et al., 2003), students become a part of vocational communities in which they interact with experienced practitioners and are provided unique opportunities to experience authentic, real-world practices (Lave & Wenger, 1991). Unique experiences shape the vocational development of students as they engage in purposeful actions and exercise agency (Goller & Billett, 2014).

Numerous studies underscore the importance of facilitating workplace learning in shaping students into vocational practitioners (Barman et al., 2023; Guile & Griffiths, 2001; Lave & Wenger, 1991; Schaap et al., 2012; Tynjälä, 2008). In workplace learning, students are allowed to actively participate in authentic work contexts and are confronted with complex and dynamic problems. To facilitate students' workplace learning process, experienced practitioners, like Wendy and Amy, are given a task to support students through continued daily practice in placements. These experienced vocational practitioners, who play a crucial role in supporting students within the workplace, are referred to as supervisors in this dissertation. In healthcare settings, supervisors have to make decisions about how they will best facilitate students' workplace learning in placements whilst accounting for the opportunities and constraints of the environment (Cantillon et al, 2020; Noble et al., 2023).

1.3. Pedagogic practices

The term pedagogic practices is used to describe a large range of activities and interactions aimed at supporting students' engagement in learning experiences at the workplace. Pedagogic practices are means by which learning through activities and interaction can be supported or augmented (Billett et al., 2018). Within these practices, various actions are undertaken by supervisors, such as monitoring students, providing explanations, scaffolding, and facilitating observations (Mikkonen et al., 2017). Essentially, pedagogic practices aim to enrich learning experiences of students.

Supervisors play an important role in affording, recognizing and shaping pedagogic practices. Through active monitoring, supervisors can identify student's learning needs, and provide just-in-time support. Providing relevant guidance contributes to students' self-regulative and autonomous learning (De Bruijn, 2012; Sagasser et al., 2017), which is extremely important, especially at the workplace (Ley et al., 2013). Guiding refers to moderating, structuring and organizing students' learning opportunities and activities (De Bruijn, 2012). Giving explanations helps students to comprehend complex concepts, and scaffolding provides support structures as students face challenging tasks, gradually building their vocational knowledge (Schaap et al., 2012). Additionally, workplace

supervisors are, especially from the perspective of students, eminently important to function as role models (Billett, 2004; Guile & Griffiths, 2001; Tynjäla, 2013). As role models, supervisors facilitate opportunities for observations and imitations, enabling students to enhance their understanding of vocational activities. As a coach, supervisors support students' experiences, provide feedback and facilitate reflective activities (Billett, 2004; De Bruijn, 2012; Tynjäla, 2013). Reflective practices are important to support students' self-regulated learning in healthcare placements (Sagasser et al., 2017). Furthermore, fine-tuned supervision requires an ongoing diagnosis of the learner's level of understanding and changing competences (Ley et al., 2013; De Vos et al., 2019).

Supervisors have a significant role in facilitating pedagogic practices in placements, as they are responsible for supporting and shaping students' learning experiences in the workplace (Benner, 2015; Tynjäla, 2008). However, pedagogic practices are not limited to individual supervisors, but should be perceived as collective in nature (Filliettaz, 2014). Pedagogic practices involve a collaborative effort, encompassing supervisors, peers, and other individuals in the workplace (Kroeze, 2014). In placements, students meet various co-workers with diverse perspectives, expertise, and experiences. These co-workers, directly or indirectly, participate in the interactions with students and influence their learning experiences.

1.4. Problem statement

Despite the recognized significance of workplace learning, challenges arise in the dynamic and multifaceted nature of healthcare settings, coupled with the diverse responsibilities placed on supervisors. Work pressure and staff shortages raise concerns about potential conflicts and obstacles in effectively facilitating students' learning in placements. Supervising can be demanding and stressful (Barman et al., 2023). Moreover, the significance of workplace learning in shaping and contributing to the ongoing student's vocational development seems underestimated, being not fully acknowledged and utilized (Billet et al., 208). A concern is then that the learning potential of healthcare placements is not fully utilized, and the pedagogic practices through which workplace learning can be enhanced are not fully exercised.

From a student perspective, there are also significant challenges to workplace learning including students' adoption of undesirable actions from role models, getting used to stress and mental illness among co-workers, and limited time for reflection, questions and feedback (Barman et al., 2023; Nieuwenhuis et al., 2017). Furthermore, in healthcare placements, students have identified emotionally challenging situations in patient treatments, such as dealing with ill or demanding patients, and feeling of unease when using

patients to enhance their own learning (Weurlander et al., 2018, 2019). This underscores the importance of further investigating and understanding how to facilitate workplace learning to optimize learning experiences for students in healthcare placements.

1.5. Aims and research question of this dissertation

In healthcare placements, facilitating workplace learning is embedded in real-life activities, experiences and challenges. The rationale for undertaking this dissertation lies in the need to enhance the understanding of pedagogic practices situated in healthcare settings. The following research question will be addressed: **What characterizes pedagogic practices in healthcare placements to facilitate students' workplace learning?**

This dissertation aims to present research findings relating to:

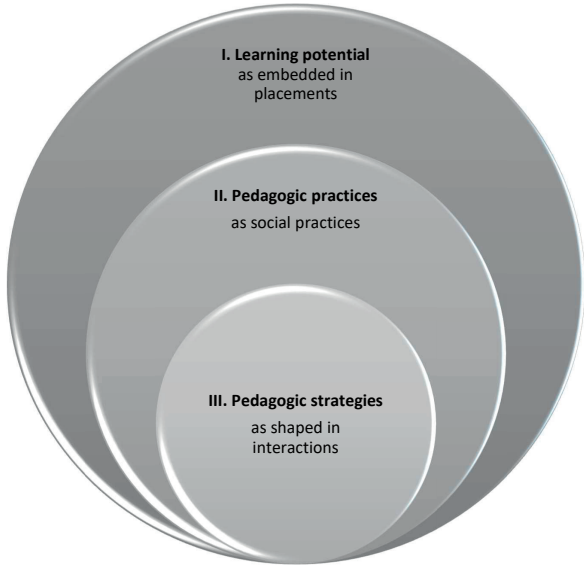
- defining pedagogic practices in workplace learning;
- identifying the learning potential in healthcare placements;
- identifying supervisors' pedagogic strategies in healthcare placements;
- and unravelling the dynamics of facilitating workplace learning.

1.6. Theoretical lenses

How pedagogic practices manifest in everyday work activities in healthcare placements is multifaceted, and not always obvious. Therefore, it is important to set out three theoretical lenses (Fig 1). These three theoretical lenses follow from a socio-cultural perspective, forming the foundation of the theoretical and methodological approach in this dissertation.

I. Pedagogic practices are embedded within the learning potential of work contexts. It involves the entirety of all possible opportunities for learning and participating in healthcare placements.
II. Pedagogic practices facilitating workplace learning are inherently social practices. In pedagogic practices, students engage in unique pathways of work activities and interactions with supervisors, co-workers, patients and peers.
III. The facilitation of workplace learning is shaped within pedagogic practices through supervisors' pedagogic strategies and in interactions with students. Supervisors employ pedagogic strategies to deliberately shape and create learning experiences for students.

Fig. 1 Conceptualizing pedagogic practices in healthcare placements



I. Learning potential of healthcare placements

Through the first lens, the potential for workplace learning is framed by the context where students perform their placements (Benner, 2015). As pedagogic practices are always embedded in the particular placement in which they occur (Lave & Wenger, 1991), they arise from the learning potential of this placement. The learning potential can be defined as the ability or power of the placement to facilitate learning (Nijhof & Nieuwenhuis, 2008). In healthcare placements, it involves the interactions of workplace affordances promoting students' workplace learning, such as opportunities to access information, to participate in work activities and to receive direct support from co-workers and peers. Workplace affordances are, in this dissertation, perceived asall opportunities at the workplace that either already exist, or can be created in order to invite students to contribute to work and simultaneously learn at the workplace.

Workplace learning and supervision is inherently shaped by the learning potential of placements, encompassing workplace affordances and situational conditions that define the opportunities for student participation (Billett, 2022; Nijhof & Nieuwenhuis, 2008). Therefore, situational awareness and understanding how unique requirements and challenges of work settings shape a learning potential is essential when studying pedagogic practices in healthcare placements.

II. Pedagogic practices

Through the second lens, pedagogic practices are viewed as social practices (Billett, 2022; Leont'ev, 1978). Workplace learning is situationally shaped in social practices in which students interact with supervisors, co-workers, peers, and patients (Wenger, 2008). In healthcare placements, the emphasis of these interactions could be on real-time decision-making, hands-on skills training or collaborative teamwork, shaping the pedagogic practices accordingly. Opportunities for student participation within pedagogic practices depend on the type of patient treatment, the patient, the supervisor and the student (Sagasser et al., 2017).

Pedagogic practices are viewed as shaping, and being shaped by, how individuals work together in healthcare placements, arising when supervisors or students see opportunities to actively engage with workplace affordances. Workplace affordances provide opportunities to participate in activities, direct interactions, as well as indirect interactions (Billett 2001, 2004). This emphasizes that pedagogic practices entail more than individual activities; it entails intertwined and dynamic interactions among activities, individuals and artifacts within the workplace (De Bruijn, 2019; Van de Wiel et al., 2011).

III. Pedagogic strategies

This dissertation delves into the importance of interactions in influencing and shaping pedagogic practices. Significant others, such as supervisors or other experienced colleagues, play a crucial role in facilitating workplace learning of students. The interactions with these experienced individuals could create a learning potential that would not exist without their support (Vygotsky, 1986). For supervisors, this means they have an important role as facilitators of students' workplace learning, including providing pedagogic strategies aimed at enabling students' active participation within healthcare placements.

Pedagogic strategies are a result of supervisors' deliberation of how to best facilitate workplace learning whilst accounting for the opportunities and constraints of the work setting (Cantillon et al., 2020; Khaled et al., 2021; Noble et al., 2023). Subsequently, pedagogic strategies may be related to the concept of deliberate practice (Ericsson, 2006), as the facilitation of workplace learning requires purposeful commitment to supervising students over time in their work activities. From the student perspective, workplace learning is largely secured through students' own effortful participation and willingness to engage with supervisors, co-workers and artifacts (Billett et al., 2018; Malle et al., 2001). Pedagogic strategies for facilitating workplace learning are studied in this dissertation as being purposefully shaped by supervisors, in interactions with students.

1.7. Research design

Aligned with the three theoretical lenses, the present dissertation is conducted from a socio-cultural orientation, as pedagogic practices are perceived to be socially embedded in healthcare settings (Lave & Wenger, 1991; Leont'ev, 1978). Therefore, the overall research design intends to provide unique insights into day-to-day workings and contextualized actions. The dissertation starts with a systematic literature review (**Chapter 2**) to obtain a first definition of pedagogic practices in placements. Based on the insights from this first study, in-depth qualitative field studies in **Chapters 3, 4 and 5** investigate the facilitation of workplace learning in empirical studies, through closely studying supervisors and students as they go about their daily work, with all its interacting elements such as co-workers, patients and artifacts. Since the aim is to gain situated insights into pedagogic practices in healthcare placements, combining observations and interviews fits appropriately, taking a holistic view on facilitating workplace learning in different contexts. In this way, we intend to provide meaningful insights into actual behavior and related considerations of supervisors and students in facilitating workplace learning (De Bruijn, 2012; Khaled et al., 2021).

1.8. Dissertation overview

Each chapter in this dissertation considers a different aspect of pedagogic practices in workplace learning (Table 1). In the field studies of this dissertation, pedagogic practices in workplace learning are studied in two healthcare occupations: physiotherapy and nursing. In the Netherlands, at Universities of Applied Sciences, healthcare education for physiotherapists and nurses comprises a 4-year Bachelor's course for full-time students. In the final year, students participate in a placement for approximately half a year. These studied placements in the final year shape the nearly-graduated students into competent physiotherapists and nurses, who develop their vocational identities and are being prepared for their future career in the healthcare domain.

Table 1 Dissertation overview

Chapter	Title	Research question	Aims	Research design
1	General introduction		Presenting the context, problem statement, aims and research question, theoretical lenses, overall research design, and an overview of the dissertation	
2	Pedagogic practices in the context of students' workplace learning: a literature review	Which pedagogic practices applied by experienced colleagues at work, in the context of student's vocational learning, can be identified and illustrated?	Defining pedagogic practices in workplace learning.	Literature review, focusing on how pedagogic practices play out in vocational practices
3	Understanding students' participation in physiotherapy and nursing work settings	**(1)** Which categories of affordances, in terms of student participation, can be identified in physiotherapy and nursing work settings? **(2)** How can we characterize student-physiotherapists' and student-nurses' daily participation in work settings through the identified categories of affordances?	Identifying the learning potential in healthcare placements, in terms of workplace affordances as opportunities for student participation.	Research design based on observations in seven placements (physiotherapy and nursing). In each placement, the participants included one student, and one or two supervisors.
4	Pedagogic strategies of supervisors in health care placements	Which pedagogic strategies of supervisors can be identified in student-physiotherapists' and student nurses' work settings?	Identifying supervisors' pedagogic strategies in healthcare placements	Interview study based on the stimulated recall method. Participants included ten supervisors of students physiotherapy and nursing.
5	Agency in workplace learning: Supervisor-student dynamics in a physiotherapy placement	What characterizes agency in facilitating workplace learning in supervisor-student dynamics in a physiotherapy placement?	unravelling supervisor-student dynamics	In-depth case study including observations and interviews of two supervisors and one student in a twenty-week physiotherapy-placement.
6	Summary and general discussion		Summary of the main findings and general discussion of how this dissertation contributes to a better understanding of pedagogic practices in healthcare placements.	

Note to reader

Chapters 2, 3 and 4 are published as individual research papers, and **Chapter 5** is submitted for publication. This means that each chapter functions as an independent piece of text, leading to some overlap, such as repeated explanations of the same concepts. Additionally, different terminology is present across chapters, as they were written for different journals. Terminology such as health professional education, higher education or vocational learning, varies in the following chapters, in accordance with the journals in which it has been published. All these terms refer to the multifaceted aspect of educating and training a vocation, that prepares students for their working life through formal educational programs and qualifies students for their future as vocational practitioners, i.e. physiotherapist or nurse (both on ISCED level 6).

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2. Pedagogic practices in the context of students' workplace learning: a literature review

Published
Ceelen, L., Khaled, A., Nieuwenhuis, L., & De Bruijn, E. (2023). Pedagogic practices in the context of students' workplace learning: a literature review. *Journal of Vocational Education & Training, 75(*4), 810-842. https://doi.org/10.1080/13636820.2021.1973544

Abstract
Pedagogic practices at workplaces are provided to support students' vocational development. To contribute to the understanding of supporting workplace learning, the focus of this literature review is to operationalize how pedagogic practices play out in practice. An overview is provided of pedagogic practices applied at workplaces to support students' vocational learning. Included studies provide descriptions of manifestations of pedagogic practices enabled by experienced colleagues, such as supervisors, in the context of students' workplace learning. Three sets of relevant search terms were defined, including synonyms and related definitions of 'pedagogic practices', 'supervisors' and 'workplace learning'. Forty- seven studies were selected, retrieved and processed qualitatively. Findings represent a comprehensive overview of fourteen categories of pedagogic practices. Three perspectives on supporting students are discussed: (a) demonstrating vocational activities, (b) stimulating vocational participation, and (c) entrusting vocational activities.

Keywords
Workplace learning; vocational education and training; mentoring; learning in the professions; pedagogy; vocational and educational guidance

2.1. Introduction

Students' vocational learning at workplaces includes learning-by-doing and engaging in practice-based experiences (Dornan & Teunissen, 2014; Sommer, 2014). For students, working together with experienced colleagues is a common practice to learn the expertise that is needed to become a vocational practitioner (Lave & Wenger, 1991). Workplace learning occurs via social interactions (e.g. Gowlland, 2014). However, the learning potential of work placements should not be taken for granted (e.g. Goller et al., 2020). Instead, students' learning experiences depend partly on pedagogic practices enabled by experienced colleagues at work, and educational interventions are sometimes warranted (Mikkonen et al., 2017; Sommer, 2014).

Research has been previously conducted to study various aspects of pedagogic practices to support students' learning at workplaces. At work, students' vocational learning occurs in authentic contexts that offers opportunities to observe, imitate and participate in work processes. Supervisors' support of workplace learning includes sharing understandings, facilitating opportunities for students to participate and reflect actively, and providing direct guidance-oriented interactions (Billett et al., 2014; Ruoranen et al., 2017). Direct guidance might be especially needed in the challenging context of workplace learning (Gowlland, 2014; Schaap et al., 2012).

The rationale for undertaking this literature review is to deepen the understanding of pedagogic practices that support students' vocational learning in the context of authentic work practices. In authentic workplaces, pedagogic practices are embedded in real-life conditions. There are several useful frameworks for understanding pedagogic practices (e.g. De Bruijn, 2012; Mikkonen et al., 2017). De Bruijn (2012) distinguishes five pedagogic strategies: modelling, guiding, monitoring, scaffolding and coaching. Mikkonen et al. (2017) described pedagogic practices in their literature review as supervisors' monitoring of students, providing explanations, scaffolding, and facilitating observations. However, they do not readily provide insights into how pedagogic practices play out in practice. For example, it would be of value to specify how 'supporting reflection' or 'providing emotional support' are adopted in work situations. To better know how supervisors could adaptively respond to students' vocational learning, there is a need to provide an overview of pedagogic practices as they are applied in specific contexts at workplaces. In current literature study, research articles that describe manifestations of supervisors' pedagogic practices will be reviewed in an in-depth manner.

2.2. Theory

Across countries, the process of learning a vocation is organized differently, and shaped by both educational and economic systems (De Bruijn et al., 2017; Billett, 2011). To investigate pedagogic practices at work, we include all students' vocational education and training (VET) that occurs at workplaces. In vocational education systems, most schools organize workplace affiliations (Billett, 2011). In some contexts, students predominantly learn a vocation through school based education. In other, students spend most of their indenture in workplaces as apprentices without much interference from schools (e.g. Gowlland, 2014). In yet other contexts, it is common to obtain work experience, such as employed clinical experience, early in formal education (e.g. Yardley et al., 2012). By using the term students, we refer to all student-practitioners, like apprentices, interns, trainees, and starters in different stages of their career path to become vocational practitioners.

Thus, current literature review focusses on how students are supported to become vocational practitioners at work in the context of vocational education and training programmes. We acknowledge that vocational education could take place both in school and at work sites (e.g. Bouw et al., 2020), and it is essential to study pedagogic practices in relation to learning at the boundary of school and work. However, current literature review is not aimed at clarifying this relationship. Instead, we choose to draw attention to vocational learning occurring at workplaces, outside educational institutions.

Workplace learning

Learning at workplaces has a centuries-old tradition of learning through practice, for example, during internships, apprenticeships, or clerkships (Guile & Griffiths, 2001; Tynjälä, 2008, 2013; Wenger, 1998). This learning is commonly termed workplace learning. Two principles are central in this study of workplace learning. First, workplace learning is shaped by and embedded in situated work contexts. Second, social interaction is an essential part of workplace learning. In this way, we mainly interpret workplace learning from a socio-cultural perspective (e.g. Lave & Wenger, 1991; Leont'ev, 1978; Vygotsky, 1986). Following the first principle, workplace learning cannot be dissociated from the context in which it occurs. Processes of workplace learning are part of activity systems and are mediated and formed by cultural and historical artefacts (Leont'ev, 1978). Such a view implicates that supporting workplace learning is collectively shaped by 'how we do things around here.' Consequently, students' learning and participation is embedded in local work contexts and dependent on participation of the learner in work-related activities (Gowlland, 2014). The second principle stresses that social interactions are fundamental to workplace learning. Through social engagements as legitimate peripheral participants in workplaces, students gradually become members of communities of practice (Lave & Wenger, 1991). Social interaction with significant others creates a potential for learning that would not exist without these interactions (Vygotsky, 1986). In other words, the process of becoming vocational practitioners at work involves social participation and interaction (Gowlland, 2014). Therefore, we define pedagogic practices in the context of workplace learning as being shaped by social invitations of experienced colleagues to participate, observe and listen in everyday work activities.

Experienced colleagues as significant others

The important pedagogic role of the significant other is stressed through Vygotsky's zone of proximal development (Vygotsky, 1986). This refers to the distance between what active engagement with others helps learners achieve, compared with what they can achieve independently. The proximity of experienced colleagues is a core condition to realize supported participation. For instance, access to colleagues, such as supervisors, allow students to discuss and further develop newly acquired working strategies (Goller et al., 2020). Thus, for supervisors, workplace learning includes making overt the

hidden knowledge that students may not be able to acquire alone (e.g. Ruoranen et al., 2017).

Since students' learning is situated in vocational communities and embedded in social systems, supporting workplace learning should be seen as collective in nature (e.g. Lave & Wenger, 1991). Experienced colleagues are mutually tasked to guide students' ability to participate in vocational activities and to gain various relevant learning experiences (Billett, 2002; Dornan et al., 2007). Nevertheless, students are commonly adjacent to experienced colleagues who have been given a task to actively support students in their learning (Billett, 2002; Mikkonen et al., 2017; Nieuwenhuis et al., 2017). Those experienced colleagues are often named supervisors, workplace educators, mentors, tutors, coaches or preceptors. The underlying meanings and activities of these concepts differ from each other, but they all intend to provide pedagogic support to students' workplace learning (e.g. Mikkonen et al., 2017). In this study, we choose to use the term experienced colleague or supervisor to refer to all significant others in vocational communities that provide pedagogic practices for students.

Manifestations of pedagogic practices

Pedagogic practices are means by which learning experiences can be enriched to promote students' learning. These are manifestations of what supervisors enact through activities and interactions to promote students' engagement in learning experiences at work. Purposes of workplace learning vary from vocational orientation, to acquisition of competences, and participation in vocational communities (Nieuwenhuis et al., 2017). To grasp the diverse manifestations of pedagogic practices at workplaces, it would be interesting not only to gain insight into which activities supervisors undertake, but also to understand their reasons and motives for doing so (Khaled et al., 2021). Supervisors' intentions to intervene can either be practical, cognitive or affective in nature (Yardley et al., 2012). Nevertheless, we realize that intentions and reasons of supervisors' activities will remain partly invisible, or even non-existent, in literature descriptions of pedagogic practices.

Workplace learning differs from learning in school contexts. However, frameworks for pedagogic strategies in vocational school settings could help to grasp pedagogic practices in work settings. De Bruijn (2012) differentiates modelling, guiding, monitoring, scaffolding and coaching as pedagogic strategies. For instance, through observations and imitations, students are modelled by experienced colleagues what their work entails in specific vocational contexts. Learning arises through processes of observation, imitation and practice that comprise everyday work activities (Billett, 2004). Furthermore, using scaffolding strategies is aimed at facilitating students' self-regulative learning processes. This requires fine-tuned support based on an ongoing diagnosis

and prolonged monitoring to generate insights in the learner's level of understanding and changing performance (De Vos et al., 2019). In addition, experienced colleagues, who coach students, intend to enhance their reflection level by asking critical reflective questions and elaborating situational feedback (Billett, 2004; Tynjälä, 2013). Specifying how manifestations of pedagogic practices are described in literature, will lead to a better understanding of supporting workplace learning in practice.

Research question

Students' workplace learning, including apprenticeships, internships, or clinical experiences, is guided by experienced colleagues. They invite them to engage and participate in learning experiences at work. This literature review will deepen the understanding of the supportive role of experienced colleagues at work. To provide a comprehensive overview into how pedagogic practices play out in practice, we gather literature descriptions of pedagogic practices at a micro level. These descriptions include applications of guided learning, teaching methods, and De Bruijn's (2012) pedagogic strategies. We will review descriptions of supervisors' activities and interactions in the context of VET students' workplace learning. The main research question of this systematic literature reviews is: **Which pedagogic practices applied by experienced colleagues at work, in the context of students' vocational learning, can be identified and illustrated?**

2.3. Methods

The research method is based on procedural steps for systematic literature reviews (Petticrew and Roberts 2006).

Search strategy

Based on our research question and theoretical framework, a combination of synonyms and related definitions of three sets needed to be evident in the search: (1) pedagogic practices, (2) experienced colleagues, and (3) workplace learning (Appendix A). Students' learning in the context of vocational education and training programmes was considered as a fourth set of search terms. However, based on trial searches, this fourths set was discarded since it resulted in the leaving out of relevant articles. Four databases were selected to ensure a broad range of studies from a variety of occupational fields.

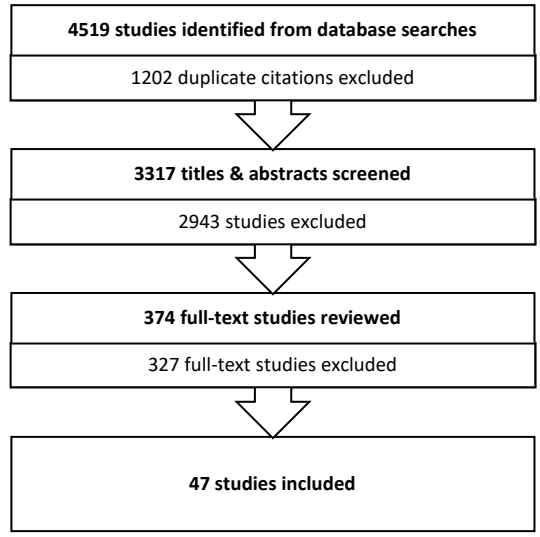
In addition to identical sets of terms for searching in titles and abstracts, the search string included database-specific key terms. The first set included search terms related to 'pedagogic practices'. In addition to general terms such as 'teaching methods', 'educational strategies', and 'instruction', we included De Bruijn's (2012) pedagogic strategies as search terms. The second set included the terms 'supervisors', 'educators', 'mentors',

'tutors', 'coaches' and 'preceptors' to specifically search for provided support by experienced colleagues. The third set included various forms of 'workplace learning', such as 'learning at work', 'internship' and 'apprenticeship'. To capture relevant articles that use different terms than the ones we specifically searched for in titles and abstracts, we used Descriptors in ERIC, MeSH-terms in PsycINFO and PubMed, and Headings in Cinahl. For example, the Descriptor 'workplace learning' and MeSH 'teaching' are linked to the related term 'training'. All search terms were carefully selected and tested in trial searches for relevance and added value. The search was conducted in 2017. Results were limited by only selecting peer-reviewed journal articles written in English.

Selection procedure

The procedure comprised three stages (Figure 1). First, studies were identified from database searches and duplicate citations were excluded. Second, titles and abstracts of studies were screened to identify potentially relevant studies. Third, full text studies were retrieved to determine whether they should be included. Articles were only included if they provided thick, situated descriptions of pedagogic practices at workplaces facilitated to support students' learning. Studies had to include descriptions of how pedagogic activities play out in situated work contexts. Inclusion and exclusion criteria were explicated and discussed within the research group (Appendix B).

Fig. 1 Study selection process



For quality reasons, 10% of the titles and abstracts were screened by the first two authors (LC & AK). After screening 330 titles and abstracts independently, the researchers achieved an observed agreement of 95% and an acceptable Cohen's kappa of 0,82.

Titles and abstracts of the remaining 2987 studies were screened by the first author. Of 374 studies, full-texts were retrieved and screened using the criteria for inclusion. To ensure objectivity, 15% of the full- text studies were screened independently by two researchers. Eventually, we included 47 studies published between 1992 and 2016.

Data analysis

In 47 studies, 525 extracts were coded at fourteen categories of pedagogic practices. Initially, results sections of the included 47 studies were read and reread carefully to select extracts. Meaningful extracts included a statement, or several related statements, that in coherence describe the manifestation of a pedagogic practice. Each extract provided a thorough description of pedagogic practices, embedded in work contexts. Thorough descriptions of pedagogic practices included situation-rich and specific descriptions of how experienced colleagues contribute to students' vocational learning at workplaces through activities or interactions. Next, extracts were coded by using the same words and short phrases as formulated by the authors of the original studies (Miles et al., 2014). Extracts were for instance coded as 'Write down specific example of students' teaching to talk about what could have been better' or 'Question about provided care intended to force connections between clinical encounter and prior knowledge'.

After coding eight studies, the 75 extracts coded so far were thematically analysis. While aiming to cluster, we approached relevant extracts of pedagogic practices inductively by letting thematic categories emerge from the data. Simultaneously, we took our theoretical framework into consideration to unify and interpret categories we encountered. Consensus was reached and thirteen categories of pedagogic practices were validated. To achieve reliable categories, multiple researchers were involved (Poortman & Schildkamp, 2012). This was accomplished by three rounds of ordering and discussing the 75 coded extracts within the research team. In the first round two authors discussed collaboratively the meanings and clustering of extracts (LC & LN). Next, two authors independently clustered all 75 extracts of eight studies in these preliminary categories (LC & AK). Lastly, differences were discussed with all authors until consensus was reached and thirteen categories were defined. At a later stage, by debating questionable coding of extracts, a fourteenth category emerged to capture all manifestations of pedagogic practices. Subsequently, coded extracts of the remaining 39 studies were allocated at fourteen categories. To continue ensuring reliability of the coding process in the last phase, four studies, including 44 extracts, were coded independently by two researchers (LC & AK).

2.4. Results

Analysis yielded descriptive information for 47 included studies (Table 1; complete overview and references are provided in Appendix C). Since we looked for thorough descriptions of how pedagogic practices play out in practice, all studies used qualitative research methods, such as interviews and observations. It is notable that studies in medical vocations and teaching are primarily present. These vocational domains are known to publish more on pedagogic practices at workplaces than other vocational domains.

Table 1 Descriptive information of includes studies

Year of publication (*N*)	1992 – 1998 (*7*) 2000 – 2009 (*16*) 2010 – 2016 (*24*)	
Country (*N*)	Australia (*2*) Canada (*6*) The Netherlands (*2*) New Zealand (*1*) Scotland (*1*) Sweden (*5*)	Sweden & Finland (*1*) Switzerland (*2*) Taiwan (*1*) United Kingdom (*4*) United States (*22*)
Occupation (*N*)	Athletic trainer (*4*) Car & industry (*1*) Midwife (*1*) Nurse (*16*)	Physician (*14*) Physician & dentist (*1*) Physiotherapy (*1*) Teacher (*9*)
Data (*N*)	Single methods: Documents (*2*) Interviews (*25*) Observations (*3*) Questionnaire (*1*)	Mixed methods: Interviews and documents (*1*) Interviews, documents and questionnaire (*1*) Interviews, documents and observations (*1*) Interviews and observations (*12*) Interviews and questionnaire (*1*)

Pedagogic practices supporting workplace learning

In the results sections of 47 studies, we found 525 extracts illustrating how pedagogic practices play out at workplaces. To operationalize pedagogic practices, these extracts were inductively coded in fourteen categories. Results are summarized in (Table 2). The subsequent paragraphs present the categories of pedagogic practices, sequenced from most to least coded. To elucidate embedded perspectives, results are presented with citations, such as interview quotes and observational field notes.

Table 2 Pedagogic practices applied at workplaces in the context of students' vocational learning

Experienced colleagues at work:		***N* coded extracts (in *N* studies)**
(1) Demonstrate vocational activities	• Are observed and imitated by students • Show skills, give instructions or articulate steps out loud to expand students' vocational knowledge and to introduce vocational activities • Model vocational competence and attitude, e.g. to trigger students' vocational beliefs	144 (*38*)
(2) Promote comfort and supportive learning environment	• Build confidence in relationships to create an approving atmosphere and supportive learning environment • Allow students to learn from mistakes and show mutual respect to make students feel comfortable at workplaces	80 (*29*)
(3) Be there, beside student	• Stand beside students to provide help, or take work over, when support is needed • Are nearby students, or check in at regular intervals, to monitor students' participation in work activities	58 (*27*)
(4) Entrust independent practice	• Consider their confidence in students for entrusting independent practice to them • Decide when it is safe to entrust more responsibilities to students • Allow students to work independently to develop autonomy in students' vocational learning	38 (*17*)
(5) Allow students in community	• Contribute to an approving learning climate when they recognize students as legitimate members of vocational communities • Allow students access to work specific attributes • Appreciate students as valuable members of communities when stimulating professional and social incorporation Enable multiple experienced colleagues to collectively contribute to students' vocational learning within the community	35 (*19*)
(6) Work and learning in collaborative relationships	• Work and learn together with students • Make students feel taken seriously in collaborative relationships • Open up to learn from students' insights and innovative approaches • Treat students as equal partners when sharing insights, discussing ideas and making decisions.	28 (*14*)
(7) Select suitable activities	• Create additional assignments or readings for students • Weigh up risks and benefits in selecting authentic activities for students • Select activities for students to afford suitable engagement in work	27 (*18*)
(8) Evaluate and reflect	• Facilitate conversations about students' learning progress, vocational development, feelings, values and growth • Reflect on students' experiences and beliefs to provide insights in their process of becoming vocational practitioners	27 (*16*)

Table 2 Pedagogic practices applied at workplaces in the context of students' vocational learning continued

Experienced colleagues at work:		***N* coded extracts (in *N* studies)**
(8) Evaluate and reflect	• Facilitate conversations about students' learning progress, vocational development, feelings, values and growth • Reflect on students' experiences and beliefs to provide insights in their process of becoming vocational practitioners	27 (*16*)
(9) Question vocational knowledge	• Ask specific, factual, questions to expand students' vocational knowledge and stimulate them to make connections between theory and practice • Ask open ended, why, or what-if questions to trigger students' vocational reasoning	21 (*11*)
(10) Provide feedback	• Provide situational feedback during or after work activities to improve students' practicing and steer their daily work activities • Use several ways of providing feedback, such as, giving direct hints or clues, providing nonverbal feedback, or telling students afterwards what was done well and what is needed to work on	19 (*15*)
(11) Diagnose competence	• Gather information about students' competence to enhance students' learning experience • Determine students' strengths and weaknesses to know how capable students are to contribute in work activities	18 (*11*)
(12) Intend to fade support	• Intend to step back and gradually fade support • Intend to gradually relinquish lead-role to students and push students towards taking initiatives and having autonomy	12 (*9*)
(13) Determine learning goals	• Share and discuss learning wishes and expectations to guide the way of working with students • Clarify learning goals to plan students' engagement in work activities	11 (*10*)
(14) Facilitate simulated practice	• Prepare students for authentic practice by providing opportunities to practice skills through simulations • Stimulate students to rehears their vocational reasoning through discussing what-if scenarios	7 (*4*)

(1) Demonstrate vocational activities

Experienced colleagues demonstrate daily work practices to students.

> In the beginning student Sue accompanied preceptor Pat in her daily work on the ward. Sue could see the nursing actions that Pat performed and how these were done. Pat used to tell Sue what she was doing while she did her nursing work. (Öhrling & Hallberg, 2000b, p. 27)

There are multiple ways of demonstrating vocational activities to students, such as letting students observe experienced colleagues who apply skills and articulate instructions at work. Experienced colleagues gradually introduce vocational activities to students. They first allow students to accompany them while performing their duties, before letting students partly take over or imitate certain activities. Vocational skills that are learned by students through observations and imitations are, for example, nurses listening through stethoscopes (Carlson et al., 2009), physicians providing gynecologic surgical care (Sutkin et al., 2014b), and teachers grading homework (Cuenca, 2011). Furthermore, experienced colleagues want to show their standards for vocational behaviour and beliefs to students, including demonstrations of ways to communicate, collaborate, solve problems, and handle stress. For example, experienced teachers wish to demonstrate to student-teachers how to cope with classroom discipline and routines (Koballa et al., 2008).

(2) Promote comfort and supportive learning environment

Establishing close relationships with experienced colleagues enables students to feel comfortable during their workplace experience.

> Marie's mentor was willing to befriend her and this activity encourages students to feel welcome and confident in their environment and more able to ask questions or to reveal worries that they might otherwise contain. (.) Such relationships foster a warm and nurturing learning climate without the emotional deterrents of fear and shame. (Spouse, 2000, p. 518)

Both experienced colleagues and students expect to have not only professional relationships, but also interpersonal interests in each other. For example, student-teachers describe their mentor-teachers as scouts, friends, or trouble-shooters (e.g. Evans-Andres et al., 2006). The interpersonal relationship with experienced colleagues contributes to students' confidence. Furthermore, experienced colleagues who allow students to learn from their mistakes, give praise, and show mutual respect contribute to an approving atmosphere for students (e.g. Rhoads et al., 2010). For example, experienced colleagues enact an open atmosphere when stimulating students to ask them all sort of questions

without fears (e.g. Hegenbarth et al., 2015). The need for experienced colleagues to provide supportive learning environments is also expressed in terms of protecting, sheltering, and preventing students from being overwhelmed or being engaged in unsafe experiences (e.g. Bourbonnais & Kerr, 2006).

(3) Be There, Beside Student

When working close by students, experienced colleagues are able to provide help when needed.

> I try to let the athletic training student do as much as they can on their own and let them learn, while still being close enough to correct them if they are doing something incorrectly. (Mazerolle et al., 2012, 162)

Students are encouraged to learn through engagement in work experiences in the proximity of experienced colleagues. By being there, beside students, experienced colleagues monitor students' actions. When students are directly observed, feedback can be given immediately and work can be turned over to, or taken over by, supervising colleagues (e.g. Piquette et al., 2015). For example, teachers are usually in the same classroom as student- teachers (e.g. Bower-Phipps et al., 2016). Additionally, physicians need to be in the proximity of student-physicians to answer their questions or take part in their clinical practice, both for patient safety as for teaching (e.g. Perron et al., 2009). Being there, beside students, could also be more subtle. For example, when experienced colleagues walk away from students, but check in at regular intervals. In some cases it only required the experienced colleague to be easily available whenever guidance was necessary (e.g. Harris & Naylor, 1992). In nursing, supervisors describe their selves as invisibly present for student-nurses, without hovering over them in every situation (Carlson et al., 2009).

(4) Entrust independent practice

A key consideration in entrusting independent practice is the confidence that experienced colleagues have in students.

> Maurine [experienced teacher] shared, "I have learned to trust Loren [student] completely, I know that he is a dedicated person, his heart is really in this. I trust him and (. . .) I'm not going to worry about what the kids are doing. (. . .). I did feel some apprehension about leaving my students, worried that [some] would walk all over Loren. But, he has learned to handle them very well." (Dever et al., 2000, pp. 246-247)

When experienced colleagues have trustful relationships with students, they feel more confident when allowing them to engage safely in independent practices. Subsequently,

experienced colleagues need to decide when it is safe enough for students to practice on their own. Important factors in these decisions are task complexity, students' performance and previous experiences (e.g. Haitana & Bland, 2011). For example, nurses' sense of responsibility for patient safety weighs heavily in their decision to entrust greater autonomy to student-nurses (Haitana & Bland, 2011). Similarly, teachers feel responsible for the education given to the children in their class (Aderibigbe et al., 2016). In the world of car mechanics, experienced colleagues consider the risk for students to burn themselves when entrusting them to work with hot metal pieces (Filliettaz, 2011). Nevertheless, experienced colleagues emphasize the importance of entrusting autonomy to students and widen their scope of responsibilities at work. For instance, teachers explicate how they believe that entrusting autonomy to students provides opportunities for them to stand on their own feet and make their own decisions (Koballa et al., 2008).

(5) Allow students in community

Students are allowed as valuable partners of vocational communities when access is given to work specific attributes.

> Providing student teachers with access to the tools to enact the practice of teaching were crucial in the ways in which Melissa and Nicole each experienced legitimacy during their field placement. As both participants noted repeatedly in their interviews, the things of teaching whether handouts, teacher's editions, or computer passwords were extremely important in helping them feel like a teacher. (Cuenca, 2011, p. 122)

Accepting students as community members is believed to contribute to an approving learning climate. The acceptance of students as legitimate members of vocational communities is related to responsibilities that are given to them by experienced colleagues. For example, experienced general practitioners who provide student general practitioners with their own consultation rooms symbolize students' recognition as team members, which strengthens their confidence (Van der Zwet et al., 2011). Allowing students in communities includes both professional involvement, where students are given responsibilities to participate in authentic work activities, and social involvement. An example of the latter is a teacher who stimulated social involvement through inviting a student-teacher to participate in the organization of a team bowling trip (Evans-Andres et al., 2006). Furthermore, Filliettaz (2011) emphasizes how pedagogic practices could be collectively distributed, to enable various experienced workers to contribute to student's integration as team partner.

(6) Work and Learn in Collaborative Relationships

Students and experienced colleagues work and learn together, developing collaborative relationships.

> A mentor (.) said, "This has been a give and take relationship. I have learned loads of new ideas from my intern." An administrator in another school agreed, "The intern comes in with that enthusiasm and spark and innovative ideas. It renews the veteran teacher she is working with." (Evans-Andres et al., 2006, p. 300)

Distinctions between experts and students become blurred when they are both learners in mutual processes. Experienced colleagues and students who work and learn collaboratively share insights, discuss ideas and, decide about work approaches as equal partners (e.g. Epstein et al., 1998; Hilli et al., 2014). Van der Zwet et al. (2011) illustrate how general practitioners take students seriously, and treat them as equal, through showing their vulnerability and sharing their uncertainties about patient care. Furthermore, when working in collaborative relationships, students are believed to contribute to the quality of work by means of innovative approaches or new ideas. For example, student-teachers share information about up-to-date science content (Koballa et al., 2008), student-physicians suggest a new use of antibiotics for urinary tract infections (Balmer et al., 2008), and student-nurses raise awareness of improving healthcare quality (Öhrling & Hallberg, 2000a).

(7) Select Suitable Activities

Experienced colleagues have to balance risks and benefits in selecting activities for students.

> "You don't want to assign the student to that patient. That patient's actively dying. The family's in there. They don't want a lot of what they would call intrusion or interference in the care of that." (Jeffers, 2014, p. 458).

Experienced colleagues are tasked to select suitable work activities for students to participate in. For instance, physicians assign less complicated patients to student-physicians (Gonzalo et al. 2012), and a nurse suggests to a student- nurse to give a report during a quiet night shift when there are less patients to discuss (Öhrling & Hallberg, 2000c). Additionally, some experienced colleagues design assignments for students to enhance their learning. For example, teachers ask student-teachers to write detailed lesson plans (Bower-Phipps et al., 2016), and athletic trainers ask student-athletic trainers to search for articles and present information to others (Mazerolle & Dodge, 2015).

(8) Evaluate and Reflect

Experienced colleagues support students' learning at the workplace by facilitating evaluations and reflections of their learning experiences.

> "After finishing each work day, I [preceptor] would encourage her [student] to write down what she learned during that day, what she did well, and what she needed to improve next time. (.) Just like writing a diary." (Chen et al. 2011, p. 195)

Reflections and evaluations are provided to support students in their process of becoming vocational practitioners. Experienced colleagues engage in reflective conversations with students about their growth, feelings, values and vocational development. For example, discussions of video-recordings of students' teaching are used to stimulate reflection (Bower-Phipps et al., 2016). Multiple studies in the medical context specifically highlight the importance of reflecting on mental aspects, by taking time to talk about work experiences with an emotional character (Jeffers, 2014; Öhrling & Hallberg, 2000b; Stenfors-Hayes et al., 2011). Studies further illustrate how teachers enable reflective conversations with student-teachers to explicate vocational beliefs related to their teaching experiences. These conversations include discussions about the effectiveness of group work, how to cope with cheating, and ways of helping children from various backgrounds (Aderibigbe et al., 2016; Bower-Phipps et al., 2016; Koballa et al., 2008).

(9) Question Vocational Knowledge

While learning at workplaces, students are asked questions to expand their vocational knowledge.

> While preparing an i.v. [intravenous] drip the preceptor asks, "How much potassium can you administrate i.v per hour?". Student "It is 20 [mmol] isn't it?". Then the preceptor asks the student "What is the normal blood level for potassium?". (Carlson et al., 2009, p. 524)

Studies illustrate various types and intentions of questions that are asked to students to recall or conceptualize their knowledge. Asking factual or conceptual questions to students enables experienced colleagues to know to what extent their knowledge has been developed. Questions are also asked to students to stimulate them to make connections between vocational encounters and prior knowledge. For instance, nurses question student-nurses regarding particular patient situations, 'tell me about the airways, what do you see?', 'what medications will work for this patient?' (Myrick 2002). Questioning is also used to trigger students' vocational reasoning through asking open ended questions (e.g. Sutkin et al. 2014a). Price and Mitchell (1993) stress how physicians intend to challenge student-physicians' higher order thinking through using 'why' and 'what-if' questions.

(10) Provide Feedback

Experienced colleagues provide specific situational feedback to students during or after observing their work activities.

> [A student] explained, "She [mentor teacher] would write down like a specific example or something that she would want to talk to me about after [observing me teach]. She would write it down and tell me what I did and what I could have done better." (Rhoads et al. 2010, 1013)

Feedback is provided with the intention to improve students' vocational practicing and steer their daily work activities. There are several ways of how experienced colleagues provide feedback to students. For example, physicians who give direct instructions or hints during work activities, such as 'better do it this way' or 'remember to' (Stegeman et al., 2013), or athletic trainers who provide formative feedback regarding students' strengths and weaknesses, such a s 'this is what you need to work on', 'this is what you are doing well' (Aronson et al., 2015; Mazerolle et al., 2014). Examples of nonverbal feedback are also found, such as, physicians who pause, say nothing, when student-physicians give incorrect answers, to let them reconsider their clinical reasoning (Ende et al., 1995), or teachers who make eye contact with student-teachers to let them realize a child answered incorrectly (Cuenca, 2011).

(11) Diagnose Competence

Experienced colleagues gather information to diagnose students' competence.

> "I asked my colleagues what they thought about the performance of the new nurse I was teaching. Their different perspectives helped me determine whether I should speed up or slow down my teaching, and what content needed greater emphasis." (Chen et al., 2011, p. 135)

Diagnosing students' competence enables experienced colleagues to check how capable students are of performing work activities and to help them to enhance their learning experience (e.g. Stenfors-Hayes et al., 2011). For example, nurses diagnose student-nurses' competence in psychosocial support to decide whether to let them participate in end of life care (Jeffers, 2014), and students' sense of responsibility to decide whether to let them give medications to patients (Bourbonnais & Kerr, 2006). Students' competence is assessed by listening to their reasoning, observing them, asking questions, or obtaining colleagues' perspectives. Multiple studies explicitly mention the initial meeting as important for experienced colleagues to assess what students are capable of doing (Bourbonnais & Kerr, 2006; Davis et al., 1993; Haitana & Bland, 2011; Myrick, 2002).

(12) Intend to Fade Support

Experienced colleagues intend to fade their pedagogic support during students' workplace experiences.

> Margie explained her expectations for the growth in knowledge and teaching competence of the beginning teacher she mentored in these words, "He's going to get more and more responsibility as we go along and then, you know, I'll let go of the bike and let him ride". (Koballa et al., 2008, p. 399)

Fading support includes a process of letting students go and pushing them towards taking initiatives and having autonomy in practice (e.g. Kennedy et al., 2007). Some studies describe a scheduled process of reversing roles where experienced colleagues start as role models the first weeks, and gradually give more autonomy to students (Bower-Phipps et al., 2016; Bradbury & Koballa, 2008; Davis et al., 1993). Intentions to gradually reduce support seem related to expectations of growth in students' vocational development. These expectations are not always met; for example, when student-teachers prefer to continue observing and relying upon expert-teachers, instead of gradually feeling comfortable in the classroom and taking more initiative in teaching (Bradbury & Koballa, 2008).

(13) Determine Learning Goals

Learning goals clarify learning wishes and expectations.

> Most preceptors discussed with the student at the beginning of the nursing practice her/his goals. By asking questions, talking and listening, they obtained insight into the students' previous experience and learning needs. The preceptors discussed, identified and accepted the students' experienced primary needs for learning during one of the first days of practice. (Öhrling & Hallberg, 2000c, p. 533)

Experienced colleagues and students determine learning goals together to guide their way of working and participation in daily activities (e.g. Velo & Smedley, 2014). To identify learning goals, experienced colleagues sometimes use students' study guides (Öhrling & Hallberg, 2000b), or short questionnaires that cover areas such as students' prior experiences and expectations (Carlson et al., 2009). However, the unpredictable context of workplaces asks for learning goals to be adapted to actual situations. For instance, the conditions for student-nurses' learning needs are not always available on the ward (Öhrling & Hallberg, 2000c).

(14) Facilitate Simulated Practice

Experienced colleagues encourage students to practice their skills in simulated situations.

> ATSs [athletic trainer students] stated that their preceptor stimulated their critical thinking skills while having the students think through simulations. [.] "[My preceptor] would fake

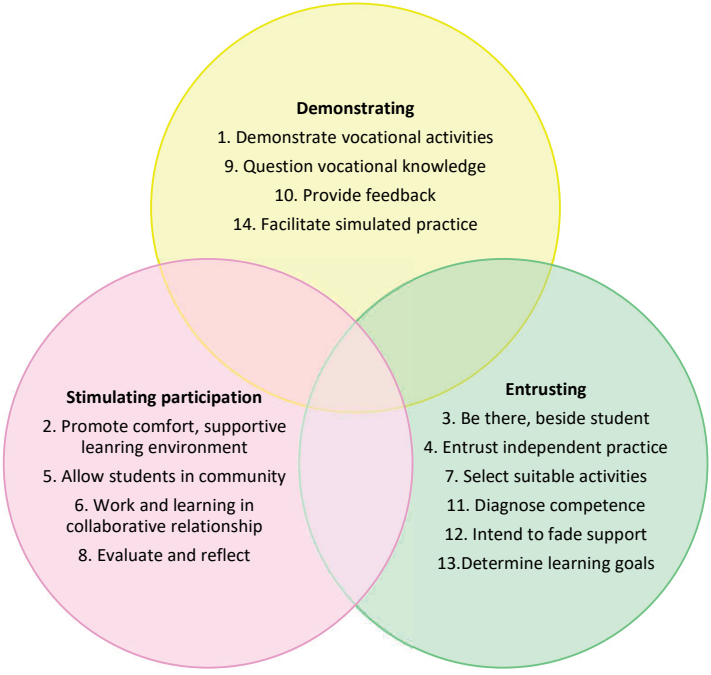
> an injury and I would be responsible for doing a very quick evaluation and then getting the athlete off in the quickest time possible to not hold up the game any more than necessary." (Aronson et al., 2015, pp. 223-224)

By facilitating simulated practices, experienced colleagues tailor to students' learning needs and provide opportunities to train their vocational skills and reasoning (e.g. Cope et al., 2000). Experienced colleagues facilitate simulated practices for students to prepare them safely for authentic practice and to usefully fill in quiet moments at work (Finnerty & Collington, 2013; Mazerolle et al., 2012). For example, midwifes let student-midwifes practice their suturing skills on sponges (Finnerty & Collington, 2013) and athletic trainers discuss what-if scenarios with student-athletic trainers to trigger their vocational reasoning (Aronson et al., 2015).

2.5. Conclusions

This literature review presents manifestations of pedagogic practices enabled by experienced colleagues in the context of students' workplace learning. We framed pedagogic practices as being shaped by social invitations of experienced colleagues to participate, observe and listen in everyday work activities. Fourteen categories illustrate a diversity of pedagogic activities, including how experienced colleagues are observed and imitated by students, collaboratively work and learn together with students, and select suitable activities for students to participate in. Although we identified fourteen separate categories to operationalize pedagogic practices, there seems to be overlap and interdependence between them. For instance, balancing risks and benefits in selecting tasks for students (category 'select suitable activities') is closely related to deciding when to entrust more responsibilities to students (category 'entrust independent practice'). Through interpretation of the diversity, interrelatedness, and intentions of our categories of pedagogic practices we come to three perspectives on workplace pedagogy (Figure 2).

Fig. 2 Perspectives on supporting students' workplace learning



Demonstrating

Pedagogic practices aimed at demonstrating vocational activities to students are found most in the literature review. This is in line with our conceptual understanding that students primarily learn at workplaces through observing and imitating experienced colleagues (Billett, 2004,). Our findings illustrate that modelling is a primary job of supervisors (e.g. Mazerolle et al., 2015). They give instructions, facilitate simulations, ask questions and provide feedback. Furthermore, students observe and imitate how experienced colleagues communicate, collaborate, solve problems, and handle stress (e.g. Johnson et al., 1994). Supervisors' demonstrations of vocational practices are embedded in students' every day working life. For instance, surgeons talk out loud while operating (Sutkin et al., 2014a). Consistent with previous research, verbalizations make experts' thinking accessible to students as they enact work tasks (Billett, 2004; Gowlland, 2014). Thus, demonstrating vocational activities, in its broadest sense, is common behaviour of experienced colleagues at workplaces.

Stimulating participation

Students engage in daily work practices. Promoting comfort and a supportive learning environment are key variables in stimulating this vocational participation. In line with previous research, results of our literature review indicate that strong and trusting

relationships intermediate students' increasing level of vocational participation and a sense of belonging (e.g. Rowe et al., 2021). Findings on 'work and learn in collaborative relationships' relate relationship building with students' social integration and participation in vocational communities. The latter is closely related to 'evaluating and reflecting' on vocational development, which includes reflective conversations about students' feelings, values and growth. Our review further reveals that experienced colleagues stimulate students' participation through giving them access to daily work routines and through socially integrating them in vocational communities. What significantly contributes to students' participation, is the access they are given to vocational attributes and tools, such as the teacher's version of the school agenda (e.g. Cuenca, 2011). This teacher's agenda is a cultural attribute that embodies the teaching tradition and thus becomes part of the process of vocational participation and acculturation of student-teachers.

Entrusting

Results indicate the process where supervisors gradually fade their support and intend to push students towards having more responsibilities. In reference to 'selecting suitable activities,' experienced colleagues ensure a gradual build-up in students' work activities. Our findings imply that experienced colleagues stand beside students to continuously diagnose and guide their vocational activities and provide immediate feedback and help when needed. Goals of learning are specified together with experienced colleagues. When entrusting responsibilities to students, experienced colleagues seem to wrestle with the level of autonomy to provide to students. They balance between competing interests of ensuring quality and safety at work, and entrusting students with appropriate and progressively greater responsibility. Although making mistakes should be part of learning processes, the stakes could be high with limited room for trial and error, especially in medical work contexts (Harteis & Bauer, 2014; Van der Leeuw et al., 2018).

2.6. Discussions and implications

The rationale for undertaking this literature review was to deepen the understanding of pedagogic practices that support students' workplace learning as part of their vocational development. A literature review was conducted to operationalize how supervisors' pedagogic practices are applied in workplace practices. In line with our theoretical framework, supporting students' vocational development includes supervisors' intentional use of pedagogic strategies to improve students' vocational learning (De Bruijn 2012; Khaled et al., 2021). Guiding, modelling, scaffolding, monitoring and coaching, are recognized as important practices for supervisors at workplaces (De Bruijn, 2012). However, we gained insight into which activities supervisors undertake, but only party

in their intentions for doing so. The incomplete overview of intentions and reasons for providing pedagogic practices, makes it inappropriate to relate De Bruijn's pedagogic strategies (De Bruijn, 2012) to our results. Moreover, students are not always explicitly being instructed following well-considered intentions. Especially at workplaces, they also learn through being invited to participate in everyday working life (Billett, 2004). Thus, pedagogic practices presented in current article also include more spontaneous and facilitative guiding behaviour.

Reviewing how pedagogic practices play out in practice, enabled us to look beyond the existing frameworks (cf De Bruijn, 2012; Mikkonen et al., 2017). Through approaching learning opportunities as being shaped in everyday working life, we indicated three perspectives on workplace pedagogy. Supervisors could be encouraged to reflect on their use of pedagogic practices to support students' vocational learning from the perspectives of demonstrating and entrusting work activities, and stimulating students' participation at workplaces. Pedagogic practices are partly obscured in daily work activities. Therefore, it is important that supervisors recognize the learning potential of daily activities and adaptively respond to it (Billett, 2002; Sommer, 2014; Van de Wiel et al., 2011).

Based on the socio-cultural perspective on learning where pedagogic practices are embedded in social interactions at work, we expected that supporting students' vocational participation would be collectively taken up by the work community as a whole, and not only by single individuals (e.g. Billett, 2002; Mikkonen et al,. 2017). Remarkably, most studies refer to single designated experienced colleagues with the task to support students. Not multiple colleagues, but individual supervisors, mentors or preceptors are mentioned to support students' workplace learning. An exception is the study of Filliettaz (2011), who describes how a student becomes an equal partner of the work team because multiple experienced colleagues together support his work and learning process. When students' workplace learning will be perceived as responsibility for the vocational community as whole, we would perhaps advance understanding into how collective contributions could support students' learning experiences.

We approached students' participation at work as gradually being stimulated through perceived legitimacy conferred by experienced colleagues (cf. Lave & Wenger, 1991). Promoting comfort, confidence, and relationships are found to be associated with students' engagement and participation at work. Furthermore, similar to assessment processes at work, experienced colleagues are continuously challenged with considerations of students' needs and readiness (De Vos et al., 2019; Ten Cate, 2013). Especially the perspective of 'entrusting vocational activities' involves considerations and diagnoses of students' readiness in relation to provided autonomy. To understand the gradual

perceived legitimacy of students at work, insights in entrustment decisions, such as the concept of EPAs, may help to appreciate how entrustment is an essential element in supporting workplace learning. EPAs (Entrustable Professional Activities) are work activities to entrust to students once they have attained sufficient specific competence (Ten Cate, 2013). It would be of value to deepen insights into the complex role of supervisors' balancing interests and decisions in the context of their applied pedagogic practices to entrust students' vocational engagement at work.

Limitations

This literature review had some limitations. (1) We included peer-reviewed journal articles written in English, and excluded on forehand contributions in other languages and forms, such as book chapters. For example, Filliettaz & Billett (2015) provided insights into culturally-specific developments of traditions in learning through work in the Francophone world. Extending the inclusion criteria might have provided us some additional relevant sources. (2) The selection of articles does not include the most recent articles, since the literature search was conducted in 2017. We decided to check for recent journal articles in the vocational domain by taking samples in the Journal of Education and Work and the Journal of Vocational Education and Training. In these journals, we screened articles published between 2017 and 2020. None of these articles has led to a different understanding or expansion of the fourteen categories of pedagogic practices. Although we assume that saturation has been achieved, it would be interesting for researchers to further review the impact of recent developments on workplace pedagogy. (3) We aimed to include pedagogic practices situated in multiple occupations, but most articles describe practices in medical occupations, or in teaching. These vocational domains are known to support teaching and learning studies, and a culture of reflective practice. Consequently, the domains of medical vocations and teaching are more inclined to publish on pedagogic practices at workplaces than other vocational domains (e.g. Nieuwenhuis et al., 2017). Future research could explore similarities or differences between occupations. Different domains might offer students different pedagogic practices for learning at work (e.g. Virtanen et al., 2014). The categories and perspectives of pedagogic practices form starting points for further research. Field research is recommended to further explore how pedagogic practices are embedded in placements and contribute to students' workplace learning.

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Appendix Table C provides the references for included studies in present systematic literature search

Appendix A Search terms

	SET 1 AND Pedagogic practices	**SET 2 AND Experienced colleagues**	**SET 3 Workplace learning**
Search terms titles or abstracts	Pedagogic practice(s) OR Didactic / didactical OR Pedagogical / pedagogy OR Teaching method /methods OR Teaching strategy / strategies OR Education(al) method / methods OR Education(al) strategy / strategies OR Learning support OR Guided learning OR Modeling / modelling OR Role model / models OR Monitoring OR Scaffolds / scaffolding OR Instructing / instruction OR Coaching OR Mentoring OR Teaching roles / OR Teaching behaviour / behaviour OR Feedback	Supervisor(s) OR Educator(s) OR Mentor(s) OR Tutor(s) OR Coach(es) OR Preceptor(s)	Workplace learning OR Learning in the workplace OR Learning at work OR Internship OR Apprenticeship OR Clerkship OR Clinical experience OR On the job learning
***Descriptors Eric**	OR Coaching (performance) OR Career guidance OR Teaching guidance OR Educational strategies OR Role models OR Progress Monitoring OR Teacher role OR Teacher behaviour OR Feedback (response)	OR Mentors OR Supervisors	OR Internship programs OR Apprenticeships OR Workplace learning OR Clinical experience
***Descriptors PsycInfo**	OR Coaching psychology OR Occupational guidance OR Teaching methods OR Role models OR Feedback	OR Mentor	OR Internship programs OR Medical internship OR Apprenticeship
***MeSH PubMed& PsycInfo**	OR Teaching	OR Mentors	OR Preceptorship OR Internship and residency OR Internship, nonmedical OR Clinical clerkship
***Headings Cinahl**	OR Teaching methods OR Role models OR Feedback	OR Mentorship OR Supervisors and supervision OR Clinical supervision OR Student supervision	OR Internship and residency OR Preceptorship

* The search strings for each database include identical general terms for searching in titles and abstracts and database-specific terms to include the search of related terms.

Appendix B Criteria for study selection

Criteria	Inclusion	Exclusion
	Peer-reviewed journal articles written in English	
Workplace	Context of learning is an authentic workplace representative for the occupation being learned.	Context of learning in other settings such as in classrooms, simulated workplace settings, at home, or online.
Vocational communities	Support is provided by experienced colleagues, such as workplace educators, supervisors, preceptors, mentors.	Support is provided by peers, or at a distance from workplaces by school-teachers or through (online) tools.
Pedagogic practices	Rich, concrete descriptions of provided pedagogic practices illustrated in their situated context.	General descriptions of pedagogic practices, which are not situated in specific contexts.
Novices	Starters (such as trainees, apprentices, interns) who learn vocations through engagement in workplace activities. Including student-teachers, student-nurses and so on in the context of vocational qualification programs, and other beginning vocational practitioners.	Experienced vocational practitioners learning something new in their existing role. Specific groups of novices, such as special needs students or specific ethnical groups.
Quality	Research question and/or aim is defined. Research method is transparent and suitable to answer the research question. Transparent presentation of results.	Not clear what arguments and statements are based on.

Appendix C Overview of included studies

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Aderibigbe, S., Colucci-Gray, L., & Gray, D.S.	2016	Conceptions and expectations of mentoring relationships in a teacher education reform context	Mentoring & Tutoring: Partnership in Learning	United Kingdom	Interviews	Teacher	Supporter teachers (*6*)	1(*1*), 4(*1*), 5(*2*), 8(*1*), 13(*1*)
Aronson, P.A., Bowman, T.G., & Mazerolle, S.M.	2015	Evaluating perceptions of culminating clinical education experiences of senior athletic training students	Athletic Training Education Journal	United States	Questionnaire	Athletic trainer	Senior students (*19*)	1(*2*), 3(*3*), 8(*1*), 10(*1*), 14(*3*)
Balmer D.F., Serwint, J.R., Ruzek, S.B., & Giardino, A.P.	2008	Understanding pediatric resident - continuity preceptor relationships through the lens of apprenticeship learning	Medical Education	United States	Interviews & observations	Physician	Preceptors (*10*) & residents (*10*)	1(*3*), 3(*1*), 5(*1*), 6(*3*), 12(*1*)
Bourbonnais, F.F., & Kerr, E.	2006	Preceptoring a student in the final clinical placement: reflections from nurses in a Canadian hospital	Journal of Clinical Nursing	Canada	Interviews	Nurse	Supervisors (*8*)	1(*3*), 2(*2*), 3(*1*), 11(*4*), 13(*1*)
Bower-Phipps, L., Van Senus Klecka, C., & Sature, A.L.	2016	Developing mentors: An analysis of shared mentoring practices	The New Educator	United States	Interviews (individual and focus group) & observations	Teacher	Mentors (*4*) & interns (*4*)	1(*4*), 3(*3*), 5(*1*), 6(*1*), 7(*1*), 8(*2*), 10(*1*), 12(*1*)
Bradbury, L.U., & Koballa Jr., T.R.	2008	Borders to cross: Identifying sources of tension in mentor-intern relationships	Teaching and Teacher Education	United States	Interviews & observations	Teacher	Mentors (*2*) & interns (*2*)	1(*5*), 2(*1*), 6(*3*), 7(*2*), 12(*2*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Carlson, E., Wann-Hansson, C., & Pilhammar, E.	2009	Teaching during clinical practice: strategies and techniques used by preceptors in nursing education	Nurse Education Today	Sweden	Interviews (focus group) & observations	Nurse	Preceptors (*29*)	1(*3*), 2(*1*), 3(*1*), 8(*4*), 9(*2*), 10(*2*), 13(*1*)
Chen, Y.H., Duh, Y.J., Feng, Y.F., & Huang, Y.P.	2011	Preceptors' experiences training new graduate nurses: A hermeneutic phenomenological approach	Journal of Nursing Research	Taiwan	Interviews	Nurse	Preceptors (*15*)	2(*1*), 4(*1*), 5(*1*), 7(*1*), 8(*2*), 11(*1*)
Cope, P., Cuthbertson, P., & Stoddart, B.	2000	Situated learning in the practice placement	Journal of Advanced Nursing	Scotland	Interviews	Nurse	Students (*30*)	1(*1*), 3(*1*), 4(*1*), 5(*1*), 9(*1*), 14(*1*)
Côté, L., & Laughrea, P.	2014	Preceptors' understanding and use of role modeling to develop the CanMEDS competencies in residents	Academic Medicine	Canada	Interviews	Physician	Preceptors (*20*)	1(*13*), 2(*1*), 7(*1*), 8(*1*), 10(*1*)
Cuenca, A.	2011	The role of legitimacy in student teaching: learning to feel like a teacher	Teacher Education Quarterly	United States	Interviews & observations	Teacher	Cooperating teachers (*2*) & students (*2*)	1(*4*), 3(*2*), 4(*1*), 5(*2*), 10(*1*)
Davis, S.D., Sawin, K.J., & Dunn, M.	1993	Teaching strategies used by expert nurse practitioner preceptors: a qualitative study	Journal of the American Academy of Nurse Practitioners	United States	Interviews (structured)	Nurse	Preceptors (*11*), physicians (*4*)	1(*1*), 2(*1*), 3(*1*), 4(*3*), 6(*1*), 7(*2*), 9(*1*), 11(*1*), 12(*2*)
Dever, M.T., Johnson, F.F., & Hobbs, D.E.	2000	A qualitative analysis of an intensive mentor-apprentice collaboration: MAC	Journal of Research and Development in Education	United States	Interviews & documents (personal reflection logs)	Teacher	Mentors (*2*) & apprentices (*2*)	1(*9*), 2(*3*), 3(*1*), 4(*2*), 6(*5*), 13(*1*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Ende, J., Pomerantz, A., & Erickson, F.	1995	Preceptors' strategies for correcting residents in an ambulatory care medicine setting: a qualitative analysis.	Academic Medicine	United States	Observations	Physician	Preceptors (*11*) & interns (*11*)	2(*8*), 9(*2*), 10(*2*)
Epstein, R.M., Cole, D.R., Gawinski, B.A., Piotrowski-Lee, S., & Ruddy, N.B.	1998	How students learn from community-based preceptors	Archives of Familiy Medicine	United States	Documents (critical incident descriptions)	Physician	Students (*37*)	1(*10*), 2(*2*), 4(*2*), 6(*1*)
Evans-Andres, M., Kyle, D.W., & Carini, R.M.	2006	Is mentoring enough? An examination of the mentoring relationship in the pilot two-year kentucky teacher internship program	The New Educator	United States	Interviews & surveys	Teacher	Principals (*8*), mentors (*10*), interns (*21*)	1(*1*), 2(*1*), 3(*1*), 5(*1*), 6(*1*), 10(*1*)
Filliettaz, L.	2011	Collective guidance at work: a resource for apprentices?	Journal of Vocational Education and Training	Switzerland	Observations (video)	Car & Industry	Apprentices (*2*) & multiple colleagues in observed workplaces	1(*3*), 3(*1*), 4(*1*), 5(*7*), 7(*1*)
Finnerty, G., & Collington, V.	2013	Practical coaching by mentors: student midwives' perceptions	Nurse Education in Practice	United Kingdom	Documents (written or audio-diaries)	Nurse	Students (*19*)	1(*3*), 8(*1*), 10(*1*), 12(*1*), 14(*2*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Gonzalo, J.D., Heist, B.S., Duffy, B.L., Dyrbye, L., Fagan, M.J., Ferenchick, G., Harrell, H., Hemmer, P.A., Kernan, W.N., Kogan, J.R., Raffert, C., Wong, R., & Elnicki, D.M.	2012	The art of bedside rounds: a multi-center qualitative study of strategies used by experienced bedside teachers	Journal of General Internal Medicine	United States	Interviews	Physician	Physicians (*34*)	1(*6*), 2(*1*), 3(*1*), 7(*1*), 9(*2*), 13(*1*)
Haitana, J., & Bland, M.	2011	Building relationships: the key to preceptoring nursing students	Nursing Praxis in New Zealand	New Zealand	Interviews	Nurse	Preceptors (*5*)	2(*3*), 4(*7*), 11(*1*), 12(*1*)
Harris, D., & Naylor, S.	1992	Case study: learner physiotherapists' perceptions of clinical education	ETTI Educational and Training Technology International	United Kingdom	Interviews, documents (diaries) & questionnaires	Physiotherapist	Students (*23*)	3(*10*)
Hegenbarth, M., Rawe, S., Murray, L., Arnaert, A., & Chambers-Evans, J.	2015	Establishing and maintaining the clinical learning environment for nursing students: a qualitative study	Nurse Education Today	Canada	Focus groups	Nurse	Preceptors (*17*)	2(*3*), 5(*2*)
Hilli, Y, Salmu, M., & Jonsén, E.	2014	Perspectives on good preceptorship: A matter of ethics	Nursing Ethics	Sweden & Finland	Interviews	Nurse	Preceptors (*27*)	1(*1*), 2(*11*), 5(*1*), 6(*4*), 8(*1*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Jeffers, S.	2014	Nurse faculty perceptions of end-of-life education in the clinical setting: A phenomenological perspective	Nurse Education in Practice	United States	Interviews	Nurse	Nurse faculty (*10*)	1(*2*), 2(*3*), 7(*1*), 8(*1*), 11(*1*)
Johnson, L.R., Cohen, M.Z., & Hull, M.M.	1994	Cultivating expertise in oncology nursing: methods, mentors, and memories	Oncology Nursing Forum	United States	Interviews	Nurse	Experienced nurses (*38*)	1(*5*), 2(*4*)
Kennedy, T.J.T., Lingard, L., Baker, G.R., Kitchen, L., & Regehr, G.	2007	Clinical oversight: conceptualizing the relationship between supervision and safety	Journal of General Internal Medicine	Canada	Interviews & observations	Physician	Interviews: physicians (*12*), residents (*28*), medical students (*17*), nurses (*8*) Observations: 12 teaching teams (*88*)	1(*2*), 3(*6*), 4(*4*), 5(*2*), 6(*1*), 12(*1*)
Koballa Jr., T.R., Bradbury, L.U., Glynn, S.M., & Deaton, C.M.	2008	Conceptions of science teacher mentoring and mentoring practice in an alternative certification program	Journal of Science Teacher Education	United States	Interviews & observations	Teacher	Mentors (*6*) & beginning teachers (*6*)	1(*11*), 2(*4*), 4(*2*), 6(*3*), 7(*3*), 8(*4*), 12(*2*)
Manyon, A., Shipengrover, J., McGuigan, D., Haggerty, M., James, P, & Danzo, A.	2003	Defining differences in the instructional styles of community preceptors	Family Medicine	United States	Interviews	Physician	Preceptors (*14*)	1(*3*), 2(*1*), 3(*1*), 4(*1*), 5(*1*), 11(*2*)

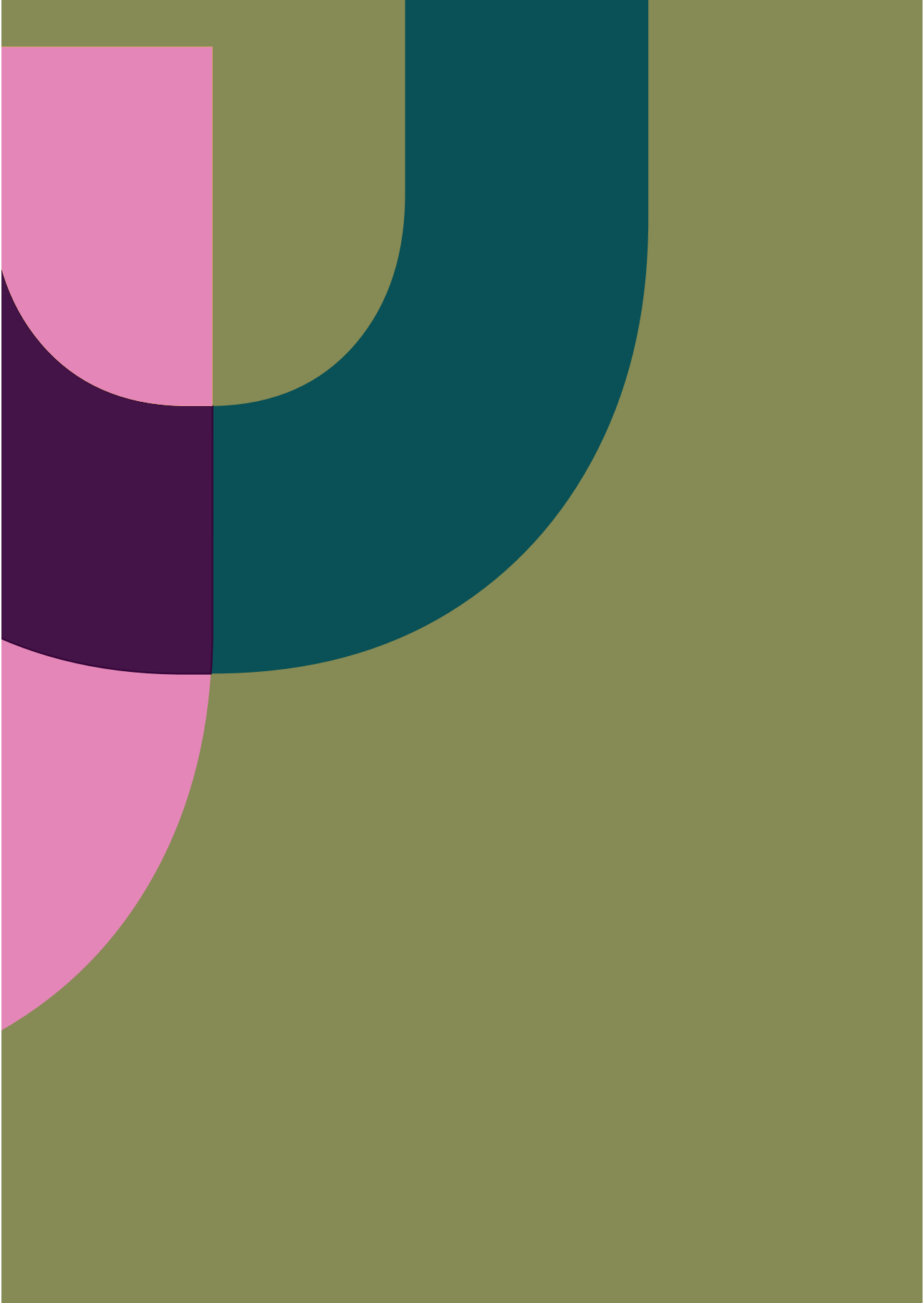
Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Mazerolle, S.M., Bowman, T.G., & Benes, S.S.	2014	Defining the engaging learning experience from the athletic training student perspective	Athletic Training Education Journal	United States	Interviews (online)	Athletic trainer	Students (*21*)	2(*2*), 3(*2*), 7(*1*), 8(*1*), 10(*2*)
Mazerolle, S.M., Bowman, T.G., & Dodge, T.M.	2012	Clinical instructional methods employed by preceptors in the clinical setting	Athletic Training Education Journal	United States	Interviews	Athletic trainer	Preceptors (*24*)	1(*2*), 2(*3*), 2(*2*), 8(*1*), 9(*1*), 10(*1*), 14(*1*)
Mazerolle, S.M., & Dodge, T.	2015	Role of clinical education experiences on athletic training students' development of professional commitment	Athletic Training Education Journal	United States	Interviews	Athletic trainer	Students (*17*)	1(*3*), 2(*1*), 3(*3*), 7(*1*)
Myrick, F.	2002	Preceptorship and critical thinking in nursing education	Journal of Nursing Education	Canada	Interviews & observations	Nurse	Preceptors (*6*) & preceptees (*6*)	1(*2*), 2(*2*), 3(*2*), 5(*6*), 7(*2*), 9(3), 11(*2*), 13(*6*)
Öhrling, K., & Hallberg, I.R.	2000a	Nurses' lived experience of being a Preceptor	Journal of Professional Nursing	Sweden	Interviews	Nurse	Preceptors (*17*)	1(*2*), 2(*2*), 3(*1*), 4(*1*), 6(*1*), 7(*1*), 8(*3*), 11(*2*)
Öhrling, K., & Hallberg, I.R.	2000b	Student nurses' lived experience of preceptorship. Part 2 - the preceptor-preceptee relationship	International Journal of Nursing Studies	Sweden	Interviews	Nurse	Students (*17*)	1(*5*), 2(*4*), 3(*3*), 4(*4*), 5(*2*), 7(*3*), 8(*2*), 11(*1*), 13(*1*)
Öhrling, K., & Hallberg, I.R.	2000c	The meaning of preceptorship: nurses' lived experience of being a preceptor	Journal of Advanced Nursing	Sweden	Interviews	Nurse	Preceptors (*17*)	7(*1*), 11(*2*), 12(*1*), 13(*2*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Perron, N.J., Sommer, J., Hudelson, P., Demaurex, F., Luthy, C., Louis-Simonet, M., Nendaz, M., De Grave, W., Dolmans, D., & Van Der Vleuten, C.P.M.	2009	Clinical supervisors' perceived needs for teaching communication skills in clinical practice	Medical Teacher	Switzerland	Interviews (focus groups)	Physician	Supervisors (*19*)	1(*1*), 3(*3*), 7(*1*), 8(*1*)
Piquette, D., Moulton, C.A., LeBlanc, & V.R.	2015	Model of interactive clinical supervision in acute care environments. Balancing patient care and teaching.	Annals of the American Thoracic Society Journals	Canada	Observations	Physician	Residents (*57*), fellows (*35*) & attending physicians (*19*)	1(*5*), 3(*2*), 4(*3*), 9(*3*), 10(*1*)
Price, D.A., & Mitchell, C.A.	1993	A model for clinical teaching and learning	Medical Education	Australia	Interviews (small group discussions) & observations	Physician	Tutors (*24*)	1(*1*), 2(*1*), 4(*1*), 5(*1*), 9(*3*)
Rhoads, K., Radu, I., & Weber, K.	2010	The teacher internship experiences of prospective high school mathematics teachers	International Journal of Science and Mathematics Education	United States	Interviews	Teacher	Prospective secondary mathematics teachers (*9*)	2(*3*), 3(*1*), 10(*1*)
Rikard, G.L, & Veal, M.L.	1996	Cooperating teachers: insight into their preparation, beliefs and practices	Journal of Teaching in Physical Education	United States	Interviews	Teacher	Cooperating teachers (*24*)	1(*2*), 2(*7*), 3(*2*), 5(*2*), 6(*2*), 10(*1*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Spouse, J.	2000	Bridging theory and practice in the supervisory relationship: a sociocultural perspective	Issues and innovations in nursing education	United Kingdom	Observations, interviews & documents	Nurse	Students (*8*)	1(*1*), 2(*3*), 5(*3*), 7(*1*), 13(*1*)
Stegeman, J.H., Schoten, E.J., & Terpstra, O.T.	2013	Knowing and acting in the clinical workplace: trainees' perspectives on modelling and feedback	Advances in Health Sciences Education	Netherlands	Interviews	Physician	Trainees (*22*)	1(*2*), 9(*1*), 10(*1*)
Stenfors-Hayes, T., Hult, H., & Dahlgren, L.O.	2011	What does it mean to be a good teacher and clinical supervisor in medical education?	Advances in Health Sciences Education	Sweden	Interviews	Physician & dentist	Supervisors (*15*)	1(*3*), 8(*1*), 11(*1*)
Sutkin, G., Littleton, E.B., & Kanter, S.L.	2014a	How surgical mentors teach: a classification of in vivo teaching behaviours part 1: verbal teaching guidance	Journal of Surgical Education	United States	Observations (video) & interviews	Physician	Residents (*5*), fellows (*3*) & surgeons (*5*)	1(*6*), 9(*2*)
Sutkin, G., Littleton, E.B., & Kanter, S.L.	2014b	How surgical mentors teach: a classification of in vivo teaching behaviours part 2: physical teaching guidance	Journal of Surgical Education	United States	Observations (video) & interviews	Physician	Residents (*5*), fellows (*3*) & surgeons (*5*)	1(*9*), 5(*1*), 6(*1*)
Van der Zwet, J., Zwietering, P.J., Teunissen, P.W., Van der Vleuten, C.P.M., & Scherpbier, A.J.J.A.	2011	Workplace learning from a socio-cultural perspective: creating developmental space during the general practice clerkship	Advances in Health Sciences Education	Netherlands	Interviews (group)	Physician	Medical students (*44*)	1(*4*), 2(*1*), 3(*2*), 4(*3*), 5(*3*), 6(*1*), 10(*2*)

Authors	Year	Title	Journal	Country	Methods	Occupation studied	Participants (*n*)	Pedagogic practices coded* (*N*)
Velo, K., & Smedley, A.	2014	Using reflection to enhance the teaching and learning of midwifery students	British Journal of Midwifery	Australia	Observations & interviews	Midwife	Registered nurse midwife (*1*) & registered nurse / student midwife (*1*)	3(*1*), 7(*3*), 13(*1*)

* Note. Numbers of coded pedagogic practices refer to the following fourteen categories: (*1*) Demonstrate vocational activities; (*2*) Promote comfort, supportive learning environment; (*3*) Be there, beside novice; (*4*) Entrust independent practice; (*5*) Allow novices in community; (*6*) Work and learn in collaborative relationships; (*7*) Select suitable activities; (*8*) Evaluate and reflect on vocational activities; (*9*) Question vocational knowledge; (*10*) Provide feedback on work activities; (*11*) Diagnose competence; (*12*) Intend to fade support; (*13*) Determine learning goals together; (*14*) Facilitate simulated practice. search of related terms.



3. Understanding student participation in physiotherapy and nursing work settings

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Abstract
Students' health profession education includes learning at the workplace through placements. For students, participating in daily work activities in interaction with supervisors, co-workers and peers is a valuable practice to learn the expertise that is needed to become a health care professional. To contribute to the understanding of HPE-students' workplace learning, the focus of this study is to identify affordances and characterize student's participation during placements. We applied a research design based on observations. Three student-physiotherapists and four student-nurses were shadowed during two of their placement days. A categorization of affordances is provided, in terms of students' participation in activities, direct interactions and indirect interactions. Students' daily participation in placements is discussed through unique combinations and sequences of the identified affordances reflecting changing patterns over time, and differences in the degree of presence or absence of supervisors, co-workers and peers.

Keywords
Affordances; health profession education; participation; physiotherapy; placements; nursing; supervising; workplace learning

3.1. Introduction

In healthcare, as in other professions, students have to be prepared for their future roles as practitioners at the workplace. Therefore, health profession education (HPE) includes placements where students are required to participate in work settings through internships, apprenticeships, and clinical experiences (Guile & Griffiths, 2001). Work settings shape students' learning in particular ways, since learning during these placements follows from participation in daily work-related activities. In contrast to learning at school, learning at the workplace is often not intentional and not designed beforehand (Janssens et al., 2017). Little is known about students' participation at the workplace.

To enhance HPE-students' learning during placements, research is needed into the way students are invited to participate in work settings. The inviting quality of the workplace relates to the degree to which the workplace affords students' participation in daily work activities and interactions (Hauer et al., 2014). Affordances are perceived as opportunities at the workplace that either already exist, or can be created in order to invite students to contribute to work and simultaneously learn at the workplace. According to Billett (2001, 2004), affordances provoke students' participation in activities, direct interactions, and indirect interactions. Activities refer to students' daily work actions. Direct interactions include guidance by co-workers who support students in accessing and securing vocational expertise. Indirect interactions are also important for students' learning at the workplace, and include observation, listening and having access to specific tools and instruments.

Referring to students' participation at the workplace from a socio-cultural perspective, we perceive learning as a socially and culturally embedded process of becoming health practitioners (Engeström & Sannino, 2010; Lave & Wenger, 1991; Vygotsky, 1986). We perceive affordances as (1) situated, and (2) social in nature. Firstly, affordances are situated and cannot be dissociated from the context in which they occur. Accordingly, students' participation in activities and interactions is embedded in particular work settings in local communities of practice (Lave & Wenger, 1991). In other words, the way work settings afford students' workplace learning is believed to be inherently related to the characteristics of local communities of practice (Kyndt & Beausaert, 2017; Lave & Wenger, 1991). Logically, most research about students' participation in work settings addresses specific communities of practice, such as care innovation units (Snoeren et al., 2016), skills labs (Harrison et al., 2021), hospital firms (Billett et al., 2018), or geriatric nursing homes (Goller et al., 2010; Anvik et al., 2020). However, identifying the inviting quality of different work settings in a variety of vocational communities will be helpful to improve general understanding of students' participation at the workplace.

Secondly, since the relationship between individual learning and the environment is social in nature (Leont'ev, 1978), interactions are assumed to characterize affordances. Students gradually become participants in communities of practice through social interactions with experienced practitioners (Lave & Wenger, 1991; Vygotsky, 1986). Consequently, students are supported to participate in work activities in direct interaction with their supervisor, co-workers and peers. In this way, their learning is influenced by multiple viewpoints on practice (Morris et al., 2021). From this perspective, students' participation includes, for example, invitations to discuss work processes actively, and engagements in guidance-oriented interactions (e.g. Gowlland, 2014; Ruoranen et al., 2017). Although prior research reveals opportunities for students' learning, including

cooperation, coaching, feedback and reflection (Kyndt et al., 2009), we want to learn more about the way HPE-students' participation is afforded in work settings.

Affordances are believed to be situated and characterized by social participatory processes. We perceive students' participation at work as manifestations of affordances. Consequently, the way students participate in activities, direct interactions and indirect interactions is influenced by contextualized practices of specific work settings, and shaped by 'how we do things around here'. The rationale for undertaking this empirical study is to enhance understanding of HPE-students' participation in placements. The research questions of this study are: **(1) Which categories of affordances, in terms of students' participation, can be identified in physiotherapy and nursing work settings?** and **(2) How can we characterize student-physiotherapists' and student-nurses' daily participation in work settings through the identified categories of affordances?**

3.2. Methods

We performed our empirical study in placement programs of student-physiotherapists and -nurses in Dutch Universities of Applied Sciences. In the Netherlands, at Universities of Applied Sciences, HPE for physiotherapists and nurses comprises a 4-year Bachelor's course for full-time students. During those four years, students gain clinical experience at various times. In the final year, students participate in a placement for approximately half a year. Students are paired with one supervisor at the workplace, and sometimes with two supervisors. During these final placements, the focus of student-physiotherapists' and -nurses' learning is predominantly on developing professional competence towards an entry-level practitioner.

Research design

A research design based on observations was chosen to enable researchers to access manifestations of affordances in placements of HPE-students. To identify categories of affordances and to describe students' participation in work settings, seven student-physiotherapists and -nurses were shadowed during two of their placement days. Shadowing involves following participants over an extended period of time (McDonald, 2005; Vukic & Keddy, 2002). The perspective of this methodology does not seek causes or effects, but intends to provide unique insights into day-to-day workings and contextualized actions. The present study was conducted from a socio-cultural orientation, as we believe that affordances are socially embedded and situated in specific work settings. Shadowing is useful to investigate students' participation in activities and interactions in a detailed way, as this qualitative method aims to closely follow students as they

go about their daily work, with all its interacting elements such as co-workers, patient and facilities. Shadowing made it possible to capture these interplays in observations, and provide insight into manifestations of affordances taking place simultaneously. Since we aimed to investigate students' participation in work settings authentically and contextualized, this method was appropriate.

Participants

Using a convenience sampling method, contacts within multiple work settings were approached through the external network of key teachers in physiotherapy and nursing. These teachers, of three Universities of Applied Sciences in the Netherlands, were asked to contact workplace supervisors that they considered to facilitate representative placement experiences to students (Miles et al., 2014). Seven work settings participated in the present study. Table 1 represents an overview of the work settings. In each work setting one student agreed to participate in our study. The participating student-physiotherapists and student-nurses did a twenty-week placement, as part of their final year of HPE. Prior to data sampling, supervisors and students were met by the first author and informed about the ethical procedures, their voluntary participation and the research design. Participants were then given time to consider their participation, read the information letter and ask questions, before written informed consents were signed. During the moments of shadowing, verbal permission was obtained from other involved students, coworkers, and patients at workplaces.

Tabe 1 Overview of work settings

Period of data sampling	Work setting	Occupational context	Short description
February 2019 until July 2019	Rehabilitation centre (1)	Physiotherapy	Rehabilitation centre where patients often stay in-house and participate in longitudinal interprofessional treatment processes. The student-physiotherapist is paired with two supervisors. A fixed agenda determines the daily patient planning. Patient-care is provided in the common exercise room, the swimming pool, or in private rooms.
	Hospital (2)	Physiotherapy	The placement includes two hospital departments: neurology and gastroenterology. Two supervisors jointly guide the student and five other student-physiotherapists. Physiotherapists from different departments meet in the common staff room. A daily updated overview of patients indicates which of them require physiotherapeutic care today. Direct patient-care is most often provided in patient-rooms, or in public areas such as the halls and stairwell.
	Private practice (3)	Physiotherapy	The private practice is located in a community health centre. The student is accompanied by two supervising physiotherapists, with various specializations. A fixed agenda determines the daily patient planning. Patient-care is provided in private treatment rooms, and in the common exercise room. Besides direct patient-care, fitness training is provided, where people can exercise and/or rehabilitate in small groups, under professional coaching.
September 2019 until January 2020	Hospital (4)	Nursing	The placement is located in the hospital department of gynecology and urology. The student-nurse is officially paired with one supervising nurse, but also works shifts without her supervisor and with other coworkers and several other students. Each (student-)nurse has a number of own patients and carries a mobile phone; patients press a bell when they are in need of care. Direct patient care is provided in patients' rooms, as well as during the doctor's rounds. Handovers and consultations most often take place in the staff room
	Nursing home (elderly care) (5)	Nursing	The nursing home accommodates elderly people who can no longer live independently and require nursing care, including patients with dementia, Parkinson's disease, physical disorders and rehabilitation. Residents have their own room, and a shared living room. The student-nurse is assigned to a supervising nurse, who works in various departments with a focus on quality assurance and education. In the daily work processes, students are most often accompanied by other co-workers, and several other peers. The treatment schedule is drawn up together on a daily basis.
	Psychiatric care institution (6)	Nursing	The placement is located in a department of a psychiatric care institution for people with chronic depression. Residents stay in-house and participate in longitudinal treatment processes. The student-nurse is pared with one supervisors. In addition, the small staff-team consists of a couple of other co-workers and students. Daily work processes are partly determined in a fixed agenda, and partly dependent on unpredictable patient care. The team divides the nursing tasks daily, consultations take place in the shared staff room.
	Home-based care (district nursing) (7)	Nursing	Home care takes place at people's own homes. Patients are pre-assigned among the team of nurses, each of whom walks a different route of patient visits. A certain amount of time is available per patient. The student-nurse is paired with a supervising nurse, who also has policy responsibilities in district nursing

Data sampling

Between February 2019 and January 2020, a student in each work setting was shadowed for two days. All data was sampled by the first author. This researcher observed all their activities and interactions, including for example patient visits, feedback moments and peer discussions. An observation protocol structured the data sampling process. The observation protocol included an overview of the procedure before, during, and after the data sampling period, and a description of the needed materials, such as printed copies of research information, consent forms and the observation scheme. During the shadowing process, field notes were made in an observation scheme which was developed in line with our conceptual framework. The observation scheme distinguished four columns representing times and location in the first column, and columns for detailed descriptions of students' participation in activities, direct interactions, and indirect interactions in the following columns (Table 2). Prior to and during data sampling, calibration on the correct completion of the observation scheme was carried out with the second author. To avoid interrupting daily work processes throughout the observation period, the researcher rarely asked questions. In exceptional case, some questions were asked for clarification, such as what was being said on the other end of a phone call. The transcripts of a day's shadowing varied between 2100 and 5200 words.

Table 2 Observation scheme

	Workplace affordances		
Time & place	**Activities**	**Direct interactions**	**Indirect interactions**
Start time of the activity and short description of the location/place where the activity took place	Detailed description of students' actions in work-related activities	Descriptions, as literal as possible, of direct interactions with supervisor, co-worker or peer	Short descriptions of indirect interactions: observations or available materials, resources or tools
	What is the nature of participation in activities?	What is the nature of interactions?	Is there indirect access to support?
	Is there independent, in proximity or supported participation in activities?	Who is involved in the conversation?	Who is present in the same room?

The first observation days took place between the fifth and ninth week of students' placements. The second observation days followed at least six weeks later, and were scheduled between week thirteen and nineteen of students' placements. Observation periods varied between 180 and 348 min, and averaged four hours and twelve minutes. References to organizations or individuals were pseudonymized in transcripts of field notes.

Data analysis

We followed a qualitative data analysis approach as described by Miles et al. (2014). All field notes were transcribed verbatim by the first author. Initially, all authors familiarized themselves with the data by means of reading through multiple transcripts of field notes. A sub-set of data, comprising the data of four placement days, sampled in two work settings, was selected by the first author to start exploring and analyzing the data (Brooks & King, 2014). In order to answer the first research question, the first and second author highlighted and discussed patterns in the field notes of students' participation in activities, direct interactions and indirect interactions which might potentially contribute to the identification of categories of affordances in this sub-set of data. The first author open-coded the transcripts line by line, following a group meeting to discuss and define preliminary categories. Subsequently, all transcripts were coded in the preliminary categories of affordances by the first author. To ensure reliability of coding, fragments were partly coded independently by the first and second author, followed by consensus meetings with all authors in which similarities and differences were discussed. In these meetings, the preliminary categories were evaluated by abstraction, and further reduced. Inductive saturation appeared when no new categories were identified in the data (Saunders et al., 2018). This process resulted in the identification of five categories of affordances reflecting students' participation in physiotherapy and nursing work settings.

To characterize students' daily participation in work settings through the identified affordances, the first author reorganized the textual transcripts by creating matrices (Miles et al., 2014). In these matrices, for each placement day, students' participation in activities, direct interactions and indirect interactions were highlighted in five different colors, representing the categories of affordances (Table 3). In this way, manifestations of affordances in students' daily participation in work settings were visualized. In meetings with all authors, differences and patterns of students' participation in work settings were described using a constant comparison approach to systematically discuss similarities and differences between placement days, within and across work settings (Glaser & Strauss, 1967; Lincoln & Guba, 1985). To externally validate the identified categories of affordances and to discuss students' daily participation in work settings through the identified categories, results were presented by the first author in academic peer meetings and in conference sessions, including the online EARLI 2021 conference.

3.3. Results

The data revealed five categories of workplace affordances: (1) interaction before and after caregiving activities, (2) observing caregiving, (3) providing care with direct support, (4) providing care in proximity, and (5) working individually.

Affordances identified in physiotherapy and nursing placements

The specifications of affordances found in fourteen placement days, in seven work settings, are summarized in Table 3.

Table 3 Affordances in physiotherapy and nursing work settings

Categories of affordances	Students' participation in placements		
	Activities	**Direct interactions**	**Indirect interactions**
Interaction before and after caregiving activities	Active participation in interactions, before and after caregiving interaction about day-planning, preparing or dividing work activities - discussing patient cases and receiving feedback on caregiving activities - reflective conversation about learning progress, personal development, and views on professional practice	Interactions before and after providing direct patient care - organising and influencing planning of work activities - making clinical reasoning explicit, being questioned about patients' cases and work approach, receiving feedback on provided patient care, and engaging in short discussions aimed at providing brief feedback on caregiving - being listened to, being encouraged to reflect and explicate views on professional practice, and being challenged to make learning objectives and challenges explicit	Presence of supervisor, co-worker, or peer - time for interactions before and after providing direct patient care - staff- or private rooms for calm conversations
Observing caregiving activites	Passive participation in caregiving activities, observing others' caregiving activities	Limited interactions - receiving explanations getting involved in patient-interactions	Presence of supervisor, co-worker, or peer - observe provided care - listening to supervisors', co-workers', or peers', talking out loud and interactions with patients
Providing care with direct support	Supported active participation in caregiving activities - receiving and processing direct support while proving patient care - updating and adjusting caregiving activities	Direct supportive interactions, talks as an expert and a novice - receiving direct verbal support while providing patient care: feedback, questions, explanations and suggestions while providing patient care - receiving physical support while providing patient care	Presence of supervisor, co-worker, or peer - supervisor, co-worker or peer who also monitors and responds to patients' feedback - supervisor, co-worker or peer who keeps track of time

Table 3 Affordances in physiotherapy and nursing work settings continued

Categories of affordances	Students' participation in placements		
	Activities	**Direct interactions**	**Indirect interactions**
Providing care in proximity	Active participation in caregiving activities - preparing, providing, and administering patient care - interacting with patients (formal and informal conversation) - processing patients' feedback	Peer-to-peer interaction, discussions as reasonable equal colleagues, or no interactions - talking out loud and discussing work-approach while providing care - talking about division of work activities - requesting or receiving confirmation or feedback for small adjustments (verbally or nonverbally) e.g. nodding affirmatively, small suggestions, tips or hints	Presence of supervisor, co-worker, or peer - being observed and monitored, - listening to their interactions, e.g. with patients
Working individually	Active participation in caregiving activities - preparing, providing, and administering patient care - interacting with patients (formal and informal conversation) - processing patients' feedback	No direct interactions	Absence of others - supervisor, co-workers, or peers who are somewhere else, but contactable - schedule, patient-planning and division of work activities - patient information at (mobile) computers, printed overviews, phone, or hard copy folders

Interaction before and after caregiving activities

During their placements students were able to discuss work and learning activities, before and after direct patient care. The topics of conversation varied. Some shorter examples of work-interaction included concise feedback moments or brief patient discussions. These discussions took place in consultation rooms, but also at the coffee machine, or on the way to the next patient. In other discussions, supervisors explicitly discussed students' learning activities and difficulties. Learning progress and professional reasoning were subjects of these conversations.

> In the rehabilitation centre (1), the student-physiotherapist and her supervisor start their workday together at eight am. With the first patient arriving at half past eight, they take time to talk about the upcoming work day together. They discuss the patients, and divide work activities. (..). The nature of the conversation changes when the supervisor asks her student if there are any further things she wants to go through. The student-physiotherapist tells her supervisor how she struggles with her views on professional practice. In her previous placement, things were different. She has the feeling that she now has to 'un-

learn' things that she had just learned half a year ago at her previous placement. She gives an example of how she previously learned to approach treatments of lower back pain differently. Her supervisor explains how these different approaches are not either good or bad, when the rationale for practice is right. The student explains how she struggles to structure and justify her reasoning in order to provide evidence-based practice.

Observing caregiving activities

Students were allowed to observe the caregiving of their supervisor and other co-workers. In this way, students were present at the scene, but played no active role in work activities. While observing others' caregiving activities, students were seen to be more or less included in direct interactions with patients.

In the hospital (4), the student-nurse and her supervisor visit a patient together. (..) The supervisor provides medicines and explains out loud what the medication does, and how she scans and administers it. Next, the supervising nurse replaces the patient's stoma while the student-nurse observes her. Occasionally, she asks the student-nurse to indicate materials, and she explains and instructs the steps for stoma care out loud.

Providing care with direct support

During their placements, students were entrusted to participate actively in patient care activities with direct supervisor support. Supervisors were able to guide students' work activities by describing the next step, asking questions, giving explanations, or providing physical support.

In the hospital (2), the student-physiotherapist is asked questions while providing patient care. When the patient bends and extends his leg, the supervising physiotherapist asks the student whether this leg is in full extension. When the student-physiotherapist remains quiet, she continues by asking how they could extend the leg even further. The student indirectly answers her by explaining to the patient how to practice the leg's extension by pressing the knee as far as possible into the bed. The students' supervisor nods and suggests to measure the patients' extension. The student-physiotherapist takes the measurements and writes down the values.

In some situations, supervisors tried to steer students' actions verbally. In the example below, the supervisor's verbal support was followed by a change of role. At a certain point, the student literally steps back when the supervisor takes over from her by adjusting the patients' exercise.

In the private practice (3), the supervising physiotherapist stands alongside the student when the patient asks the student if she can do abdominal exercises. The supervisor men-

tions to the student-physiotherapist to take into account that the patient cannot easily get to and from the ground because of her operated knee. The supervising physiotherapists further says aloud that abdominal exercises can be done standing up, or, for example, from bed. Next, the student-physiotherapist explains an exercise, and encourages the patient to practice this exercise on the steps. (..) The supervisor observes this and asks the student what muscles the patient specifically is training in this exercise. The student answers (..), to which the supervisor responds: "I am sorry, but I am going to adjust this exercise". The student listens while her supervisor explains another exercise to the patient.

Providing care in proximity

While providing care in proximity, there was not always a clear distinction between the role of the experienced colleague and the student as beginner. This included situations where students work independently, while others are present.

In the psychiatric care setting (6), the student-nurse, her supervising nurse and a physician together attend a meeting in the morning with patients which is named the day-start. The student-nurse asks the first patient to start. The patient talks about the activities she will undertake today. Then, the other patients follow. The student-nurse asks each patient some follow-up questions such as "What do you think of your treatment schedule?", "Did you include enough moments of rest?", or "Have you thought about some exercise?". Once, her supervising nurse complements the student by advising a particular patient to go and see a specific activity.

Collaborative work in patient care was also found in this category of affordances. Specific work tasks were then divided between the supervisor and the student.

In the hospital (4), the student-nurse and her supervisor take care of a patient together. While the student-nurse replaces the patient's bag of urine, her supervising nurse is changing the patient's bed.

Working individually

Students were invited to participate in patient care individually. Affordances in this category include students' individual preparation or administration of patient care activities.

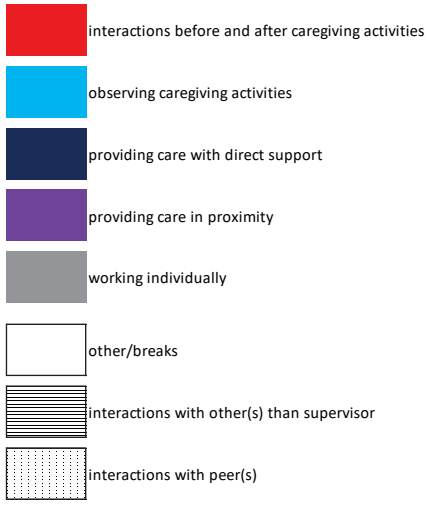
In the home-based care setting (7), the student-nurse is challenged to work individually, without direct interaction with her supervisor, co-workers or peers. The work schedule on her mobile phone provides a structure for her patient visits. By bicycle or on foot, the student-nurse moves from home to home to provide patient care independently. At

patients' homes, this student-nurse is facilitated to work with patient folders, including written patient information and overviews of caregiving tasks.

Characterization of students' placement days in work settings

In the seven placements, students are stimulated to learn through unique combinations and sequences of the identified affordances (Fig. 1). Students' daily participation in placements could be characterized through changing patterns over time, and differences in the degree of presence or absence of supervisors, co-workers and peers.

Legenda for reading **Fig. 1**



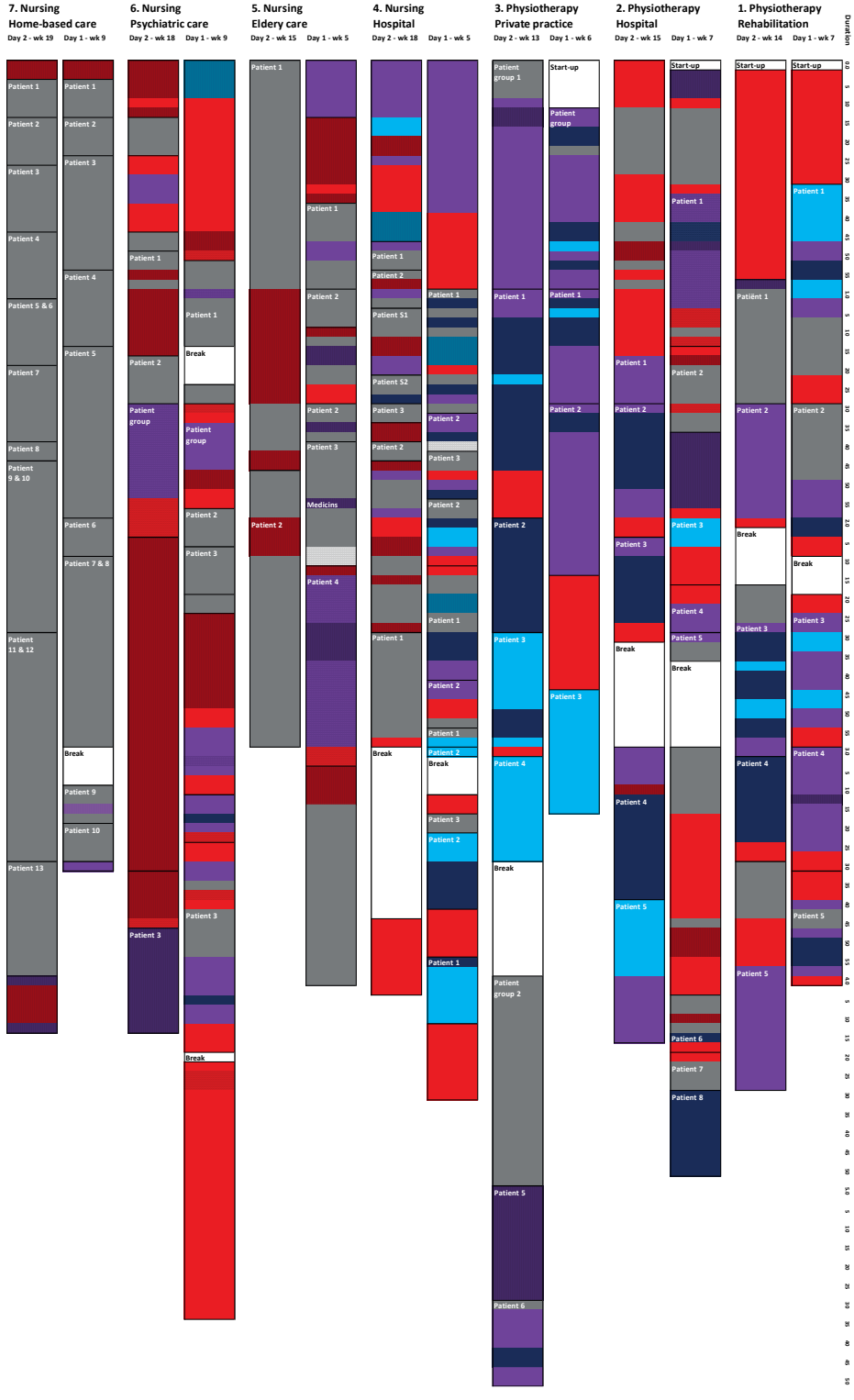


Fig. 1 Students' participation in physiotherapy and nursing work settings. Colors correspond to categories of affordances in **Table 3**

Uniqueness of work settings

Each work setting reveals its own pattern of affordances. Accompanying Fig. 1, below, a brief outline is given per work setting.

• In the rehabilitation centre (1) both placement days start with interactions between the supervisor and student-physiotherapist about work, and the student's learning progress. The interactive start is followed by several patient treatments. The categories of affordances alternate per patient: provide care with direct support, in proximity, or individually. Occasionally the student observes her supervising physiotherapist providing patient care. The patient visits are interspersed with short feedback moments. Both on the first and second day, there is one short moment where the student's work interacts with another more experienced co-worker (other than her supervisor).

• In the hospital setting (2), both the physiotherapists' work activities and the categories of affordances alternate more quickly than in the private practice. The student-physiotherapist prepares patient visits and administers patient data mostly individually. Patient visits usually take place in the presence of peers, co-workers, or supervisor. At a number of times, direct support is provided by the supervisor, and once, direct support is provided by a peer. Almost all patient cases are discussed with the supervisor before and/or after patient visits. The student not only discusses patient cases with his supervisor, but also with other co-workers. On both days, the student observes a patient treatment by his supervisor once.

• In the private practice (3) the supervisor literally stands beside the student-physiotherapist for most of the time, both days. However, on the second day of observation, the student was seen to provide a group lesson individually, without the presence of her supervisor. Work activities and categories of affordances alternate more discretely in this work setting. The proximity of the supervisor allows her to provide just-in-time guidance, and also, to take over the student's work on a number of occasions. The student observes several patient treatments provided by her supervisor. Most direct interactions between supervisor and student take place during patient care activities. Unlike in the previous work settings, there are only a few moments for interaction before and after caregiving activities.

• In the hospital setting (4), the student-nurse is confronted with frequently changing categories of affordances. Work activities with and without direct support often alternate, and patients' caregiving activities are regularly varied with short interactions about work. The student-nurse's work activities are interrupted multiple times, for example by requests from other patients, co-workers or the doctor's visit. Interactions, before and after caregiving activities, are frequent and usually brief. On the first day, demonstrations of work activities and direct support were provided by the supervisor at a number of brief moments. On the second day of observation, direct support was only provided once. The student works mostly independently and engages in multiple conversations with co-workers, other than her supervisor.

• In the nursing home (elderly care) (5), the student-nurse visits patients individually, or in the presence of another co-worker or a peer student. Unlike in most other work settings, the supervisor is only present at the start of the day, and only comes back once during the day to shortly monitor how things are going. During the second observation moment, the student does not see her supervisor. Although the student often works in close proximity to another, the conversations between the student and colleagues do not have the character of direct support. The topics of conversation, before and after caregiving, are usually practical in nature and concern, for example, patient division and planning. On the second day of observation, the student visits patients independently. In between, the student briefly discusses a patient case with colleagues.

• In the psychiatric care institution (6), a relatively large number of moments to discuss patient cases with colleagues is observed. These interactions, before and after direct patient contact, take place with several co-workers, and students. Unlike in the other work settings, relatively little direct contact is seen with patients. The student-nurse meets patients both individually, for example to hand out medicines, and in groups. Patient group meetings take place in the presence of her supervisor, co-workers and/or peer-students. The students' supervisor hardly provides any direct support in the presence of patients. There are, however, multiple feedback meetings before and after patient contact.

• In home-based care (district nursing) (7) the student-nurse works mostly independently. She spends most of her placement day alone, with patients, which is visualized by a practically unambiguous pattern of the category 'work and provide care individually'. During both days, there is no direct interaction with her supervisor. Once, the student calls a colleague to ask for permission to give medication to a patient. At the beginning and end of the shift, there is brief consultation with other co-workers.

Patterns of affordances over time

When comparing the data sampled at the beginning and at the end of students' placements, in four work settings an increase was shown in moments of working individually. Students were afforded more often to work individually on the second day of data sampling, compared to the first, in the rehabilitation centre (1), the private practice (3), the hospital (4), and in the nursing home (eldery care) (5). The degree of individual work in home care (7) is high on both of the student's placement days. In the hospital (2) and the psychiatric care institution (6) we did not find an increase in the duration of the category 'work individually'.

> In the private practice (3), the student-physiotherapist accompanies patient group lessons both on the first day and the second day of data sampling. On the first day her supervisor remains present. However, on the second observation day, later in the term, the student-physiotherapist was seen accompanying a similar patient group lesson independently and individually.

It is noticeable that in all physiotherapy work settings (1, 2 and 3), the category 'provide care with direct support' increases on the second day of observation, compared to the first day of observation. In the nursing work settings (4, 5, 6, and 7), we found the opposite: the category 'provide care with direct support' decreases on the second day of observation, compared to the first, or remains low.

> The student-nurse's work activities in the hospital (4) are interrupted for direct supervisor support more often on the first day of data sampling than on the second moment. Similarly, in elderly care (5), the student-nurse's moments of individual working and caregiving become longer on the second moment of data sampling.

Presence of supervisors, co-workers and peers

Our data reveals differences in the presence of others during the observed placement days. We have found students who work in pairs with their supervisor, students who work with co-workers or peers, and students who hardly see any other colleagues at all. In some work settings, several colleagues work in the same work space, making proximity to others more of a standard practice.

> In the rehabilitation centre (1), the student-physiotherapist provides patient care independently, while her supervisor and other co-workers are present at the same time in the spacious exercise room. While working in each other's proximity, her supervisor is able to keep an eye on her, and parallelly treat another patient in the same exercise room.

Most students participated in work processes and interactions in the presence of others. Exceptions are the high degree of individuality found on the second day of observation of the student-nurse working in elderly care (5), and the student-nurse working in home-based care (7). The data also shows that the student-physiotherapists work more often in close vicinity of their supervisors than the student-nurses. Particularly the work of student-nurses in the nursing home (5) and the psychiatric care institution (6) interfaces at several times with various co-workers.

> In the elderly care setting (5), the student-nurse and a peer-nurse briefly reflect on the joint caregiving activity they have just undertaken. They washed and dressed a lady together. When they are in the hall again, they talk about what went well, and what could be improved. The student-nurse explicates that, to improve their procedure for washing the lady, they should observe how a more experienced colleague takes care of this lady. The peer agrees to ask a co-worker for help later today, and they continue to the next patient room.

In four out of seven work settings, students were found to interact with student-peers. The nature of the interactions between peers differed. In the nursing home (5), students were mostly observed to work together, as equal colleagues. In the hospitals (2 and 4), the students' caregiving activities seemed to interface less, but students knew where to find each other for short consultations or social talk. In the psychiatric care institution (6), we observed that the (senior) student-nurse takes a (junior) student with her a number of times throughout the second observed placement day.

> In the psychiatric care institution (6), the student-nurse meets a patient to discuss the treatment plan. On her way with the patient to find a consultation room, the student walks past the staff room. She sees the junior-student sitting there, and asks him if he would like to join the patient's treatment plan discussion with her. The junior-student looks at his supervising colleague. "Good idea" says the colleague, "it is important to see as much as possible during your placement". The junior-student goes along, and listens in on the treatment plan discussion.

3.4. Discussion

Our most important finding is the categorization of affordances, which allows us to characterize HPE-students' participation at the workplace. In general, the findings indicate that work settings invite students to gain meaningful learning experiences in their placements, as a result of active participation in daily work processes at work. The chosen research method has been appropriate for investigating affordances in terms

of students' participation. Following a contextualized perspective on affordances, we found that work settings are distinctive in the ways they stimulate students' workplace learning and that each placement day is shaped by unique combinations and sequences of these categories.

The five categories of affordances enable the understanding of the inviting qualities of work settings and the opportunities to stimulate HPE-students' learning. Generalizations of our findings are difficult to apply because we investigated unique learning situations in seven different work settings. Nevertheless, we recognise that our findings are in line with previous research. This enables us to discuss the tentative relationship between the categories of affordances and students' workplace learning. The category 'work individually' involves students' independent practice and could be related to the concept of entrustment. Entrustment involves decisions to let the student participate autonomously in work activities (Ten Cate et al., 2013). Independent practice is commonly considered important, because it is believed to contribute to the development of students' skills, confidence and professional identities (Bremer et al., 2022; Snoeren et al., 2016). 'Provide care in proximity' could afford students to learn safely through trial and error. Supervisors or other co-workers are present to provide help when needed and monitor students' level of understanding (De Bruijn, 2012; De Vos et al., 2019; Harteis & Bauer, 2014; Van der Leeuw et al., 2018). 'Provide care with direct support' might illustrate the supportive culture of work settings, in which students can learn through supported participation and are afforded opportunities to receive direct feedback (Billett, 2004, 2016). Affordances to 'observe caregiving activities' show how students are invited to participate through observations in placements. This involves experts' demonstrations of vocational knowledge and skills, including the out-loud articulation of their clinical reasoning (**Chapter 2**). Besides the varied possibilities for engaging in caregiving activities, most students were invited to participate in all kinds of social interactions. Affordances to 'interact before and after caregiving activities' could, for example, include joint reflections of the performances of the student (Billett et al., 2014). Although the five categories were briefly approached separately, we assume that the learning potential could best be found in the unique combinations of workplace affordances.

The combinations in which the distinctive categories represent daily participation in placements reveal interesting configurations of affordances. For example, scaffolding strategies can only be seen in a series of sequential categories involving the students' activity to be monitored ('provide care in proximity'), steered through explanations ('provide care with direct support') and demonstrated through taking over parts of the activity that the student is not yet able to do ('observe caregiving'). However, when analyzing students' daily participation in work settings, it was difficult to find such typical

structures. We hardly ever observed that the categories of affordances followed comparable patterns. Instead, the combinations and sequences of affordances appeared to be unique throughout all placement days (Fig. 1). Nevertheless, the findings indicate some interesting insights regarding the characteristics of work settings, the presence (or absence) of others, and changes of affordances over time.

The unique configurations of affordances show how student-physiotherapists and -nurses are stimulated to learn differently, depending on the work setting in which they are placed. Different sequences and alternations of affordances could possibly be explained by the nature and traditions of professions, and the values and norms in specific work settings (Morris et al., 2021). For example, it could be in line with a historical tradition for nurses working in home-based care to work more individually than, for instance, nurses working in hospitals or psychiatric care. Alongside historical reasons, the focus on independent work of student-nurses in home-based care is obviously related to financial, societal and demographic reasons. In line with previous research (Goller et al., 2019), we have the feeling that experienced nurses in home-based care may have deep-rooted values to prepare students in such a way that students contribute as new team members fully to the work in the shortest time frame possible. Furthermore, whereas nurses may have traditionally worked in teams, in physiotherapy there seems to be a centuries-old tradition of individual novices who learned the profession at the side of a master. That may partly explain why we found that the student-physiotherapists worked more often in the immediate vicinity of their daily supervisor, compared to the student-nurses. However, explanatory statements are not appropriate to the contextualized approach of our study and there are more reasons, such as pedagogic reasons, that determine how students are invited to learn in work settings.

As stated in the introduction, interactions with others are assumed to positively influence students' workplace learning. In the seven work settings, most students participate at work in close company of their supervisors. This seems a relevant finding since the presence of supervisors, and other co-workers, could be related to providing a safe learning environment for students in which direct support and interactive participation stimulates students to grow professionally and develop work-strategies (Harteis & Bauer, 2014; Van der Leeuw et al., 2018). Indeed, the affordances may indicate how the presence of a supervisor could result in supported participation and just-in-time interventions (e.g. Billett et al., 2014; Ruoranen et al., 2017). However, in some work settings, the students' placement seems to be foremost a work environment, with less opportunities to learn in the presence of a supervisor. In these work settings, students had limited access to direct interactions which might imply sub-optimal learning. Nevertheless, not only the interactions with supervisors, co-workers and peers are believed

to afford students' learning; the caregiving activities, including contact with patients, could presumably function as feedback on their own (Bremer et al., 2022).

We had expected to find an increase in the autonomy of students' participation at work over time. Indeed, in some work settings, we found that affordances regarding individual work increased, and affordances regarding direct support decreased. Nevertheless, in other work settings, especially in the physiotherapy work settings, supervisors seemed to be continuously present alongside the student, also towards the end of their placement. The categories of affordances do not reveal supervisors' pedagogic perspective and reasons why they decided to entrust students to work individually, or not to do so. Supervisors are challenged to ensure accessibility, affordability, and quality of care, whilst offering safe learning conditions and supported participation for students (Billett, 2016; Dornan et al., 2007; Verhees et al., 2021). Since supervisors are known to be continuously challenged with considerations of students' needs and readiness (De Vos et al., 2019; Ten Cate, 2013), it would be interesting to further review supervisors' strategies, motives and conceptions (De Bruijn, 2012; Khaled et al., 2021). Insights into interrelated processes of supervisors' actions and reasons will enable us to further explore students' participation at work, and the changes over time, from a pedagogic perspective.

Lastly, it is not our aim to relate affordances to the students' actual workplace learning. As we know, this depends not only on the inviting qualities of the workplace, but certainly also on the individual student's choices to elect or refuse to participate in affordances provided by the workplace (Bryson et al., 2006). The reciprocal interplay between affordances and the students' agency encourages students' learning and professional development (Billett, 2001; Goller et al., 2019). For example, proactive students could have created meaningful learning opportunities through the agentic seeking of information and feedback, even in environments where direct interactions seemed to be limited. Future research into students' perspectives is recommended to understand how students' agency interacts with the inviting quality of work settings.

Limitations

This study has some limitations. (1) The first limitation that is encountered in shadowing, as a qualitative research technique, is the possible effect that a researcher has on the situation they are researching. Although the first author did not feel she actually interrupted the normal work activities, the participants noticed her presence which may have influenced their work of activities. The possible observer effect was discussed with the participants after the observation (McDonald, 2005), and included questions about how 'normal' their day has been while the researcher was present. In order to comfort the participants, the researcher indicated beforehand that the research was descriptive in nature, and did not attempt to judge whether learning and supervision

are 'good' or not. (2) A second limitation may be that generalizations of our findings should be formulated very carefully since we conducted present study from a contextualized perspective. Investigating workplace affordances in the context of seven unique work settings is considered as robust in qualitative research (Poortman & Schildkamp, 2012), but does not allow us to make normative statements about, for example, the quality of workplace learning and supervision. This brings us to a third limitation. (3) The observations provided us with a rich data set, but did not give us detailed insight into the reasoning of participants. We do expect the reasoning of supervisors and students to have an impact on the affordances provided in work settings. For example, from the supervisor's perspective, their perception of the student's performance may impact the affordances provided. Including interviews with supervisors will provide more in-depth information regarding supervisors' decisions and reasoning whether to, for example, provide direct support or entrust work activities to students. Similarly, HPE-students' active engagement in activities and interactions is required for meaningful learning to take place. Since students elect how they engage with what is afforded to them, research on the reasoning of students will lead to more robust findings on how they give meaning to participatory practices.

Implications

The presented insights into students' participation in work settings extend current knowledge about the facilitation of students' workplace learning. Careful attention to the ways students are invited to engage in work activities and interactions can have a positive effect on the professional development of students. Those involved in internship programs may do well to consider the variety of opportunities for students to participate in work settings.

Practically, this study might serve as a hold for supervisors and educators when considering and discussing the possible variations in guiding students at work. We have shown that supervisors contribute in their own unique ways to students' participation in daily work activities and interactions. While some supervisors prefer to observe most students' actions themselves, other supervisors entrust students to work mostly independently. Supervisors' awareness of their guidance practices with regard to the inviting qualities of the work setting can positively contribute to students' workplace learning. With regard to training HPE-students in clinical settings, specific guidance about the different possibilities to afford students' participation at work is recommended.

3.5. Conclusions

Workplace learning becomes increasingly important to prepare HPE-students for their future professions. We were able to shed some light on how students' participation is stimulated in work settings. This study reveals an empirically-grounded categorization of affordances which enabled us to discuss unique configurations in which physiotherapy and nursing students participate in work settings. In these configurations of students' participation, we found differences over time and between work settings, including the degree of proximity to supervisors, the degree of interaction possibilities, and the degree to which students work individually. The study shows how each work setting affords unique participatory practices for students. The daily participation of some students involved frequently varying sequences of affordances, whereas other students' participation could be characterized as being more monotonous. As this study only identified and described affordances in placements, more in-depth research into the relational dynamics between affordances and individual engagements will give insights into how to maximize learning opportunities in work settings.

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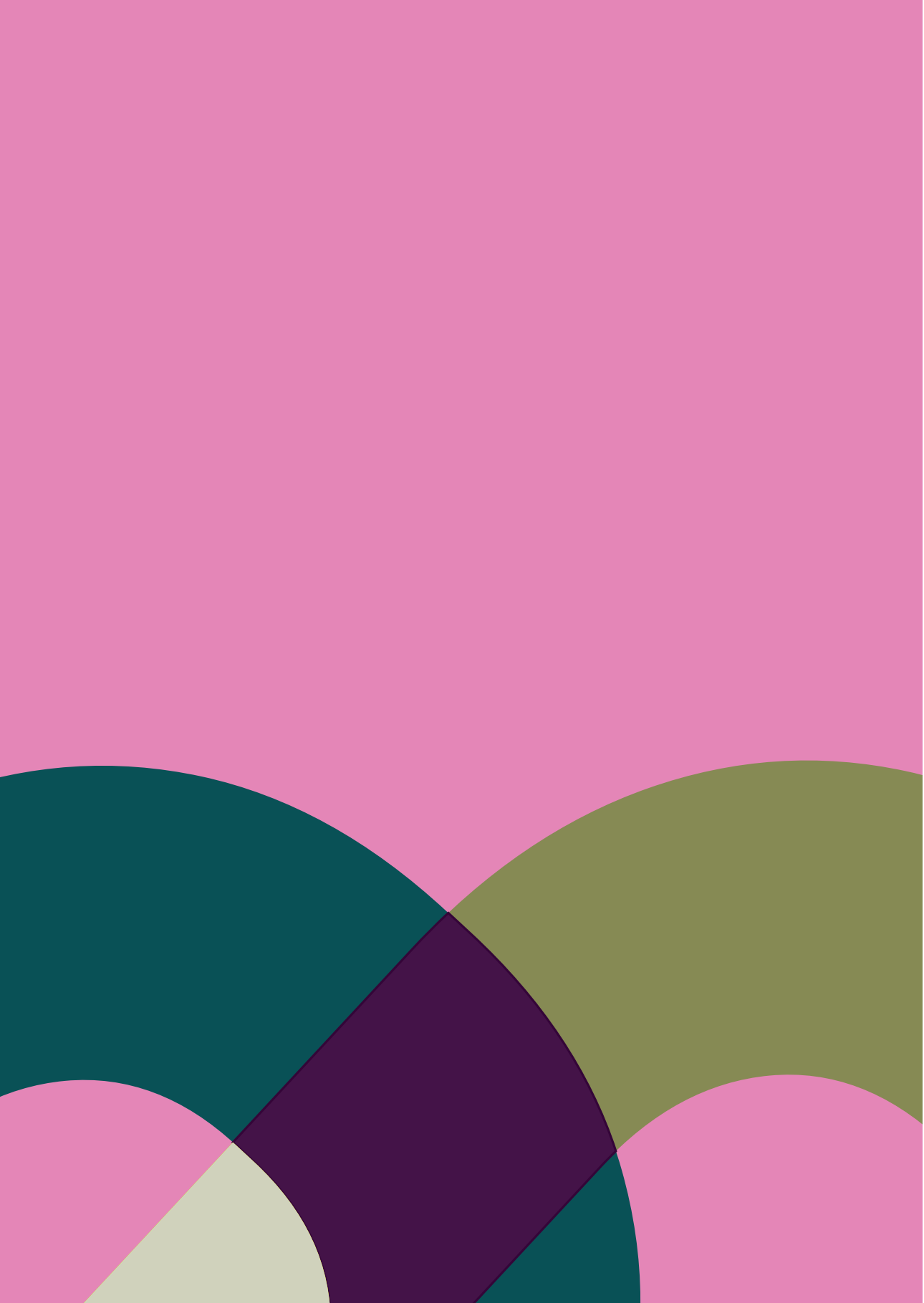

4. Pedagogic strategies of supervisors in healthcare placements

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Abstract
Supervisors are responsible to train students in healthcare placements. Although there is knowledge about workplace learning and supervision in general, little is known about supervisors' pedagogic strategies in specific healthcare placements. In this study, we identify how supervisors' reasoning and interrelated actions manifest in physiotherapy and nursing work settings. Following the stimulating recall approach, we conducted 16 interviews with supervisors at seven work settings. Using a theoretical framework of workplace supervision, we performed a deductive template analysis. Four configurations of pedagogic strategies reveal how supervision manifests in healthcare placements. The results provide unique insights into specific supervision moments, and elucidate the situatedness of the supervisors' strategies. The present study illustrates the variation in aims and focus of supervisors in placements. Supervisors' pedagogic strategies were found to be mainly based on (A) role modelling, (B) overall support, (C) trust, and (D) letting go. Further research is needed to investigate the interplay between supervisors and students in learning situations within work settings.

Keywords
Placements; supervision; pedagogic strategies; workplace learning

4.1. Introduction

In healthcare placements, supervisors are challenged to train students in becoming entry-level professionals. These supervisors have, alongside everyday work, an important pedagogic role (Billett et al., 2018). They are expected to have expertise in their own professional domain and expertise in supervising students' learning in placements. Supervisors are engaged in students' learning process when they work together and undertake interventions, such as giving explanations, providing feedback, or discussing a patient case (Mikkonen et al., 2017). Moreover, students' participation in daily work activities in interaction with their supervisors and other co-workers is central to preparing them for their future roles as practitioners at the workplace (Vygotsky, 1986; Lave & Wenger, 1991; Billett, 2016). Although there is a reasonable body of knowledge about

workplace learning and supervision in general, little is known about how supervisors' pedagogic strategies manifest in specific healthcare placements.

Pedagogic strategies are a result of supervisors' deliberation of how to most successfully supervise students. These strategies are based on supervisors' reasoning and interrelated actions (Khaled et al., 2021). Therefore, to understand the pedagogic strategies of supervisors, we need to investigate not only the interventions that supervisors undertake, but also the rationales underlying the supervisor-actions (De Bruijn, 2012). Furthermore, pedagogic strategies of supervisors should not be separated from the context in which they occur because workplace supervision is embedded in specific work settings, also referred to as communities of practice (Lave & Wenger, 1991). Through supervisors' engagement in social participatory processes with students in local communities of practice, supervisors gradually develop comprehensive pedagogic strategies, explaining how and why they contribute to students' workplace learning (Hauer et al., 2014; De Vos et al., 2022).

To grasp pedagogic strategies of supervisors in healthcare placements, a three-way focus on workplace supervision provides a theoretical framework (**Chapter 2**).

(a) Demonstration: fostering students to learn through observations and imitations, and affording the students to learn through supported participation, for example by providing them with opportunities to receive direct feedback (Billett et al., 2014).
(b) Stimulated participation: preparing students to contribute as (full) team members and stimulating them to develop a professional identity (Goller et al., 2019).
(c) Entrustment: promoting students' independent practice, including the constant judgment processes of supervisors when reasoning about ways to foster students' autonomy in work activities (Ten Cate et al., 2021; De Vos et al., 2022).

To improve the understanding of how supervisors' pedagogic strategies evolve from demonstration, stimulated participation, and entrustment in particular work settings, an empirical investigation of workplace supervision is required. Through interviewing supervisors, we will be able to learn about contextualized manifestations of workplace supervision in real-life work settings. The research question of this study is: **Which pedagogic strategies of supervisors can be identified in student-physiotherapists' and student-nurses' work settings?**

4.2. Methods

In the Netherlands, Health Profession Education (HPE) for physiotherapists and nurses comprises a 4-year bachelor's course for full-time students, accredited as level 6 of the International Standard Classification of Education and European Qualification Framework. In their final year, students participate in a placement for 3 or 4 days a week during approximately half a year. During the final placements, the focus of supporting the students' learning is predominantly on developing professional competence towards an entry-level practitioner.

In this empirical study, we focused on work settings that provided a 20-week placement in the final year of student-physiotherapists and student-nurses in HPE. In these work settings, students were paired with one or two supervisor(s). Those supervisors worked as experienced physiotherapists and nurses, and were assigned a role to supervise students. In certain work settings, supervisors guide multiple students. However, in each work setting, we studied the supervisor's pedagogic strategies in relation to an individual student.

Participants

Ten supervisors in seven work settings were selected to participate in the present study, using a convenience sampling method (Table 1). Teachers from the physiotherapy and nursing education programs at three Universities of Applied Sciences in the Netherlands were asked to contact workplace supervisors that they considered to facilitate representative placement experiences to students (Miles et al., 2014). Prior to data sampling, supervisors and students were informed about the research design and given information letters. After a period of consideration, they agreed to participate in the study and informed consents were signed. Management staff gave written permission to conduct the study within the organization.

Table 1 Context of data collection

Work setting	Description
Rehabilitation centre	Military rehabilitation centre where patients often stay in-house and participate in longitudinal interprofessional treatment processes. A fixed agenda determines the daily patient planning of the physiotherapists..
Hospital	Physiotherapy placement including two hospital departments: neurology and gastroenterology. A daily updated overview of patients indicates caregiving activities.
Private practice	Physiotherapy practice located in a community health centre. A fixed agenda determines the daily patient planning.
Hospital	Nursing placement located in the hospital department of gynaecology and urology. Work activities are partly scheduled, and partly dependent on ad hoc patient needs.
Nursing home (elderly care)	Nursing home which accommodates for elderly people who can no longer live independently and require nursing care, including patients with dementia, Parkinson's disease, physical disorders and rehabilitation. Treatment schedule is drawn up together on a daily basis with the team of nurses and student-nurses.
Psychiatric care institution	Department of a psychiatric institution for people with chronic depression. Residents stay in-house and participate in longitudinal treatment processes. Daily work processes of the nurses are partly determined in a fixed agenda, and partly dependent on unpredictable patient care.
Home-based care	Patient-care activities takes place at people's own homes and are pre-assigned among the team of nurses. A fixed amount of time is available per patient.

Data collection

A research design based on the stimulated recall method was chosen to enable researchers to access pedagogic strategies of supervisors in student-physiotherapists' and nurses' placements (Lyle, 2003; Khaled et al., 2021). Between February 2019 and January 2020 interview data was collected (Table 2). Interview triggers, in the form of photos representing specific supervision moments, were collected in the seven work settings during observation of daily activities and interactions between supervisors and students. The interviews with supervisors usually took place on the same day and otherwise within a week after observation. In the interviews, supervisors were prompted to articulate their pedagogic actions and reasons related to these photos of real-life moments. The 16 interviews were audio recorded, transcribed verbatim, and pseudonymized prior to analysis.

Table 2 Collected data

Occupation	Supervisors	Work setting	Data collection in 20-wk placement	Interview triggers (*N* photos)	Interview duration (minutes)
Physiotherapy	Jennifer Matthew	Rehabilitation Centre	1: week 7	4	39 52
			2: week 14	6	40 38
	Wendy	Hospital	1: week 7	4	44
	Sara		2: week 15	5	42
	Laura	Private Practice	1: week 6	6	45
	Jessica		2: week 13	4	49
Nursing	Amber	Hospital	1: week 5	4	43
			2: week 18	2	32
	Emily	Nursing home, elderly care	1: week 5	1	34
			2: week 15	1	29
	Amy	Psychiatric care institution	1: week 9	5	55
			2: week 18	2	42
	Britt	Home-based care	1: week 9	3	23
			2: week 19	1	31

Data analysis

A five-step analysis was performed based on a qualitative data analysis approach, and the main steps involved in undertaking template analysis (Brooks & King, 2014; Miles et al., 2014) (Fig. 1). To explore the data, the first and second author read through multiple interview transcripts. Relevant fragments were coded by the first author (Table 3) using a theoretical framework of workplace supervision for deductive data analysis (**Chapter 2**). Data fragments of the physiotherapists in the private practice were coded independently by the first and second author for reliability reasons. The interpretation and coding of questionable data fragments were discussed in consensus meetings with all authors.

Fig. 1 Analysis process

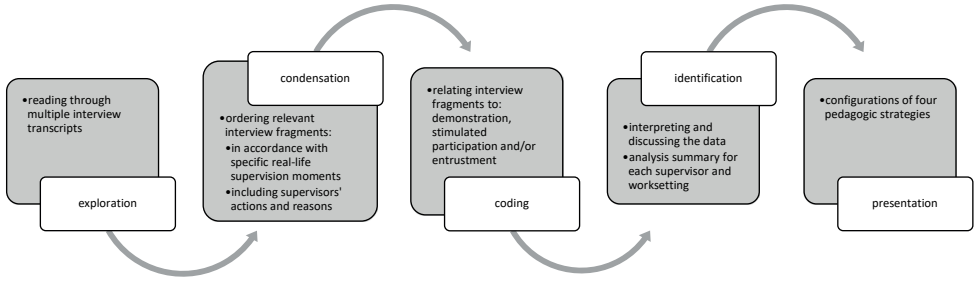


Table 3 Example of coded data fragment

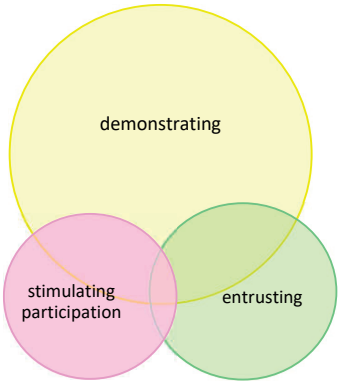
Code: Demonstration	Photo	 Amber (nurse in hospital) and the student are in conversation in the nurses' staffroom.
	Actions	Amber reflects how she facilitated the preliminary discussion with the student about the patients through asking her questions: 'Which patients do you want to take care of today, what is their history (operation e.g.), what is your focus of today's work activities, what do you specifically want to learn?'.
	Reasons	Amber wishes to stimulate the student to prepare the upcoming work activities. It is important for her that the student understands the patient's history. She wants to explain to her what to be attentive to in specific patients' cases, for example by recognizing the possible complications of surgery. Amber reasons that this patients' discussion beforehand is important for the student, to develop a clinical overview when providing patient care.
	Illustrative interview quote	I think the clinical reasoning beforehand is important, so she knows what to be careful of, and also to be able to understand the whole clinical picture of this patient, including the surgery they have had, in order to estimate how the patient is doing

In the identification phase, the data of four supervisors were further discussed with three authors (LC, AK, and LN) who collaboratively interpreted the data. To find patterns and combinations, the focus of supervisors' pedagogic strategies was visualized as figures with spheres of different sizes, derived from the number of coded fragments to demonstration, stimulated participation and entrustment. Since interview fragments were regularly double-coded, figures with overlapping spheres were chosen to visualize the interdependence of the three focuses on workplace supervision. Also, the first author completed an analysis summary format for each work setting and each supervisor. To obtain a better understanding of the meaning of these visualizations, all authors discussed them in relation to the supervisors' analysis summaries, which led to the presentation of four configurations of supervisors' pedagogic strategies.

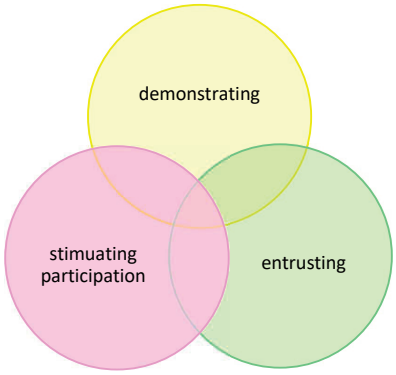
4.3. Results

The subsequent paragraphs illustrate four configurations of pedagogic strategies for supervising student-physiotherapists and student-nurses in seven work settings. The configurations represent how supervisors' pedagogic strategies evolved from a diverse focus on demonstration, stimulated participation, and entrustment (Figure 2). The results are presented with descriptions of specific supervision moments and interview quotes to elucidate the embeddedness of the supervisors' strategies.

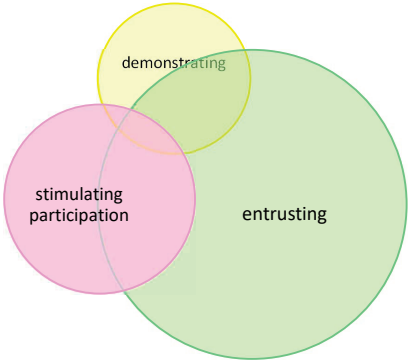
Figure 2 Results summarized in four configuration of pedagogic strategies



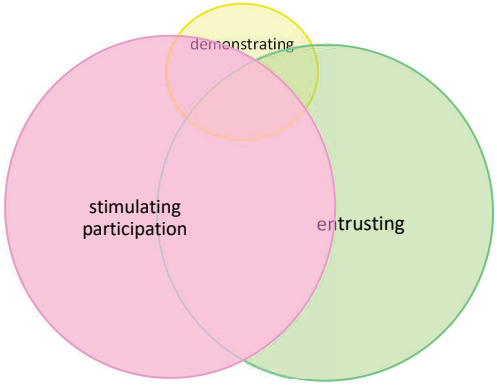
Configuration A. Pedagogic strategies of Laura and Jessica (physiotherapists in private practice) were mainly focused on demonstrating



Configuration B. Pedagogic strategies of Sara (physiotherapist in hospital), Jennifer and Matthew (physiotherapists in revalidation centre) were equally balanced.



Configuration C. Pedagogic strategies of Wendy (physiotherapist in hospital), Amber (nurse in hospital) and Amy (nurse in psychiatric care institution) were mainly focused on entrustment.



Configuration D. Pedagogic strategies of Emily (nurse in nursing home) and Britt (district-nurse, home-based care) were focused on entrustment and stimulated participation.

Configuration (A)

In the private practice, Laura's and Jessica's pedagogic strategies were mainly focused on demonstrating to the student the needed knowledge, skills, and attitude to become a physiotherapist (Fig. 2(A)). In the daily course of their work activities, these supervisors contributed to the student's competence development by supporting the student directly, using observation and imitation, feedback, questions, and explanations. Through providing direct support to the student, Laura and Jessica aimed to optimize and structure the student's learning activities. However, with regard to the patient treatments, they wished to be in charge. They did not feel comfortable letting the student do 'their' work, as they considered the patient's interest as highly important.

> Laura checked up on the student when she performed a physiotherapy treatment on the patient. She asked the student: 'do you know what muscle this is?' Laura explained that she often gives the answer herself to retain the patient's confidence. 'Because, at this moment, she [the student] did not answer me (.,), so I told her. I want to protect the student a little bit, and I don't want the patient to get the feeling of 'uh-oh, she does not know what she is doing".

According to Laura and Jessica, it was important to enable a careful and gradual entrustment of the student's independency in caregiving activities. Subsequently, the supervisors indicated that they were continuously in the presence of the student, to provide support and take over the student's work activities when needed. The first consideration related to the entrustment of work activities to the student appeared to be based on the best approach for the patient. The second reason, which makes the presence of the supervisor during patient treatments important, concerned the assessment of the sufficiency of the student's knowledge base.

> The student took a patient history. Jessica complemented the student with additional questions for the patient. Jessica reflected: 'I have noticed that the student lags behind in taking the anamnesis and doing the patient's examination. So we have been slightly delayed. (.) That is why I still have to intervene.'

In sum, the pedagogic strategies of Laura and Jessica seemed primarily aimed at training the student's knowledge and skills. They remained in close proximity to the student to provide direct support, thereby valuing the patients' interest and being able to intervene in the student's actions when necessary.

Configuration (B)

Sara (hospital), Jennifer, and Matthew (rehabilitation centre) supported the student from an approximately equal focus on demonstration, stimulated participation, and entrustment (Fig. 2(B)). Although they stated that they were often near the student, their actions included alternations of providing direct support and monitoring the student from some distance. They indicated the significance of having interactions with students to manage their expectations, agree on the upcoming work activities and prepare patients' treatments in advance. Therefore, Sara, Jennifer, and Matthew aimed to promote the student's overall learning by means of a clear role and task distribution of the supervisor's and student's work activities.

> During a supervisor-student interaction, Jennifer demonstrated the spinal vertebrae to the student with a jig. She said about this preparative conversation: 'We discuss things in

> advance: what is your plan, and what can you do [in the context of this patient]? (.) This preliminary discussion provides the student with the confidence to treat a patient.'

According to Jennifer, Matthew and Sara it was important to be there for the student by taking the time to discuss the students' learning process and professional development. The supervisors described how they highly valued the students' participation and were explicitly committed to the wellbeing of the student. Jennifer, Matthew, and Sara wished to ensure the student felt at ease to undertake daily work activities. Although the supervisors entrusted the students to be in charge and partly improvise in patient treatments, they could not fully allow students to work independently.

> Matthew listened in when the student interacted with a patient. He reflected: 'I deliberately sit on the bench somewhere in the back corner, because I wish to interfere as little as possible. And I tend to interrupt quite quickly. So, sometimes, I really have to take a step back very consciously to try not to get on top of things too quickly.'

In brief, the pedagogic strategies of Jennifer, Matthew, and Sara were based at supporting the students' overall learning process. The supervisors endeavored to prepare and structure the students' work activities, as well as address their job satisfaction and professional identity, and provide them with the confidence to perform daily work activities.

Configuration (C)

The pedagogic strategies of Wendy (hospital), Amber (hospital), and Amy (psychiatric care institution) were mainly based on entrustment (Fig. 2(C)). An important reason to entrust the students to work independently was based on the confidence that the student would inform them, or others, when they needed help. Furthermore, most patient cases were discussed with the supervisors before and/or after patient visits.

> When Wendy was unexpectedly scheduled in the morning for other activities, she was not able to do a joint start-up with the student. She made sure she carried a phone and could be reached: 'If anything happens, the student can always call me. That's the idea, that I'm always accessible.'

According to the supervisors, the students' participation in their work settings could be characterized as collective in nature. Although the supervisors were not always physically present with the student, they felt that the students enjoyed an approach based on equality. An important consideration that benefited the supervisors' entrustment of student participation related to the nature of the work structure in which students always worked in close proximity to other colleagues and peers.

> Amy considered the student's reflections as in-depth and she appreciated how the student had initiated feedback-discussions with multiple colleagues. She described how supervising is a collective practice in the psychiatric care institution: 'Indeed, the student receives a lot of feedback from different co- workers. (.) And therefore, I am inclined to ask my colleagues every now and then: 'do you have any further details about this student, or something that we need to pay some attention to, (.) and do you agree with me that things are going well?".

The pedagogic strategies of Wendy, Amber, and Amy seemed primarily based on trust. They acknowledged the importance of approaching the student as an equal partner. Through the collective character of working together as a team, the supervisors described how they were able to monitor and entrust students to operate independently in work activities.

Configuration (D)

Emily (nursing home) and Britt (home-based care) in particular used pedagogic strategies that were focused on stimulating participation and entrustment (Fig. 2(D)). For Emily and Britt, the students participated as full team members. According to the supervisors, the students' full participation was a self-evident fact in their work settings. Emily and Britt did not actively participate in the daily patient care activities as the student does. As a result, they were not present when the student participated in caregiving activities and there was no, or very limited, direct interaction between the supervisor and the students throughout the placement days. Emily and Britt indicated how they indirectly supported the students' learning, for example, by enabling them to have access to a phone and patient files, and stimulating them to use learning objective forms. In regular feedback conversations, the supervisors stated that the students themselves indicated what kind of support they needed from their supervisors.

> Emily described how she suggested that the student, as part of a school task, could be assigned to take the lead in the morning discussions when the nursing team allocates the patients among the colleagues. Emily explained: "The student learned a lot from this (.). The team collaboratively supported her to take this role, but I think that she has really grown by just doing it in practice, going for it."

Emily and Britt rationalized entrustment as a matter of logic. Because the students were approaching graduation, it felt appropriate for them to provide the students with an individual workload, in accordance with full participation. Another reason to fully entrust student participation related to the supervisors' comments that the patient care activities in their work settings were usually not very complex in nature.

> In home-based care, the student visited all of her patients individually. Britt reasoned: "Our patient care is not of such complexity that someone has to accompany her patient's visit in order to teach her, or supervise her, or whatever. She is able to visit patients independently because soon, she will have to work alone too. I certainly have in my mind, when the student is in her fourth year, that in six months' time she could have also been my colleague. (.) And I think, that this is in line with the ultimate student's goal: to be able to go out alone and to experience that she can do it [individually]. If she would be always together with another colleague, she would not know if she could really work on her own. I think it is nice for her to discover 'o well, I did all those patients' visits individually today, it went really well, I got nice patients' comments, and if something happened, I just solved it myself."

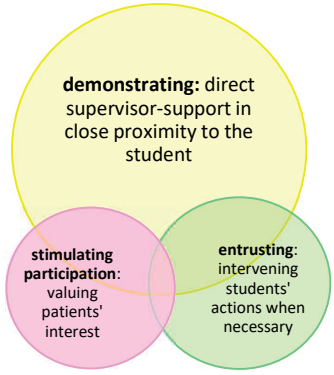
The pedagogic strategies of Emily and Britt were based on a natural letting go of the students. The supervisors' support included occasional feedback meetings with students and, mostly indirectly, the facilitation of students' independency as (nearly) professionals and team members.

4.4. Conclusion and discussion

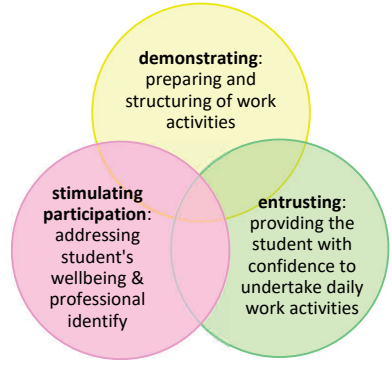
The present research studied how workplace supervision is perceived and conducted by supervisors in practice. Since we aimed to investigate supervisors' pedagogic strategies in real-life work settings, the stimulated recall method helped to ascertain supervisors' actions and reasoning regarding students' workplace learning in physiotherapy and nursing placements. An important finding is that the three-way focus of supervision at the workplace (**Chapter 2**) does indeed provide a hold for understanding the pedagogic strategies of supervisors in placements. Although supervisors' actions and reasoning are shaped by unique learning situations in the daily working life of the seven different work settings, we were able to identify configurations of pedagogic strategies for supervising students. These configurations might serve as a frame of reference for other supervisors and work settings to define supervision in placements.

Despite all students being in their final HPE-year, significant variations were noticeable in the focus of supervisors' pedagogic strategies. Variety is reflected in the four configurations, which reveals not only different proportions, but also different interpretations of demonstration, stimulated participation and entrustment (Fig. 3).
Our results illustrate how supervision is shaped differently in various work settings. Although most work settings facilitate similar opportunities to work in close proximity to the student, workplace supervision is manifested differently in practice. Moreover, traditions of local communities of practice might explain why supervision of the students in this study is manifested in different ways in their placements. This is in line with

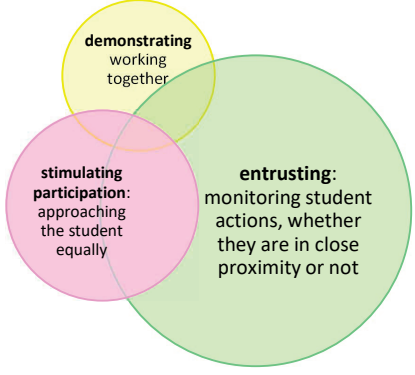
Fig. 3 Manifestations and Interpretations of Pedagogic Strategies in Placements



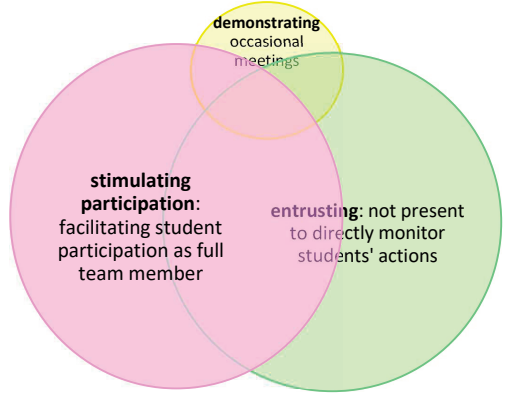
Configuration A: Role Modelling
Pedagogic strategies of supervisors are mainly aimed at training students' knowledge and skills



Configuration B: Overall Support
Pedagogic strategies of supervisors are mainly aimed at supporting students' overall learning process



Configuration C: Trust
Pedagogic strategies of supervisors are mainly aimed at promoting students' independency and fostering a collaborative relationship



Configuration D: Letting Go
Pedagogic strategies of supervisors are mainly aimed at valuing students as individual professionals

literature describing that the nature of work activities influences pedagogic strategies of supervisors in practice (Benner, 2015). Differences in nature of work activities and traditions in work settings might, for example, explain why the pedagogic strategies of the supervisors in the physiotherapists private practice were primarily based on role modelling (Fig. 3(A)) whereas the pedagogic strategies of the supervisors in the hospitals and psychiatric care institution were mainly based on trust (Fig. 3(C)). Furthermore, nursing home and home-based care supervision was based on letting go (Fig. 3(D)) and supervisors maintained more distance from the students' daily practice. Indeed, in line with previous research (Goller et al., 2019), we recognize how supervision in home-

based care follows traditions and supervisors' inherent values to support students in such a way that they fully contribute as new team members to the work in the shortest time frame possible. Therefore, the traditions of professions and the pedagogical values and norms in work settings seem to determine, at least partly, the variation in workplace supervision (Lave & Wenger, 1991; Morris et al., 2021).

Another noticeable finding of our study is that supervisors seem to be continuously engaged in a balancing act. They are challenged to balance the interests of the patient, the student, the supervisor's own interest and the interest of the school or organization. For example, some supervisors would like to approach their students as equal colleagues; however, they struggle because the student is still learning the job. Furthermore, they would like to stimulate the student to work individually and independently, but they cannot, because that is not always in the best interests of their patient.

With regard to this balancing act, previous research has indicated that decisions about how far to trust students to carry out patient care on their own, seems related to the relationship between supervisor and student. Indeed, we recognize in our findings that getting along of supervisors and students could benefit a successful supervision relationship (Sagasser et al., 2017; Heyns et al., 2019). Trust seems to foster supervisors' pedagogic strategies that are aimed at optimizing possibilities for students to actively participate in daily work activities. Although students' and supervisors' ability to get along is mainly a positive aspect in workplace supervision, it could also come with potential risks. It may, for example, also lead to overestimation of students' performance (Barnhoorn et al., 2023). On the other hand, when supervisors have less confidence in the student, they should be careful to not place students in a passive role (Geitz et al., 2016). Further research is recommended to investigate how students' learning process is shaped in the social relationships with supervisors in different work settings.

Limitation and further research

An important limitation of our study is that the supervisor interviews provided us with a rich data set, but gave us little insight into the learning process of students. Including students' perspectives would have provided us with more in-depth information regarding the interrelatedness of supervisors' pedagogic strategies and students' learning experiences. Future research should clarify how the configurations of supervisors' pedagogic strategies are associated with students' learning at the workplace.

Implications for practice

Our study presents new ways to frame workplace supervision from a focus on demonstration, stimulated participation and entrustment. This study serves as a template for supervisors and educators when reflecting on the supervision of students' workplace

learning. More specifically, the configurations of pedagogic strategies based on (A) role modelling, (B) overall support, (C) trust, or (D) letting go, elicit reflection for enactment and improvement of workplace supervision.

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6. Summary and general discussion

This dissertation presents the results of a research project on unravelling the dynamics of facilitating workplace learning through pedagogic practices in healthcare placements. Supervisors are challenged to foster safe learning opportunities and fully utilize the learning potential of placement through stimulating active participation for students while ensuring quality patient care (Billett, 2016; Dornan et al., 2007; Nieuwenhuis et al., 2017; Verhees et al., 2021). In healthcare placements, staff shortages and work pressure may lead to stress when facilitating workplace learning (Barman et al., 2023). Enhancing pedagogic practices in healthcare placements seems essential to support students in challenging experiences, such as emotional challenges (Barman et al., 2023; Weurlander et al., 2018, 2019). This dissertation proposes approaches for optimizing learning experiences for students by highlighting the value of day-to-day work activities and interactions in healthcare placements, and shedding light on agency in workplace learning through supervisor- and student-strategies.

Four studies were conducted to answer the research question: **What characterizes pedagogic practice in healthcare placements to facilitate students' workplace learning?**

The foundational theoretical lenses of the present dissertation were presented in **Chapter 1** and are represented in Figure 1.

Fig. 1 Conceptualizing pedagogic practices in healthcare placements: research focus of chapters

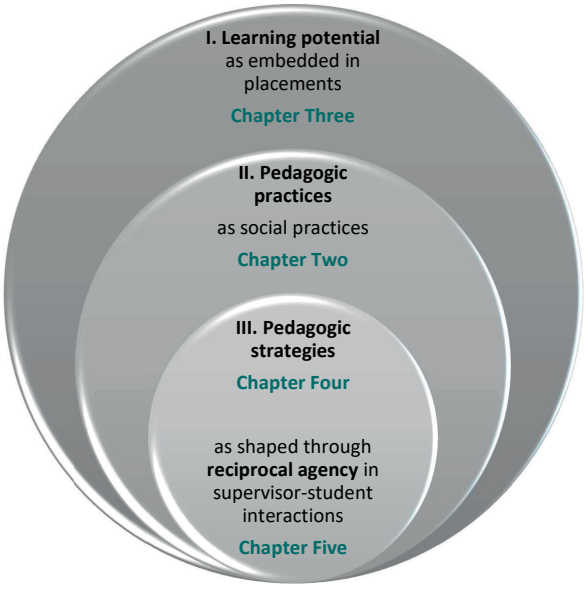


Figure 1 proposes the embeddedness of pedagogic practices in healthcare placements. By answering the research question, different chapters focus on different layers of pedagogic practices in healthcare placements.

- **Chapter 2** defines pedagogic practices in workplace learning;
- **Chapter 3** identifies the learning potential in healthcare placements;
- **Chapter 4** identifies supervisors' pedagogic strategies in healthcare placements;
- and **Chapter 5** unravels the supervisor-student dynamics of facilitating workplace learning.

In Section 6.1, the main findings of the four studies in **Chapters 2, 3, 4 and 5** will be summarized. Subsequently, Section 6.2 includes the general discussion through the three lenses (Fig. 1).

6.1. Summary of main findings

Recognizing the limited exploration of pedagogic practices in healthcare placements as situated and interactive practices, this dissertation started with a literature review (**Chapter 2**), establishing the foundation for subsequent empirical studies (**Chapter 3, 4 and 5**). In this review, literature is included about pedagogic practices in placements for all vocations. In the subsequent field studies, healthcare placements in physiotherapy and nursing programs are studied across various Dutch universities of applied sciences (hbo).

Literature review

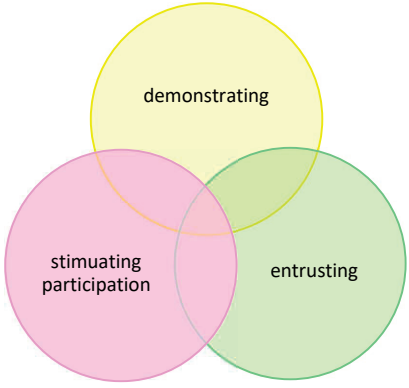
In **Chapter 2**, we were able to operationalize how pedagogic practices play out in vocational practices. These practices involve both deliberate and spontaneous manifestations of facilitating workplace learning, partly obscured in day-to-day work practices. The cohesion of fourteen categories of pedagogic practices are discussed through three perspectives: (a) demonstrating, (b) stimulating participation, and (c) entrusting (Fig. 2).

The literature review lays the foundation for the empirical studies, as it provides an understanding of how workplace learning is facilitated in the workplace.

(a) From the perspective of demonstrating, the following categories were identified in the literature study: demonstrating activities, questioning knowledge, providing feedback, and facilitating simulated practice.

(b) Stimulating participation includes promoting comfort and a supportive learning environment, allowing students into the community, working and learning in collaborative relationships, and evaluating and reflecting.
(c) The perspective of entrusting involves: being there beside students, entrusting independent practice, selecting suitable activities, diagnosing competence, intending to fade support, and determining learning goals.

Fig. 2 Three perspectives on facilitating students' workplace learning (Chapter 2)



The partial overlap of the three perspectives, as showed in Figure 2, underscores that certain categories are suitable for adjusting to different perspectives, as pedagogic practices are dynamic and situation-dependent.

Empirical studies

Three empirical studies investigate pedagogic practice in healthcare placements. The initial empirical study involves observations of student participation to identify the learning potential in physiotherapy and nursing placements. The second empirical study builds upon the findings of the literature review (**Chapter 2**) and sheds light on supervisor strategies. The third empirical study delves into the interactive aspect of supervisor- and student-agency in workplace learning.

1. Student participation in healthcare placements.

In **Chapter 3**, student physiotherapists' and student nurses' participation were studied to identify and characterize the learning potential of healthcare placements. In this study, students and their supervisors were closely observed as they engaged in their daily tasks and interactions throughout their placement days. Five categories of workplace affordances (Table 1) reveal how student participation is facilitated in healthcare placements.

Workplace affordances are defined as the various opportunities that could enable student participation in work activities, direct and indirect interactions (Billett, 2004). The identified affordances throughout placement days demonstrate how student-physiotherapists and -nurses are facilitated to participate differently, in distinct and unique ways (see also Fig. 1 in **Chapter 3**). This contributes to a better comprehension of the learning potential in healthcare placements, enriching our understanding of student participation. It also provides valuable insights for a better understanding of pedagogic practices, as being embedded in the broader learning potential of healthcare placements.

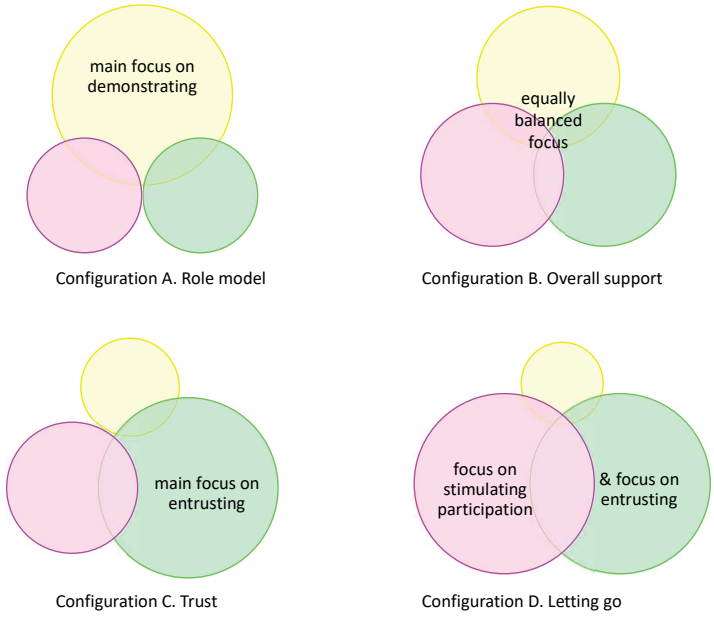
Table 1 Categorization of workplace affordances (Chapter 3)

Categories of affordances	Examples of workplace affordances
Interactions before and after caregiving activities	Including opportunities for discussing patient cases and student's learning progress, or the availability of a staff room for calm conversations
Observing caregiving activities	Including opportunities for observing vocational practices, or being able to listen to the supervisor talking out loud to the patient
Providing care with direct support	Including opportunities for receiving direct verbal and physical support while providing patient care, or monitoring of supervisor to respond to patient's feedback
Providing care in proximity	Including opportunities for collaborating with the supervisor in caregiving activities, or the presence of a supervisor in the same room
Working individually	Including opportunities for autonomy in treatments and interactions with patients, or availability of patient information in printed overviews

2. Pedagogic strategies of supervisors in healthcare placements

Chapter 4 provides insights into supervisors' pedagogic strategies for facilitating workplace learning. Three pedagogic strategies, outlined in **Chapter 2**, (a) demonstrating, (b) stimulating participation and (c) entrusting, provided a framework for deepening the understanding of pedagogic strategies in placements. In the interview study, insights were provided into supervisors' deliberate considerations of using pedagogic strategies. Four configurations of pedagogic strategies elucidate how supervision manifests in healthcare placements: (A) role modeling, (B) overall support, (C) trust, and (D) letting go (Fig. 3).

Fig. 3 Configurations of supervisors-strategies in facilitating workplace learning (Chapter 4)



The four configurations of supervisors' pedagogic strategies provide an understanding of how workplace learning is supported in healthcare placements.

(A) Role model. Supervisors in healthcare placements who serve as role models have the primary goal of demonstrating students how the work should be done. They demonstrate vocational knowledge, skills, and attitudes to the student, and actively engage in students' workplace learning by providing direct support. This involves being close to students, being willing and able to intervene or support students when needed, and ensuring that students learn and enhance their competences.
(B) Overall support. Supervisors in healthcare placements focusing on overall support for students aim to provide broad support to the student's learning process. They balance the three strategies to ensure student participation, vocational development and comfort in the workplace. These supervisors were found to provide clarity in agreements on student participation and facilitate students to gradually take on more responsibility.
(C) Trust. Supervisors in healthcare placements emphasizing trust, have the main aim of entrusting students to act independently. This occurs within a collaborative relationship where mutual trust seems essential. These supervisors encourage students' development by letting them perform tasks independently and make autonomous decisions. These supervisors remain involved in students' workplace learning by monitoring their actions and being available for direct support.

(D) Letting go. Supervisors facilitating students' workplace learning with the letting go approach view the student as a competent practitioner. They encourage students' development in healthcare placements by entrusting and stimulating them to participate as a full team member. Unlike the other approaches, these supervisors are often not present to monitor students' independent actions and decisions within the work setting. There are occasional meetings and discussions to review students' work and development.

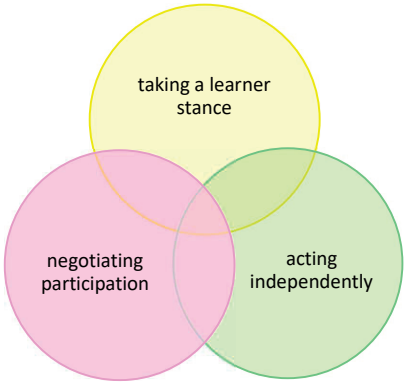
By recognizing and adapting to the diverse needs and abilities of students, supervisors where found to deliberately consider their pivotal role in facilitating students' workplace learning within the possibilities of the healthcare placement.

3. Agency in workplace learning

In **Chapter 5**, agency is added to the framework; supervisors and students choose, in interactions, whether and how to engage with opportunities for workplace learning. Within the scope of this study, agency is defined as the will and ability of an individual to engage with workplace affordances, taking an active and intentional role in their actions and interactions with others.

In the single-case study in a physiotherapy placement, student agency was found to facilitate workplace learning through the following strategies: (a) taking a learner stance, (b) negotiating participation, and (c) acting independently (Fig. 4). Taking a learner stance signifies students' commitment to learning, including an intentional approach that embraces the continuous pursuit of vocational learning. Through the negotiation of participation, students intentionally explore various ways to engage in (collective) actions, fostering collaboration and taking ownership in actions and discussions related to their vocational development. When students choose to act independently, they show both willingness and ability to engage in autonomous actions, entrusting themselves in goal-directed work practices.

Fig. 4 Student-strategies in facilitating workplace learning (Chapter 5)



In-depth studying the supervisor-student dynamics in a single-case study (**Chapter 5**), enhanced our understanding of the interactive nature of workplace learning in healthcare placements. The three student-strategies (Fig. 4), in alignment with the three supervisor-strategies (Fig. 2), suggest a mutual engagement with workplace affordances as opportunities for facilitating workplace learning. The flow of supervisor-student dynamics unveils reciprocal agency where both supervisors and students could play active and intentional roles in facilitating workplace learning. As students employ specific strategies, supervisors respond accordingly, and vice versa, creating a continuous interplay (see also Fig. 6 and Table 3 in **Chapter 5**). Interactions between supervisors and students unfold dynamically, responding and adapting to the specific needs within the healthcare placements.

6.2. General discussion

By approaching pedagogic practices as being afforded within the everyday work activities and interactions, the embedded nature of these practices is highlighted. Moreover, studying how pedagogic practices unfold in practice allowed for looking beyond existing frameworks (cf. Billett, 2001; De Bruijn 2012; Mikkonen et al. 2017), thereby expanding current conceptualizations of facilitating workplace learning.

Discussion of conceptual definitions

Some concepts occasionally seem synonymous, but subtly differ in meaning. Throughout the research process, the definitions for these concepts gradually became more concise over time. This underscores the importance of clarifying the definitions of concepts in this dissertation (Table 2), and, subsequently, discuss them.

Table 2 Definitions of concepts used in this dissertation

Concepts	Definitions
Pedagogic practices	Pedagogic practices are social practices intending to facilitate students' workplace learning
Student participation vs. workplace learning	Student participation refers to the engagement of students in activities and interactions in healthcare placements, potentially eliciting students' workplace learning.
Learning potential vs. workplace affordances	The learning potential in healthcare placements encompasses all workplace affordances that either already exist, or can be created, providing direct or indirect opportunities for student participation.
Perspectives vs. strategies	Perspectives allow for conceptualizing overarching approaches and viewpoints, while strategies include deliberate considerations on how to facilitate students' workplace learning, and the active and intentional role in facilitating workplace learning.
Agency vs. strategies	Agency in workplace learning occurs through supervisors' and students' strategies to engage with workplace affordances, with the purpose of facilitating student learning in the workplace.

Pedagogic practices

The term pedagogic practices is used to describe a large range of activities and interactions aimed at supporting students' engagement in learning experiences at the workplace. In **Chapter 1**, pedagogic practices are defined as means by which learning through activities and interactions can be supported or enhanced (Billett et al., 2018). In **Chapter 2**, the focus of pedagogical practices is refined to studysocial practices intended to enable student participation in work activities.

Student participation vs. workplace learning

Student participation in placements through internships, apprenticeships or clerkships, is commonly termed workplace learning. In our studies, student participation in healthcare placements is interpreted from a socio-cultural perspective (e.g., Lave & Wenger, 1991; Leont'ev, 1978; Vygotsky, 1986). Subsequently, workplace learning is intricately embedded in healthcare placements, with interactions, direct and indirect, playing a fundamental role. In **Chapter 1**, workplace learning is introduced as arising through student participation in activities and interactions (Billett et al., 2018), enabling students' vocational development. Given that this dissertation focuses on the facilitation of workplace learning, the term student participation is used to denote the potential for workplace learning to unfold, as discussed in in **Chapter 3**.

Learning potential vs. workplace affordances

The concepts of learning potential and workplace affordances are both broad and comprehensive terms. In **Chapter 1**, the learning potential of healthcare placements is defined as the ability or power of the workplace to facilitate learning (Nijhof & Nieuwenhuis, 2008). In **Chapter 3**, workplace affordances are introduced as opportunities in the

work setting that either already exist, or can be created, to invite students to contribute to work and simultaneously learn at the workplace (Billett, 2002). According to Billett (2001, 2004), affordances provide opportunities for student participation and learning in activities, direct and indirect interactions. In line with our conceptual approach in **Chapter 5**, the learning potential of healthcare placements thus encompasses the entirety of workplace affordances.

Perspectives vs. strategies

The concepts of perspectives and strategies are closely related. In **Chapter 2**, three perspectives are introduced: (a) demonstrating, (b) stimulating participation and (c) entrusting. As strategies are based on supervisors' reasoning and interrelated actions (De Bruijn, 2012; Khaled et al. 2021), we aimed to elucidate their intentional pedagogic approaches. However, in the included studies in the literature review, there was a notable deficiency in understanding supervisors' reasoning and interconnected actions, making it difficult to define strategies in **Chapter 2**. Therefore, the term perspectives was chosen to denote the overarching approaches and viewpoints on workplace pedagogy. Subsequently, these same perspectives were validated as strategies in **Chapters 4 and 5**, since the empirical studies allowed to study both the activities supervisors undertake and the rationales behind their actions. In **Chapter 4**, pedagogic strategies are defined as the result of supervisors' deliberation of how to most successfully supervise students.

Agency vs. strategies

Both agency and strategies underscore an intentional consideration and effort to facilitate workplace learning. The intentional thoughts and actions of supervisors are manifested as strategies in **Chapter 4**. In **Chapter 5**, strategies are used to elucidate agency in facilitating workplace learning and agency is defined as the willingness and ability to engage with workplace affordances (Billett, 2004; Bryson, 2006; Vähäsantanen et al., 2022). In hindsight, it becomes apparent that the terminology agency-strategies, as mentioned in **Chapter 5**, is a pleonasm as strategies are inherently agentic.

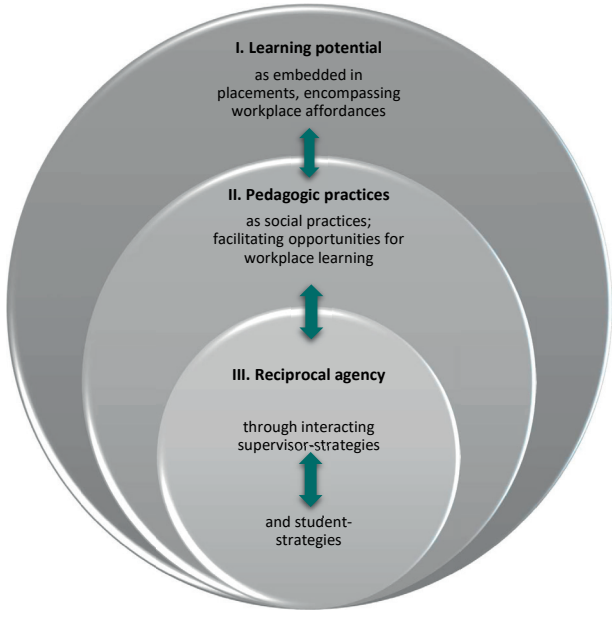
Discussion of theoretical lenses

In the general introduction and in Figure 1, three theoretical lenses were presented to characterize pedagogic practices for facilitating workplace learning. In the following paragraphs, I will demonstrate how the three lenses are interconnected, influence each other, and cannot be viewed separately from one another (Fig. 5). By doing this, I will increasingly zoom in on the micro-level of facilitating workplace learning.

I. Firstly, proposing that pedagogic practices are embedded in the broader landscape of work settings, the uniqueness of the learning potential in each placement will be emphasized.

II. Secondly, I will explain that when the learning potential in healthcare placements is recognized within social practices, it aligns with a pedagogic practice.
III. Delving deeper, pedagogic practices are shaped in, and emerge from, supervisor-student dynamics in healthcare placements. This highlights the interactive aspect of facilitating workplace learning, where both supervisors and students can actively contribute to facilitating workplace learning through reciprocal agency.

Fig. 5 Conceptualizing pedagogic practices in healthcare placements: interrelatedness of lenses



I. Learning potential of healthcare placements

Whilst existing research acknowledges that pedagogic practices are shaped within the learning potential of placements (e.g., Billett, 2022; Nijhof & Nieuwenhuis, 2008; Noble et al., 2023; Steinert et al., 2017), in this dissertation, understanding was enhanced on the actual learning potential in different healthcare placements. The following field notes of observations from **Chapter 3** illustrate manifestations of student participation in different settings.

> In the hospital, the student-nurse and her supervisor visit a patient together. (..) The supervisor provides medicines and explains out loud what the medication does, and how she scans and administers it. Next, the supervising nurse replaces the patient's stoma while the student-nurse observes her. Occasionally, she asks the student-nurse to indicate materials, and she explains and instructs the steps for stoma care out loud.

> In the home-based care setting, the student-nurse is challenged to work individually, without direct interactions with her supervisor, co-workers or peers. The work schedule on her mobile phone provides a structure for her patient visits. By bicycle or on foot, the student-nurse moves from home to home to provide patient care independently. At patients' homes, this student-nurse is facilitated to work with folders of written patient information and overviews of caregiving tasks.

As showed by the above field notes of observations, different learning potential of healthcare placements is evident in the degree of student autonomy, opportunities for interactions and the proximity to supervisor-support. For example, hospital settings involve direct student-supervisor interactions and hands-on support, while in the home-based care, students are entrusted to work independently, relying more on workplace affordances as indirect interactions, including a structured work schedule, the availability of a mobile phone and folders of patient information. The findings of **Chapter 3** highlight how the nature and meaning of pedagogic practices in workplace learning follow from the learning potential and the availability of workplace affordances in the healthcare placement (Fig. 5). Additionally, in **Chapter 4** is confirmed that supervisors' strategies are influenced by specific situations, patient cases, student needs and supervisor preferences, and also by the socio-cultural nature, economic conditions and social traditions in workplaces and vocations.

Thus, consistent with existing literature, pedagogic practices are shaped by the learning potential of specific placement settings in which they are embedded (Benner, 2015; Goller et al., 2019; Lave & Wenger, 1991; Morris et al., 2021). What this dissertation contributes to existing literature, is the illustration that, in certain healthcare placements, specific workplace affordances, such as opportunities for hands-on support, appear to arise naturally within the workflow, while in other healthcare placements, these workplaces affordances need to be intentionally created or planned. By doing so, there is a potential for organizing workplace affordances in a way that implies a kind of implicit support structure.

II. Pedagogic practices

Pedagogic practices are a natural result of the learning potential available in social practices. Although these practices are often not established to promote workplace learning, they can facilitate students' learning. This aligns with existing literature emphasizing the inherent learning potential of observations, discussions, and feedback as integral components in ordinary work activities (Billett et al., 2018; Fluit et al., 2010; Newton et al., 2011; Prideaux et al., 2000; Wright et al., 1998). Yet, some work activities, such as nurses' hand-overs, are believed to be inherently rich in pedagogical value (Billett & Noble, 2020). Going beyond their work, this dissertation recognizes the possibilities to

deliberately influence, shape and enhance pedagogic practices (Fig. 5). The subsequent illustrations show some activities and interactions that occur every day in healthcare placements, i.e. the rehabilitation centre and the elderly care setting (based on **Chapter 3**).

> In the rehabilitation centre, the placement days typically start with a dialogue between the supervisor and student-physiotherapist. In these interactions, insights on patient cases are exchanged and the preparations of patient treatments are discussed. The interactive start is followed by collaborative engagement of the supervisor and the student in several patient treatments.

> In the elderly care setting, collaborative learning and working are integral components of the caregiving processes. After completing a joint activity, such as washing an dressing a patient, the student-nurse takes a moment to engage in a brief reflective discussion with her peer-nurse. Through this discussion, they collectively recognize the value of observing more experienced colleagues.

Although the pedagogic value may inherently exist in each placement, the facilitation of student learning could be further enhanced through interactions with supervisors, and other practitioners. Supervisors play a crucial role in advancing students' learning by guiding them towards the zone of proximal development (Vygotsky, 1986). Preparatory dialogues and collaborative engagement with supervisors, as observed in the rehabilitation centre, are believed to optimize the pedagogic value within healthcare placements. Additionally, various co-workers or peers could assume roles similar to supervisors roles, supporting students' learning experiences during health care placements (**Chapter 3**). In the example provided, the student in the elderly care setting actively approaches her peer-nurse to discuss their joint challenges. This indicates how student perceptions determine who they consider significant others in providing support during their learning process (De Bruijn, 2019). However, for these practices to occur, workplace affordances should invite for student participation in various interactions with different practitioners.

This dissertation underlines how opportunities could be provided to invite for student participation in social practices, for example, by regularly setting aside time for supervision and being available when students need support (see also Fluit et al., 2010; Harden & Crosby, 2000). This includes collaborative moments for determining learning goals, debriefing, explaining complex matters, and posing questions during patient treatments (**Chapters 2 and 3**). Nevertheless, despite all students being in their final year of physiotherapy and nursing education at Universities of Applied Sciences, in our empirical studies, variations were noticeable in which pedagogic practices were available in

different healthcare placements. However, the richness of the learning experiences are not premised upon the learning potential of pedagogic practices afforded in healthcare placements alone; it is also based on how supervisors and students come to engage with them (Billett & Noble, 2020).

III. Reciprocal agency

The integration of student agency in the final study has significantly enhanced the conceptual understanding of facilitating workplace learning, revealing the reciprocal interplay between supervisors' and students' strategies (**Chapter 5**). The alignment of strategies emphasizes the reciprocal nature of agency in workplace learning, where supervisor and student collaboratively facilitate and shape learning in healthcare placements. Previous research proposed that the interplay between affordances and agency facilitates students' learning (Billett, 2001; Goller et al., 2019). Research findings in **Chapter 5** confirm this interplay and, additionally, introduce the nuanced concept of reciprocal agency in workplace learning. Reciprocal agency involves interactive processes of supervisor-student dynamics, encompassing both supervisor- and student-strategies to facilitate workplace learning. In the subsequent narrative, based on **Chapter 5**, reciprocal agency is evident as the supervisor and student actively respond to each other.

In the revalidation centre, it was agreed beforehand that the student-physiotherapist was required to create a long-term treatment plan and independently provide patient care. The student presented a general outline of her plan but lacked specific details.

Supervisor: "So, she indicated that she was planning to do this and that, but she kind of improvised because she had not put anything on paper to prepare, so it went from one thing to another. I made it clear to her that she needed to organize her thoughts more, that she really should formulate a hypothesis to conduct goal-directed patient treatments."

Student: "And then at first, I was a bit taken aback, (..) just feelings of uncertainty, (..). But then I thought yeah; I will just work hard now to figure it all out properly."

(..)

Although the supervisor expected the students' independency in the preparation of patient treatments, she provided the student with a framework, assigning it as homework, because she noticed the student's need for a bit more structure to effectively prepare for a patient treatment. This proved to be supportive.

Supervisor: "And then, I was positively surprised because in her thorough preparation I could really see the steps of her reasoning process."

> Student: "Now, I really knew what I was talking about, could truly substantiate it, and then it became even enjoyable to discuss the patients' treatment plan with my supervisor. When she asked questions, I had well-founded answers, which actually gave me confidence, a sense of security, and the feeling that I can start the patient treatment with a prepared mindset."

The narrative involves a dynamic interplay of strategies provided by both supervisor and student, constantly responding to each other and adapting to the evolving circumstances. As showed with the above example, the supervisor initially entrusts the student-physiotherapist with autonomy, expecting from her to prepare her work independently, which is supported by research showing that students are often stimulated to work autonomously in placements (O'Connor et al., 2019; Sagasser et al., 2017). However, in this case, the student encounters difficulties in preparing patient treatments, which interferes with her ability to act independently. When the supervisor changes her strategy and demonstrates how to proceed, the student is then willing and able to take on a learner stance. This is proved to be supportive and aligns with my view, as intentional engagement from both supervisors and students can advance supervision and workplace learning experiences.

By emphasizing collaborative responsibilities, reciprocal agency underscores the potential for both supervisors and students to take an intentional stance in workplace learning. However, while this dissertation suggests that learning and working synergize effectively in healthcare placements (see also Khaled et al., 2021; Noble et al., 2023), I acknowledge that challenges may arise in exercising agency within daily work tasks. Conditions such as staff shortage, the intensity of work tasks and the need to provide quality patient care may limit opportunities for supervisors and students to engage in deliberate practices. This necessitates utilizing and creating during healthcare placements, where there is an opportunity to pause, reflect and engage in discussions about the supervision and workplace learning processes. In my view, these discussions should address supervisors' and students' agentic role in workplace learning.

6.4. Methodological considerations and reflections

The research design involved employing a multifaceted research approach to comprehend pedagogical practices in healthcare placements and unravel the dynamics of facilitating workplace learning in authentic settings. Each chapter presents considerations and limitations, offering methodological insights that reflect on the respective studies. The methodological considerations and reflections in this section encompass the overall research approach.

The in-depth character provided rich and varied data allowing to take authentic views on facilitating workplace learning. In this dissertation, data were obtained from literature, observations and interviews, thereby promoting data triangulation (Mays & Pope, 2000; Tavakol & Sandars, 2014). The data derived from observations of supervisors and students in interactions with one another, provided insight into actual behaviour. In combination with interview studies, focusing on considerations and reasons, the studies provided a deep understanding of how pedagogic practices play out in healthcare placements.

The systematic review of literature (**Chapter 2**) has an explorative and descriptive nature (De Groot, 2019), and proved to be a crucial conceptual foundation for the subsequent empirical studies. Subsequently, three empirical studies took place where, through observation, induction, and deduction, I brought to life pedagogic practices in authentic settings. The empirical studies in this dissertation distinguish themselves from testing or evaluative research, as I was not focused on testing predefined hypotheses (De Groot, 2019). This doesn't imply that there were no initial hypotheses, theories, or beliefs within the research approaches in **Chapters 3, 4, and 5**; it means that the research approach and collection of data was not intended and not suitable for rigorous testing or evaluation of hypotheses.

Adopting a socio-cultural perspective in this study made the exploration of micro-processes in real-world practices essential, yielding a rich set of data. The conceptual understanding logically derived from **Chapter 2**, and the evolving insights in **Chapter 3, 4, and 5** provided me with focus and ensured that the richness of data did not confuse me but consistently inspired me to further unravel pedagogic practices. The observation-study in **Chapter 3** has a descriptive nature (De Groot, 2019), exploring student participation and the learning potential of healthcare placements to provide an accurate picture of what happens in different work settings. The interview study in **Chapter 4** and the single-case study in **Chapter 5** take the research approach a step deeper, unravelling pedagogic practices as micro-processes in social practices. In these studies, interpretation is central (De Groot, 2019), where I attempted to gain in-depth insight into the complexity and layered nature of pedagogical practices and facilitating workplace learning.

The strength of this dissertation lies in valuable and rich insights into authentic situations, promoting its overall validity and credibility. However, certain methodological challenges should be acknowledged. The empirical research was confined to describe specific situations in healthcare placements, making it challenging to apply the dissertation findings in other contexts. Furthermore, inevitable subjectivity is present in this research, influencing reliability and consistency. I inherently brought my own inter-

pretations while trying to understand each supervisor's and student's experiences and considerations, affecting the objectivity of the research. Given that I was the only one that collected data, and had to make just-in-time decisions, for example about when to take photos while simultaneously shadowing the student and taking field notes, it raises the potential risk for researcher bias. Additionally, analyzing extensive qualitative data in empirical studies is believed to be complex, and other researchers may draw different conclusions. Although subjectivity is inherent in qualitative research, it underscores the importance of transparency and reflexivity in the research process and research team (Poortman & Schildkamp, 2012). This was done in regular meetings with my research supervisors, discussing conceptual understanding, collaborative analysis and written feedback on manuscripts.

Overall, I believe that the research approach was fitting for the aim of this dissertation, providing a comprehensive understanding of pedagogic practices to facilitate workplace learning in healthcare placements. This is reinforced by the coherence found in several studies (i.e. **Chapters 2 and 4**, and the culmination of research findings in **Chapter 5**), aligning with and expanding upon findings from existing research.

6.5. Implications for further research

Focusing primarily on healthcare placements, specifically on physiotherapy and nursing, this dissertation delved into the facilitation of workplace learning. This opens opportunities for further research into pedagogic practices and workplace learning.

- *Longitudinal studies providing in-depth understanding.* Adopting a socio-cultural perspective, this dissertation advocates for more longitudinal investigations into the facilitation of workplace learning. Such longitudinal research could further unravel the dynamic nature of pedagogic practices over time and under different circumstances, providing a more nuanced understanding of how workplace learning and supervision manifests and adapts.
- *Pedagogic practices in diverse vocations.* The dynamics of supervisor- and student-strategies as identified in a single-case study (Chapter 5) are valuable for further research to validate whether the alignment of strategies could be recognized in other placement settings. It would be interesting to go beyond the occupations of physiotherapy and nursing to enhance further insights on facilitating workplace learning in placements.

- *Student agency and student learning.* While our dissertation focuses on facilitating workplace learning, future research could delve deeper into student learning. Fur-

ther studying student agency, in dynamic interactions with supervisors, could offer valuable insights into the actual learning processes elicited in students. Such insights can provide a glimpse into whether facilitating workplace learning actually results in learning, and how these learning processes unfold.

- *Embeddedness of workplace learning in educational systems.* While our dissertation focuses solely on workplace learning, this learning in placements is part of an educational system. Subsequent research could focus on how learning at school, in placements, and at the boundary between school and work can be further promoted to encourage collaboration, shared experiences, dialogue and agency in vocational learning.

For further studying students' workplace learning, understanding the inviting quality of work settings is crucial, just as the dynamic interplay of supervisor- and student-agency in facilitating workplace learning. This dissertation provides a conceptual framework for this. In this way, further research can contribute to supervisors' and students' workplace learning experiences, and support work settings and education institutions in facilitating placements.

6.6. Practical implications

The following practical implications are provided for practical support for supervisors, students, teachers and other stakeholders involved in facilitating workplace learning. These practical implications emphasize collaboration, reflection and dialogue to meet the needs of students' vocational development and adequately use the learning potential of placements.

Promote reflective practices for supervisors

In one of the interviews for this dissertation, a supervisor expressed a desire to provide student autonomy and space for learning, while ensuring the quality of patient care.

> Supervising physiotherapist: "I enjoy supervising students, but I also find it quite difficult. I actually want to give students all the autonomy and space they need, but at the same time, I want to ensure that the patients receive the best treatment."

This quote reflects the complexity of the supervisory role, illustrating the inherent considerations involved in facilitating workplace learning. It underscores the importance of supporting supervisors to recognize the learning potential in their placements and reflect on their use of the three pedagogic strategies: (a) demonstrating, (b) stimulating participation, and (c) entrusting, to contribute to students' workplace learning expe-

riences (**Chapter 2; Chapter 4**), considering the opportunities for student participation and the inviting qualities of the work setting (**Chapter 3**). Supervisors could be explained that effective supervision looks different in each placement (Billet et al., 2001; Noble et al., 2023), and they may find support in realizing that students may not always benefit most from autonomy alone; they will also be encouraged to learn through other supervisor strategies. Insights into configurations of pedagogic strategies: (A) role modelling, (B) overall support, (C) trust, and (D) letting go (**Chapter 4**), could elicit supervisors' reflection on how to deliberately manifest agency in facilitating students' workplace learning (**Chapter 5**).

Prepare students for their agentic role in workplace learning.

The following quote provides an example of a student actively engaging in her own learning experiences during her placement. The student's progression, from initially observing her supervisor to gradually taking more initiative, illustrates her development of independency in workplace learning.

> Student-nurse: "Initially, I was shadowing my supervisor, and now it's my fifth week. So, at first, I just followed along, and we basically did things together. However, gradually, I started initiating and doing more things on my own. And, you know, she [supervisor] is aware that if I need help, I will ask her for it. So, I think that is why she is comfortable letting me take more initiative."

Prior to, and during their placements, students should be prepared to embrace their agentic role by participating goal-directed in work activities and making autonomy-based decisions. This is not easy and obvious for all students. They could be supported to learn about the strategies they could employ: (a) taking a learner stance, (b) negotiating participation, and (c) acting independently (**Chapter 5**). Actively engaging in their own learning experiences in placements, also involves receiving support on recognizing the learning potential of their placements (**Chapter 3**), and fostering an understanding of their and their supervisors' agency in discussing their ways of participation and supervision (**Chapter 5**).

Agree on student participation in placements

While collaborative learning through interactions with others in healthcare placements may seem inherent, the quote from the student-nurse in home-based care highlights the reality of limited communication and collaboration about patient care activities among co-workers during her placement in home-based care.

> Student-nurse: "Co-workers don't really see each other (..), so I do not discuss patient cases with others. There is very little contact in that regard, and essentially, you would have

to do that discussions in your free time because any time not spent with a client is not considered as working hours."

To address such potential risks, close communication between school and work is recommended, encouraging teachers, supervisors and students to foster dialogue about learning intentions and supervision expectations as collaborative partners in the student's learning process. Those involved in facilitating placement programs should acknowledge the interactive and collaborative nature of workplace learning, and could utilize this dissertation as valuable resource for clear communication and agreements about supervision and student participation prior to and during placements.

Discussions about student participation should include agreements on students' engagement with work activities and opportunities for interactions (**Chapter 3**). When interactions with supervisors or co-workers are not naturally occurring during patient treatments, establishing fixed moments, for example for pre-discussion or debriefing work activities, shall be beneficial and needed. The framework for reciprocal agency in workplace learning (**Chapter 5**) offers a helpful way for talking about supervisor- and student-strategies and sharing experiences of supervision and workplace learning in healthcare placements.

6.7. Concluding remarks

This dissertation unravels the dynamics of facilitating workplace learning from a socio-cultural perspective, by in-depth studying pedagogic practices in healthcare placements. I emphasized the embedded and interactive nature of pedagogic practices, and discussed them as social practices. The dissertation underscores the significance of both supervisor- and student-strategies in recognizing, shaping and using the learning potential in pedagogic practices. While this might suggest a smooth unfolding of workplace learning with high levels of supervisor- and student-agency, this dissertation also reveals instances of supervisor struggles and student challenges during healthcare placements. In my view, recognizing reciprocal agency invites both supervisors and students to facilitate workplace learning more deliberately.

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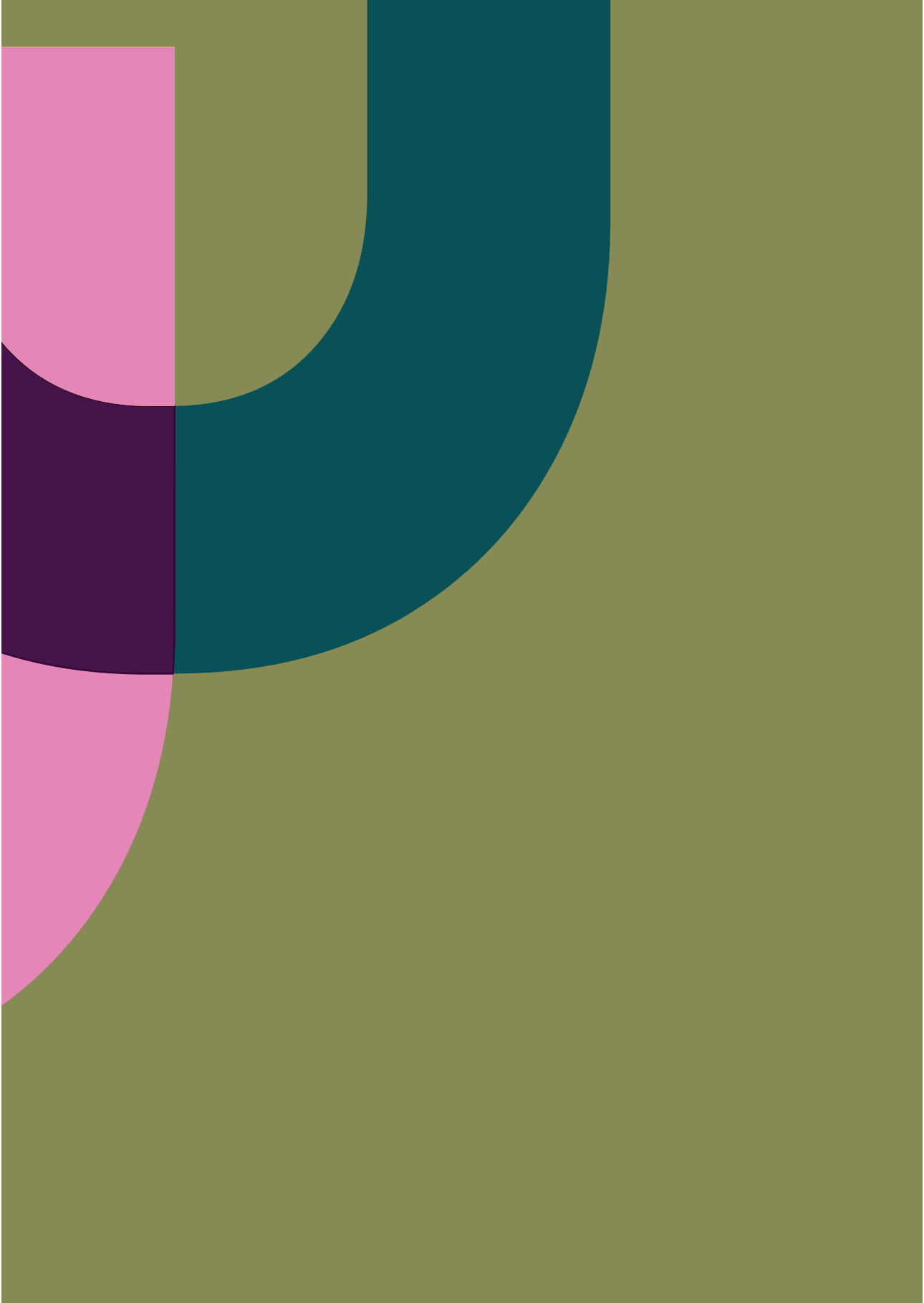


Nederlandse samenvatting

Voor het leren van een beroep is het belangrijk voor studenten om praktijkervaring op te doen op de werkplek. Daarom zijn stages een belangrijk onderdeel van het beroepsonderwijs. In dit proefschrift worden stages in de gezondheidszorg onderzocht en meer specifiek stages voor hbo fysiotherapie- en verpleegkundestudenten. De stages van beroepsopleidingen in de gezondheidszorg vinden bijvoorbeeld plaats in ziekenhuizen, revalidatiecentra, particuliere praktijken of andere zorginstellingen. Tijdens deze stages werken studenten samen met verschillende collega's en krijgen ze te maken met een diversiteit aan patiënten, variërend van mensen die een kleine hulpvraag hebben tot mensen die complexe of acute hulp nodig hebben. Dit zorgt voor gevarieerde leerervaringen, die er op iedere werkplek, en voor iedere student anders uit zien.

Studenten worden tijdens stages uitgenodigd om actief te leren op de werkplek door deel te nemen aan dagelijkse werkzaamheden. Zo worden studenten in staat gesteld om samenhangende kennis, handelingsrepertoire en een beroepsidentiteit te ontwikkelen. Het is daarbij essentieel om werkplekleren op zo'n manier te faciliteren, dat het leerproces van studenten wordt ondersteund. Als studenten stage lopen, worden zij daarom op de werkplek begeleid door praktijkopleiders. Praktijkopleiders worden ook wel praktijkbegeleiders of stagebegeleiders genoemd. In dit proefschrift bedoel ik met praktijkopleiders de personen op de werkplek die de dagelijkse begeleiding bieden aan studenten tijdens hun stage. Zij hebben een belangrijke rol om studenten te ondersteunen in het dagelijkse werk en een veilige leer- en werkomgeving te creëren. In de gezondheidzorg moeten praktijkopleiders beslissingen nemen over hoe ze het leren van studenten op de werkplek het beste kunnen ondersteunen, rekening houdend met goede zorgverlening aan patiënten. Dit kan soms lastig zijn.

Het leerpotentieel van de werkplek wordt niet vanzelfsprekend benut. Werkplekleren van studenten brengt uitdagingen met zich mee vanwege de dynamische en complexe aard van stages. Praktijkopleiders kunnen te maken hebben met werkdruk en personeelstekort. Hierdoor bestaat het risico dat studenten verkeerde routines overnemen van hun praktijkopleiders, stress ervaren en beperkte tijd hebben om te leren via reflectie en feedback. Daarnaast komen studenten soms ook emotioneel moeilijke situaties tegen, zoals het omgaan met zieke of veeleisende patiënten, en kunnen zij zich onzeker voelen om patiënten te 'gebruiken' voor hun eigen leerervaringen.

Om leerervaringen van studenten tijdens hun stages te bevorderen, is het belangrijk om beter te begrijpen hoe pedagogisch-didactische praktijken het leren op de werkplek kunnen faciliteren Pedagogisch-didactische praktijken verwijzen naar verschillende

activiteiten en interacties die bedoeld zijn om studenten te ondersteunen bij het leren op de werkplek. Dit kan bijvoorbeeld betekenen dat praktijkopleiders aan studenten uitleg geven, vragen stellen of op andere manieren begeleiding bieden tijdens het uitvoeren van taken. Pedagogisch-didactische praktijken zijn altijd verweven met de context van het werkplekleren. Het onderzoek in dit proefschrift beantwoordt de volgende onderzoeksvraag: **Wat kenmerkt pedagogisch-didactische praktijken in stages in de gezondheidszorg met de bedoeling om het leerproces van studenten op de werkplek te ondersteunen?**

De hoofdstukken in dit proefschrift presenteren onderzoeksresultaten met betrekking tot de volgende doelen:

- het definiëren van pedagogisch-didactische praktijken in de context van het leren op de werkplek (literatuurstudie in Hoofdstuk 2);
- het identificeren van het leerpotentieel van de werkplek (observatiestudie in Hoofdstuk 3);
- het identificeren van begeleidingsstrategieën van praktijkopleiders (interviewstudie in Hoofdstuk 4);
- en het ontrafelen van de dynamiek tussen studenten en praktijkopleiders in het faciliteren van werkplekleren (enkelvoudige casestudie in Hoofdstuk 5)

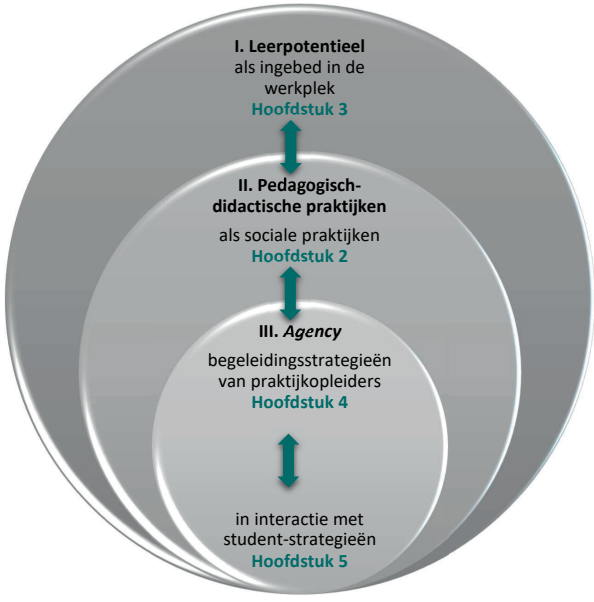
Belangrijkste bevindingen

De basis van de theoretische en methodologische aanpak in dit proefschrift zijn samen te vatten in drie theoretische lenzen die volgen uit een sociaal-cultureel perspectief (Lave & Wenger, 1991; Leont'ev, 1978; Vygotsky, 1986). De bevindingen in dit proefschrift laten zien hoe deze drie lenzen met elkaar samenhangen, elkaar beïnvloeden en niet los van elkaar kunnen worden gezien (Figuur 1).

I. Het leerpotentieel van de werkplek omvat alle mogelijkheden voor activiteiten en interacties, zowel direct als indirect, die het leren van studenten kunnen uitlokken tijdens stages. Het leerpotentieel van de werkplek beïnvloedt - en wordt beïnvloed door - pedagogisch-didactische praktijken.
II. Pedagogisch-didactische praktijken zijn bedoeld om het werkplekleren van studenten te ondersteunen. Het zijn inherent sociale praktijken. In pedagogisch-didactische praktijken doen studenten ervaringen op tijdens het werken en leren in interacties met praktijkopleiders, collega's, patiënten en medestudenten.
III. De *agency* van praktijkopleiders en de *agency* van studenten in pedagogisch-didactische praktijken beïnvloeden gericht de processen van stagebegeleiding, en

daarmee werkplekleren. *Agency* komt tot uiting in een wederkerige dynamiek van begeleidingsstrategieën en student-strategieën.

Fig. 1 Conceptualisering van pedagogisch-didactische praktijken op de werkplek



In de volgende paragrafen wordt steeds verder ingezoomd in de concepten en processen van stagebegeleiding door de lenzen – leerpotentieel, pedagogisch-didactische praktijken en agency – één voor één te bespreken.

I. Leerpotentieel van de werkplek

Het leerpotentieel van de werkplek wordt gedefinieerd als het vermogen of de kracht van de werkplek om leren te faciliteren (Nijhof & Nieuwenhuis, 2008). Het leerpotentieel van de werkplek omvat een geheel aan workplace affordances (Tabel 1). Deze affordances bestaan al op de werkplek, of kunnen worden gecreëerd, en bieden mogelijkheden voor studenten om deel te nemen aan activiteiten en interacties, zowel direct als indirect (Billett, 2001; 2004).

Tabel 1 Categorieën van workplace affordances (Hoofdstuk 3)

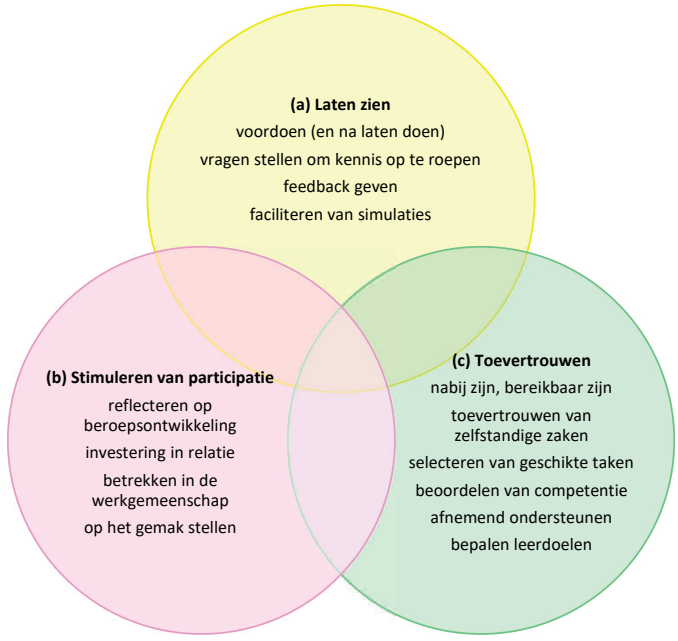
Categorieën van *affordances*	Voorbeelden van *affordances*
Gesprekken voor en na de zorgverlening	Zoals mogelijkheden voor studenten om patiëntcasuïstiek en de eigen leerwensen te bespreken, of de beschikbaarheid van een personeelsruimte voor rustige gesprekken
Observeren van zorgverlening	Zoals mogelijkheden voor studenten om het handelen van meer ervaren collega's te observeren, of mee te luisteren in patiëntgesprekken
Zorgverlening met directe begeleiding	Zoals de mogelijkheden voor directe ondersteuning bij het verlenen van patiëntenzorg, of de hulp van de praktijkopleider om adequaat te reageren op de patiëntbehoefte
Zorgverlening in nabijheid	Zoals de mogelijkheden voor studenten om samen te werken met de praktijkopleider, of de aanwezigheid van de praktijkopleider in dezelfde ruimte
Individueel werken	Zoals de mogelijkheden voor studenten om zelfstandig patiënten te behandelen, of de autonomie van studenten in het opstellen van een behandelplan en de toegang tot patiëntinformatie.

In **Hoofdstuk 3** is het leerpotentieel van de werkplek onderzocht voor studenten fysiotherapie en studenten verpleegkunde. In dit onderzoek zijn zeven studenten en hun praktijkopleiders geobserveerd tijdens hun stages. Observaties van de dagelijkse taken en interacties tijdens verschillende stagedagen laten zien hoe deze studenten participeren op de werkplek. Uit de observaties van stages in een particuliere praktijk, revalidatiecentrum, ziekenhuis, ouderenzorg-instelling, psychiatrische instelling en de thuiszorg wordt duidelijk hoe het leerpotentieel van een werkplek kan verschillen. Bijvoorbeeld, sommige stages bieden veel mogelijkheden voor zelfstandig werken, terwijl andere meer directe begeleiding of gesprekken faciliteren.

II. Pedagogisch-didactische praktijken

Pedagogisch-didactische praktijken zijn inherent sociaal van aard en bedoeld om het werkplekleren van studenten te ondersteunen. Dit kan betrekking hebben op verschillende begeleidingsaspecten van het leerproces tijdens stages, zoals het faciliteren van praktische ervaringen, observaties, feedback, evaluaties en interacties tussen studenten en hun omgeving op de werkplek.

Fig. 2 Pedagogisch-didactisch handelen op de werkplek (Hoofdstuk 2)



In **Hoofdstuk 2** is in een literatuurstudie onderzocht hoe begeleiding van studenten tijdens stages eruitziet. Uit de analyse van empirische onderzoeksresultaten in 47 artikelen komt een rijk en gevarieerd beeld tevoorschijn van veertien categorieën van pedagogisch-didactisch handelen op de werkplek. Praktijkopleiders, en andere collega's waarmee studenten samenwerken tijdens stages, hebben bijvoorbeeld aandacht voor het creëren van een veilige leeromgeving, stellen studenten vragen tijdens patiëntbehandelingen, laten zien hoe vaardigheden en het klinisch redeneren in de praktijk wordt uitgevoerd en geven studenten de ruimte om zelfstandig te handelen. Een belangrijke bevinding is dat stagebegeleiding ook gaat over 'er zijn' voor de student: in de directe nabijheid van de student of indirect, bijvoorbeeld telefonisch bereikbaar. De veertien categorieën worden samengebracht in drie perspectieven op stagebegeleiding: (a) laten zien, (b) stimuleren van participatie en (c) toevertrouwen (Figuur 2).

De gedeeltelijke overlap van de drie perspectieven, zoals te zien in Figuur 2, laat zien dat bepaalde categorieën van pedagogisch-didactisch handelen passend kunnen zijn bij verschillende perspectieven. Dit is afhankelijk van de overwegingen van praktijkopleiders en hoe zij de specifieke situatie en de student inschatten.

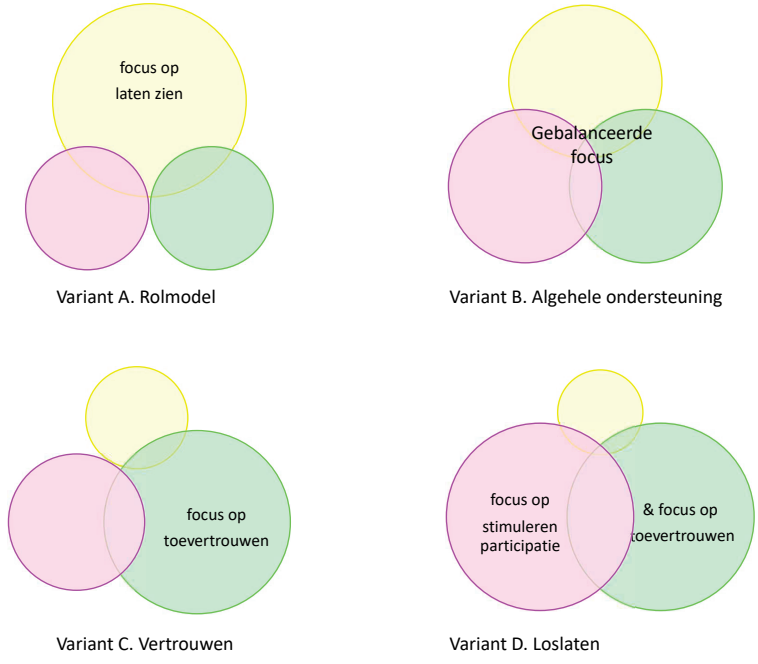
III. *Agency* van praktijkopleiders en studenten

Het goed benutten van het leerpotentieel van de werkplek voor studenten hangt niet alleen af van de beschikbare mogelijkheden voor activiteiten en interacties (affordances), maar vooral van hoe supervisors en studenten hier gericht invulling aan geven door agency uit te oefenen (**Hoofdstuk 4 en 5**). In de context van dit proefschrift, is agency gedefinieerd als de bereidheid en het vermogen van praktijkopleiders en studenten om affordances op de werkplek te herkennen, benutten en beïnvloeden. Dit doen ze door actief en intentioneel te participeren in werk- en begeleidingsactiviteiten, en hierin bewuste keuzes te maken en doelen te stellen (naar Billett, 2004; Vähäsantanen et al. 2022).

Agency van praktijkopleiders: Begeleidingsstrategieën

Begeleidingsstrategieën omvatten zowel de feitelijke handelingen van praktijkopleiders als de gerelateerde overwegingen en onderbouwingen die ze hebben bij deze handelingen. Voortbouwend op de bevindingen in **Hoofdstuk 2**, zijn in de interviewstudie in **Hoofdstuk 4** drie begeleidingsstrategieën van praktijkopleiders te onderscheiden: (a) laten zien, (b) stimuleren van participatie en (c) toevertrouwen. Uit zestien interviews met praktijkopleiders blijkt dat zij deze drie strategieën in vier verschillende combinaties toepassen, met een verschillende focus: (A) rolmodel, (B) algehele ondersteuning, (C) vertrouwen en (D) loslaten (Figuur 3).

Fig. 3 Varianten van begeleidingsstrategieën tijdens stages (Hoofdstuk 4)



De vier varianten van begeleidingsstrategieën van praktijkopleiders geven inzicht in hoe werkplekleren wordt ondersteund in stages in de gezondheidszorg.

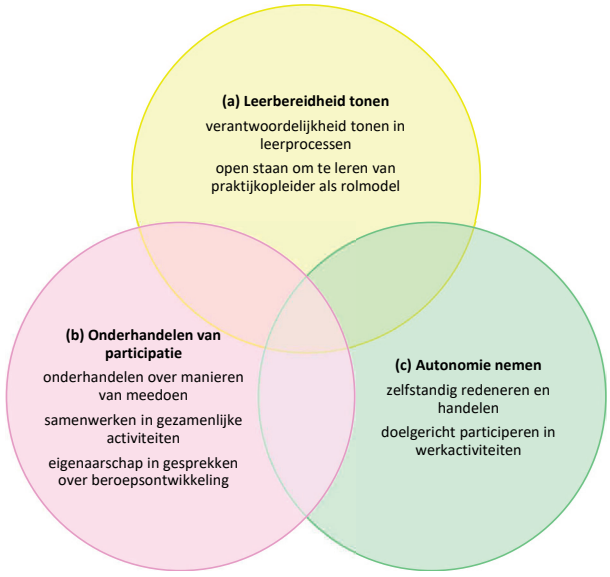
Bij de eerste variant, (A) rolmodel, fungeren praktijkopleiders in de gezondheidszorg als voorbeeld, rolmodel, in hoe het beroep moet worden uitgeoefend. Deze praktijkopleiders doen studenten voor hoe ze beroepsmatig handelen en redeneren kunnen inzetten en ondersteunen studenten actief in het leerproces door directe ondersteuning te bieden. Praktijkopleiders die begeleiden op basis van variant (B), algehele ondersteuning, hanteren gebalanceerd de drie strategieën (a) laten zien, (b) stimuleren van participatie en (c) toevertrouwen. Ze zorgen bijvoorbeeld voor het samen bespreken van leerwensen en wat van studenten verwacht wordt en moedigen studenten aan om geleidelijk meer verantwoordelijkheid te nemen. Bij variant (C), vertrouwen, ligt de nadruk op het toevertrouwen van taken aan studenten. Deze praktijkopleiders moedigen studenten aan om taken zelfstandig uit te voeren en autonome beslissingen te nemen, terwijl ze de activiteiten van studenten monitoren en beschikbaar blijven voor directe ondersteuning. Bij de laatste variant, (D) loslaten, worden studenten benaderd als competente professionals. Deze praktijkopleiders moedigen studenten aan om deel te nemen als volledig teamlid in de gezondheidszorg. Hoewel deze praktijkopleiders vaak niet aanwezig zijn om het werk van studenten direct te monitoren, vinden er af en toe bijeenkomsten en gesprekken plaats om het werk en de ontwikkeling van studenten te bespreken.

Verschillen in begeleidingsstrategieën kunnen deels verklaard worden door de aard en pedagogisch-didactische tradities van beroepen, en de waarden en normen in specifieke werkomgevingen (Morris et al. 2021). Daarnaast laat dit proefschrift zien dat praktijkopleiders, op basis van eigen voorkeur en ervaringen, actief in overweging nemen hoe ze studenten willen en kunnen begeleiden tijdens stages in de gezondheidszorg. Dit onderbouwen ze met oog voor de beperkingen en mogelijkheden van de werkomgeving en de verschillende wensen, ontwikkeling en agency van studenten.

Agency van studenten: Student-strategieën

In dit proefschrift verwijzen student-strategieën naar de specifieke strategieën die studenten gebruiken om de geboden stagebegeleiding en affordances in pedagogisch-didactische praktijken te benutten en te beïnvloeden (Figuur 4). De agency van studenten verwijst naar de bereidheid en mogelijkheden van studenten om actief richting te geven aan het eigen leerproces door de activiteiten en interacties op de werkvloer te beïnvloeden.

Fig. 4 Student-strategieën tijdens stages (**Hoofdstuk 5**)

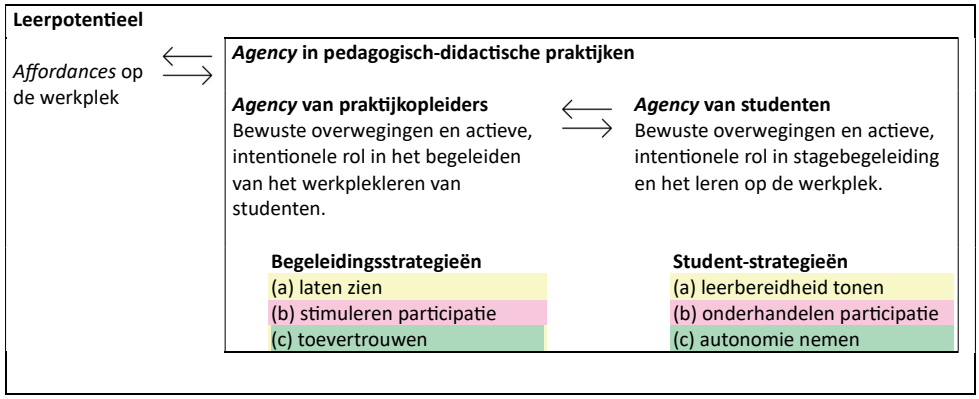


In **Hoofdstuk 5** is de agency van de student geïdentificeerd. In de enkelvoudige casestudie stuurt de student, in interacties met praktijkopleiders, of en hoe ze de mogelijkheden voor werkplekleren wil en kan benutten. De student fysiotherapie bleek de volgende strategieën toe te passen: (a) leerbereidheid tonen, (b) onderhandelen participatie, en (c) autonomie nemen (Figuur 4). De eerste student-strategie, (a) tonen van leerbereidheid, duidt op de bewuste en open houding van studenten om te willen leren. Een tweede strategie, (b) onderhandeling over participatie, omvat het doelgericht verkennen en beïnvloeden van verschillende manieren om te participeren in het werk, waardoor samenwerking met praktijkopleiders kan worden bevorderd wanneer studenten eigenaarschap nemen in gesprekken over werken, leren en hun beroepsontwikkeling. Een derde strategie, (c) autonomie nemen, heeft te maken met de bereidheid en het vermogen van studenten om zelfstandig en doelgericht te participeren in stageactiviteiten. Dit heeft ook te maken met het vertrouwen dat studenten in zichzelf hebben om autonoom taken uit te voeren.

Wederkerigheid van agency in stagebegeleiding

De identificatie van de drie samenhangende begeleidingsstrategieën en student-strategieën laat zien hoe praktijkopleiders en studenten samen begeleidings- en leerprocessen tijdens stages creëren en beïnvloedendoor agency uit te oefenen (Figuur 5).

Fig. 5 Agency in pedagogisch-didactische praktijken (**Hoofdstuk 5**)



Hoofdstuk 5 benadrukt een wederzijdse invloed en verantwoordelijkheid van praktijkopleiders en studenten in stagebegeleiding, en daarmee het werkplekleren tijdens stages. Als praktijkopleiders begeleidingsstrategieën toepassen, reageren studenten daarop, en andersom, wat resulteert in een voortdurende wisselwerking tussen uitingen van agency van praktijkopleiders en agency van studenten. Deze wederkerige agency ontvouwt zich in pedagogisch-didactische praktijken in dynamische en voortdurende interacties tussen begeleidingsstrategieën en student-strategieën.

Discussie

Vanuit een sociaal-cultureel leerperspectief wordt de nadruk gelegd op de collectieve aard van pedagogisch-didactische praktijken. Deze collectieve praktijken op de werkplek omvatten interacties met praktijkopleiders, patiënten, collega's en studenten, die elk hun eigen perspectieven, expertise en ervaringen hebben. Dit betekent dat verschillende collega's of medestudenten vergelijkbare rollen als praktijkopleiders op zich kunnen nemen. Studentenpercepties bepalen namelijk wie de studenten beschouwen als belangrijke anderen bij het bieden van ondersteuning tijdens hun leerproces (De Bruijn, 2019; Vygotsky, 1986). Desalniettemin blijkt uit dit proefschrift de cruciale ondersteunde rol van individuele praktijkopleiders doordat zij zich verantwoordelijk voelen voor de ondersteuning van de student, bewust tijd vrij maken voor begeleiding en beschikbaar willen zijn wanneer studenten ondersteuning nodig hebben.

Tijdens stages in de gezondheidszorg worden gevarieerde mogelijkheden gecreëerd voor studenten om actief deel te nemen aan verschillende werkactiviteiten en interacties. Voor de meeste studenten blijken verschillende dagelijkse werkactiviteiten tijdens hun

stages, zoals de overdracht in het ziekenhuis, inherent rijk aan pedagogisch-didactische waarde (zie ook: Billett & Noble, 2020). Echter, in sommige werkomgevingen, zoals in de thuiszorg, lijkt het minder vanzelfsprekend om met collega's in gesprek te gaan over het werk en ervaringen over de zorgverlening uit te wisselen. Dit proefschrift laat zien hoe praktijkopleiders en studenten dan een actieve rol spelen in het creëren van momenten voor bijvoorbeeld voor- en nabespreken van de zorgverlening, wanneer deze momenten niet vanzelfsprekend aanwezig zijn in de dagelijkse werkpraktijk.

Alhoewel praktijkopleiders en studenten vaak intuïtief lijken te handelen wanneer zij aan het werk zijn, laat dit proefschrift verder zien dat zij bewust oog hebben voor zowel het werkbelang (het verlenen van goede zorg) als het leerbelang (het zorgen voor goede leerervaringen en begeleiding). Voorgaand onderzoek heeft zich gericht op de interactie tussen affordances en de agency van studenten (zoals: Billett, 2001; Goller et al., 2019). Dit proefschrift gaat verder, door agency in pedagogisch-didactische praktijken te identificeren in zowel begeleidingsstrategieën als student-strategieën. Praktijkopleiders en studenten oefenen in een dynamisch en interactief proces gericht invloed uit op de stagebegeleiding, en daarmee op de leerervaringen van studenten op de werkplek.

Wetenschappelijke aanbevelingen

Dit proefschrift ontrafelt de complexiteit van pedagogisch-didactische praktijken op de werkplek. Met een primaire focus op stages in de gezondheidszorg, specifiek op fysiotherapie en verpleegkunde, heeft dit proefschrift zich verdiept in de begeleiding van werkplekleren. Dit biedt kansen en een conceptueel kader voor vervolgonderzoek.

- *Pedagogisch-didactische praktijken in andere beroepen.* De dynamiek tussen begeleidingsstrategieën en student-strategieën biedt een waardevol startpunt voor vervolgonderzoek in andere beroepscontexten. In toekomstig onderzoek kan worden bestudeerd in hoeverre de *agency* van praktijkopleiders en studenten in pedagogisch-didactische praktijken herkenbaar zijn in andere werkomgevingen.
- *Agency vs. leren van studenten.* Dit proefschrift richt zich op het faciliteren en ondersteunen van leerervaringen van studenten. Toekomstig onderzoek naar de *agency* van studenten zou waardevolle inzichten kunnen bieden in de daadwerkelijke leerprocessen van studenten.
- *Werkplekleren als opdracht van het beroepsonderwijs*. Hoewel dit proefschrift zich focust op de werkplek, zijn stages onderdeel van het beroepsonderwijs. Het beroepsonderwijs heeft een maatschappelijke opdracht om de kwaliteit van de leerervaringen van studenten op de werkplek te monitoren. Vervolgonderzoek zou zich kunnen richten op hoe beroepsgerichte leerervaringen in samenwerking kunnen worden bevorderd in stages, op school en op de grenzen tussen school en werk.

Aanbevelingen voor de praktijk

Hoewel deze Nederlandse samenvatting zou kunnen suggereren dat leren tijdens stages soepel verloopt, laat het promotieonderzoek ook momenten zien waarop praktijkopleiders worstelen en studenten uitdagingen tegenkomen tijdens stages in de gezondheidszorg. Wanneer dergelijke problemen zich voordoen, spelen zowel praktijkopleiders als studenten een actieve rol door bewust strategieën in te zetten en aan te passen aan elkaars behoeften en specifieke situaties. Alhoewel de rol van de hbo-docent in dit proefschrift niet expliciet wordt onderzocht, zijn docenten van cruciaal belang om begeleiding en ondersteuning te bieden bij het identificeren van problemen en het waarborgen van het leerproces van de student tijdens stages.

Hieronder worden drie praktische aanbevelingen gedaan voor docenten, praktijkopleiders, studenten, en andere betrokkenen bij het begeleiden van stages. Deze praktische implicaties benadrukken een gedeelde verantwoordelijkheid, doelgerichte gesprekken en reflecties tussen betrokkenen van school en de werkplek, en met studenten.

- *Stimuleer de agency van praktijkopleiders tijdens stages.* Om leerervaringen tijdens stages te ondersteunen, is het belangrijk om *agency* te bevorderen bij praktijkopleiders. Het is belangrijk dat praktijkopleiders zich bewust zijn van hun handelen en bereid zijn om verschillende manieren van begeleiden te overwegen en te proberen, passend bij specifieke situaties, de werkomgeving en de diverse behoeften, mogelijkheden en *agency* van studenten. Het gesprek over het inzetten van verschillende combinaties van drie begeleidingsstrategieën – in interactie met student-strategieën – zou praktijkopleiders kunnen helpen om te reflecteren op de wijze waarop zij het werkplekleren meer bewust kunnen ondersteunen.
- *Stimuleer de agency van studenten tijdens stages.* Het is van belang om studenten voor te bereiden op hun actieve rol tijdens stages, zodat ze gestimuleerd worden om initiatief en een actieve rol te nemen in het benutten, beïnvloeden en creëren van werk- en leeractiviteiten. Het gesprek over het inzetten van drie student-strategieën - in interactie met de begeleidingsstrategieën – kan studenten helpen om te reflecteren op de manier waarop ze kunnen bijdragen aan een ondersteunende begeleidingsrelatie met hun praktijkopleiders en sturing kunnen geven aan hun eigen leerproces en beroepsontwikkeling.
- *Zorg dat studenten actief en in interactie kunnen leren.* Het is een gezamenlijke opdracht van het beroepsonderwijs om er voor te zorgen dat er voor elke student, en op elke werkplek, actieve, veilige en gevarieerde leermogelijkheden zijn. De verschillende categorieën van *affordances* kunnen behulpzaam zijn om het leerpotentieel van de werkplek in kaart te brengen en te monitoren. Bijvoorbeeld in stagegesprekken kunnen docenten, praktijkopleiders en studenten expliciet met elkaar bespreken of

de werkomgeving voldoende mogelijkheden biedt om te leren in interacties, met directe ondersteuning, en om zelfstandig te werken.

Conclusie

In dit proefschrift is gedetailleerd de dynamiek van pedagogisch-didactische praktijken ontrafeld in de context van gezondheidszorg-stages. Mogelijk zijn de bevindingen en conclusies van het promotieonderzoek herkenbaar in andere beroepscontexten. Echter, voorzichtigheid is geboden want specifieke contextuele factoren en de sociale dynamiek binnen andere beroepsdomeinen kunnen (aanzienlijk) anders zijn.

Het proefschrift benadrukt het leerpotentieel van verschillende werkomgevingen, het sociale karakter van pedagogisch-didactische praktijken en de wederkerige dynamiek tussen praktijkopleiders en studenten. Het herkennen, bespreken en verder onderzoeken van de wederkerigheid van agency in pedagogisch-didactische praktijken, zowel in gezondheidszorg-stages als in andere beroepscontexten, kan zowel praktijkopleiders als studenten uitnodigen om, in samenspel, het werkplekleren tijdens stages meer bewust te faciliteren. Op deze wijze kan bijgedragen worden aan het beter benutten van het leerpotentieel van de werkplek.

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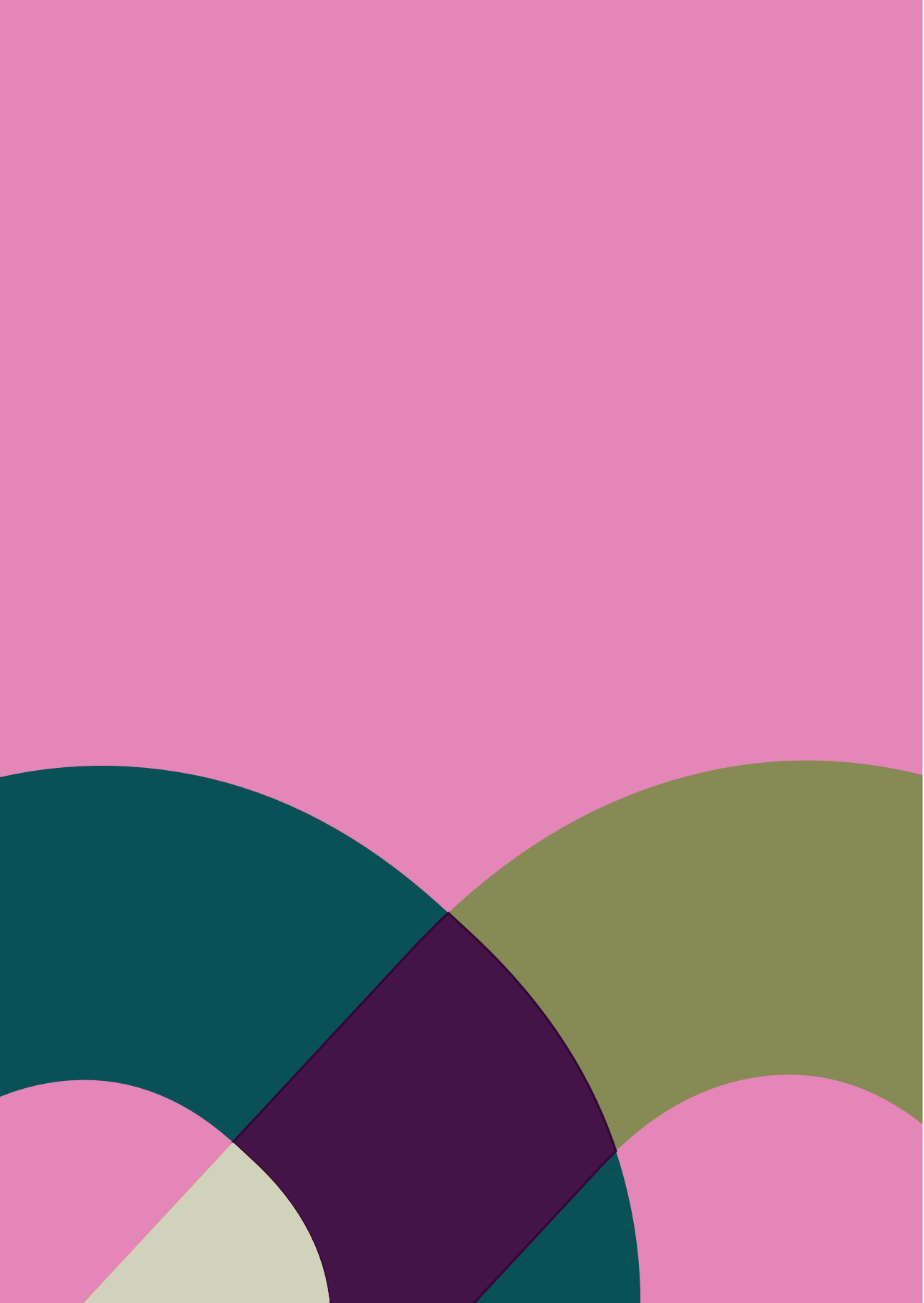

About the author

Lieke Ceelen was born on January 14th, 1986, in Veghel, and grew up in Schijndel. In 2014, she completed the Atheneum at the Elde College in Schijndel. Subsequently, she started studying in Nijmegen and graduated cum laude with a Master's degree in Educational Sciences at Radboud University in February 2010. Additionally, she obtained a Master's degree in Public Administration at Radboud University in January 2011.

During her early academic journey, Lieke has also learned at the workplace during placements. Her interest in education and training brought her to undertake an internship in Pretoria, South Africa. In a subsequent internship, she got involved in societal challenges that the local government of Nijmegen faced, as she explored the aim and fairness of promoting diversity and integration of children within schools. This is where her interest was triggered for qualitative research, particularly as she conducted observational research of student- and teacher-behaviour in various schools for her master thesis. Subsequently, Lieke worked as an intern educational consultant, where she participated in interview studies, triggering her interest in the dynamic context of higher education.

In January 2011, she began her career at the University of Applied Sciences in Utrecht (HU) as the secretary of the physiotherapy department. Shortly after, she was appointed a role of educational advisor. Lieke now has 13 years of experience in advising on educational development, assessment, teacher pedagogics, workplace learning, and innovation within various healthcare programs.

In 2015, Lieke began a pre-PhD trajectory, delving deeper into vocational education research and becoming familiar with her current research group, Lectoraat Beroepsonderwijs (HU). Her PhD-research, conducted between September 2016 and June 2024, focused on the processes of workplace learning and supervision, and how affordances, interactions and strategies can influence these processes. Her PhD dissertation was supervised by prof. dr. E. de Bruin (promotor), em. prof. dr. A.F.M. Nieuwenhuis (promotor), and dr. A.E. Khaled (co-promotor).

In September 2023, she started working as a researcher in educational sciences within the research group of vocational education (Lectoraat Beroepsonderwijs, Kenniscentrum Leren en Innoveren, HU), with a special interest in pedagogic practices and workplace learning.

Lieke lives in Nijmegen with Timo, and their children Ted and Pieter.

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Wauw. Wat een bijzonder moment, ik mag mijn dankwoord schrijven. Terwijl ik terugkijk op de afgelopen jaren, kan ik niet anders dan glimlachen. Ik heb genoten van mijn promotietraject. Het was een fijne reis! Het daadwerkelijk afronden van mijn promotietraject zag ik lange tijd als iets onwerkelijks, in de verre verte. Nooit heb ik serieus overwogen om op te geven. Zoals Confucius eens zei: "Mensen struikelen niet over bergen, maar over molshopen." Het zijn de kleine hindernissen, de molshopen op het pad, die mijn traject hebben gevormd en waarvan ik heb geleerd. Eenmaal bovenaan de bergtop kan ik genieten van het uitzicht, trots zijn en is het tijd om langzaam bij te komen van de reis ernaartoe.

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