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Students' Interprofessional Workplace Learning in Clinical Placement

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Abstract

Students' learning in the workplace during their clinical placements is an important part of their education to become healthcare professionals. Despite the number of studies of student interprofessional learning in clinical placements, little is still known about the significance of interprofessional learning and how it is facilitated and arranged for to occur. This article aims to investigate interprofessional learning between students collaborating in a workplace-driven arrangement integrated into a clinical placement. A focused ethnographic research approach was applied, comprising observations of ten students participating in the arrangement organised by clinical supervisors on a medical emergency ward at a Swedish university hospital, followed by group interviews. Using a boundary-crossing lens, the article analyses the workplace arrangement, in which students' learning across professional boundaries and their negotiations around a boundary object were prerequisites to coordinate their interprofessional knowledge and manage emerging challenges while being in charge of care on the ward.

Keywords

Boundary crossing, clinical placement, interprofessional workplace learning, healthcare education

Introduction

A significant aspect of healthcare education revolves around learning a profession and working together with other healthcare professionals. In recent years, new forms for students' interprofessional learning in workplaces during clinical placements have attracted significant attention (Kent, Hayes, Glass, & Rees, 2017; Paradis & Whitehead, 2018). Interprofessional learning refers to educational situations in which students from two or more professions learn about, from and with each other to improve healthcare practices (WHO, 2010). Interprofessional learning is therefore important for students' development of a professional identity and belonging in healthcare. In clinical placements, which is the workplace-based part of the professional education, students can learn about their profession under supervision in natural environments. Although the workplace is regarded as a natural site for interprofessional learning (WHO, 2013) it has been suggested that interprofessional learning requires active engagement and planning (Shot, Tummers & Noordegraaf, 2020). In their systematic review, the authors point to the need for professionals to actively bridge professional and task-related gaps, to negotiate overlaps and to create spaces for such interactions.

Pedagogically, students' interprofessional learning in the workplace has been organised as student activities during or in relation to clinical placements in arrangements that are well known from educational settings. This covers a wide range of activities such as Schwartz rounds (Clancy, Mitchell & Smart, 2020), patient interviews, case studies, structured workshops, ward rounds, shadowing, observations (Anderson, Thorpe, Heney & Petersen, 2009; Kent, Courtney & Thorpe, 2018; Kent, Glass, Courtney, Thorpe & Nisbet, 2020; Kent et al., 2017; Wright, Hawkes, Baker & Lindqvist, 2012), student-led primary care clinics (Kent & Keating, 2015) and student teams (Bondevik, Holst, Haugland, Baerheim & Raaheim, 2015; Gudmundsen, Norbye, Abrandt Dahlgren & Obstfelder, 2019). These initiatives mostly report productive and desirable learning outcomes among students. In a review of interprofessional workplace learning activities, Kent et al. (2017) show that dialogue and reflection were most significant for augmenting students' knowledge of professional roles, teamwork, communication skills, safety matters and understanding patient perspectives. Similarly, other reviews have singled out teamwork and collaboration skills as the most frequent learning outcomes (Kent & Keating, 2015). Students involved in interprofessional activities experience positive influences on their professional development, yet they might have feelings of uneasiness and self-consciousness when assigned to interprofessional team activities (Anderson et al., 2009). It may thus seem that being at the edge of one's comfort zone enhances possibilities for interprofessional deliberations. Alternatively, this might be

connected to a sense of being acknowledged in the team and in one's upcoming professional role, providing a sense of belonging to the future profession (Bondevik et al., 2015).

Despite the plethora of student interprofessional learning arrangements, few studies acknowledge or take departure in the context of the workplace and its affordances. Studies show that the workplace setting—with its staff, patients, artefacts, and socio-historic context—provides richer possibilities for learning the professional practice than university-based educational tasks do (Baerheim & Raaheim, 2020; Lapkin, Levett-Jones & Gilligan, 2013; Teunissen, 2015). For example, students in interprofessional teams in nursing homes are exposed to multiple interests concerning professional identities and knowledge, as well as clinical and social principles that appear in the workplace (Baerheim & Raaheim, 2020). As the students dealt with patient problems within the interprofessional team, and in dialogue with the nursing home staff, they furthered their understanding of what constitutes professional work. Furthermore, it has been stressed that giving students responsibility for their actions enhances their interprofessional learning in workplaces (Baerheim & Raaheim, 2020; Gudmundsen, Norbye, Abrandt Dahlgren & Obstfelder, 2019). The workplace context creates a natural site for teamwork that reduces competitive behaviours and facilitates interprofessional collaboration (Bondevik et al., 2015), yet many studies fail to properly describe in what way student interprofessional learning initiatives are situated in the workplace (Abu-Rish et al., 2012).

In healthcare education, certain aspects must be learnt on site in the workplace, where professional practice is performed. In this context, students encounter the complexity of everyday healthcare work (Teunissen, 2015) and the challenges practitioners deal with in relation to interprofessional collaboration, such as a multitude of interprofessional modes of collaboration (Reeves, Xyrichis & Zwarenstein, 2018), professional expert domains and values, the complex relationship between the professional and the team (Lingard et al., 2017), and issues of power structures and stereotypes (Nancarrow et al., 2013). In terms of arrangements, clearly framed common goals are essential for interprofessional discussions (Baerheim & Raaheim, 2020; Laing & Bacevice, 2013) and practitioners' innovative thinking for supporting interprofessional workplace learning (Laing & Bacevice, 2013). This underlines a need to work on the accomplishment of interprofessional learning, and to make it part of the everyday work (Shot et al., 2020), but, as argued in this article, student interprofessional learning needs to be facilitated and arranged for and cannot be assumed to occur naturally by merely gathering different professionals.

In this article, the aim is to investigate interprofessional learning between students collaborating in a workplace-driven arrangement integrated into a clinical placement. We do so by following students in an interprofessional learning activity arranged by clinical supervisors. The purpose of this workplace-driven interprofessional arrangement was to

strengthen students' interprofessional learning and collaboration between students who carried out their clinical placement on a medical emergency ward.

Theoretical framework: A boundary crossing perspective

The theoretical lens through which interprofessional learning among students collaborating in a workplace-driven interprofessional arrangement is explored departs from a boundary-crossing perspective (Wenger, 1998; 2010). A common notion in the literature on boundary crossing is that there are potentials for learning at the edges of boundaries. Boundaries are defined as "sociocultural differences between practices leading to discontinuities in actions and interactions" (Akkerman & Bruining, 2016, p. 243; cf. Akkerman & Bakker, 2011, p. 133). This implies that learning opportunities are opened up as participants face challenges in practices and boundaries are crossed, reorganised, or even dissolved (Engeström, Engeström & Kärkkäinen, 1995; Wenger, 1998). Boundary-crossing thus concerns "the effort to establish or restore continuity in action or interaction across different practices" (Bakker & Akkerman, 2019, p. 4; cf. Bakker & Akkerman, 2014, p. 225). As resources for learning, boundaries have the potential to contribute to joint action and the sharing of problem spaces between practices (Akkerman & Bakker, 2011). When actions and interactions do not lead to desired developments, or require great efforts to solve emerging problems, this leads to discontinuities due to sociocultural differences between practices (Bakker & Akkerman, 2019).

Students' learning at professional boundaries and bridging boundaries to other professions can be confusing and blurred. Conflict-filled professional boundaries arise out of the differences in knowledge of medicine and caring, as well as inequalities in professional roles and attitudes (Jentoft, 2020). There is often a strong desire to defend the interests of the particular professional group (Hall, 2005; Santy, 1999) and a lack of understanding of other professional roles (Fox & Reeves, 2015). This implies that negotiations of professional boundaries can be limited to negotiations that are acceptable within the specific professional practice (Smith, 2018). Other researchers suggest that it is the ambiguity between professional boundaries that forces students to collaborate across boundaries and coordinate their actions to deal with "wicked" problems (Veltman, van Keulen & Voogt, 2019). As Jentoft (2020) claims, students' interprofessional abilities are strengthened when different professional perspectives are encountered in situations that require collaboration and negotiation. Students' professional learning is not just about becoming experts in their professional territory; professional development through collaboration and negotiation is also needed to move or reconstruct old boundaries (Jones, 2007).

The challenge in interprofessional workplace learning lies in helping students to cross different professional boundaries, in our case within the workplace-driven arrangement for supporting interprofessional learning. How learning can be evoked in boundary-crossing, by

acting, interacting, and negotiating at boundaries, has been described by Akkerman and Bakker (2011; Bakker & Akkerman, 2019) with four learning mechanism referred to as identification, coordination, reflection, and transformation. All four mechanisms correspond to ways in which boundary-crossing can initiate processes of learning, leading to professional development (Bakker & Akkerman, 2019) and thus interprofessional development in practice.

The first learning mechanism is a process of identification by "othering" and achieving legitimacy within the group (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019). This involves defining and comparing similarities and differences between practices for achieving shared understanding and respectful acceptance. In negotiations, boundaries between two or more professional practices are encountered and reconstructed, but differences are not necessarily overcome.

The second learning mechanism is a matter of coordination, which requires establishing communicative bridges, permitting the translation of work and increasing boundary permeability between practices (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019). In coordinating, boundary objects often constitute a unifying link which gathers different professional groups and has the function of establishing continuity in a negotiation situation. Boundary objects are often shared objects such as artefacts (things or tools) that serve as bridges for intersecting practices (Star & Griesemer, 1989). Boundary objects express meaning or a competency standard for a profession that guides the use of the object for performing the job (Grealish, 2015). The object can also be a device to communicate with others and keep track of what must be done (Akkerman & Filius, 2011). As long as no one questions the object's meaning, it serves as a joint object allowing different professions to work across boundaries and to stay unified (Star & Griesemer, 1989).

The third learning mechanism is reflection, that is, crossing professional boundaries whilst realising explicit differences across one's own and others' practices (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019). In reflection, the negotiation involves accessing a comprehensive understanding by either making or taking expanded perspectives, for example of a boundary object (Veltman et al., 2019). Perspective-making means looking upon oneself and reflecting on the knowledge practice that one belongs to. Perspective-taking implies taking others' perspectives into account from the angle of one's own practice. Critical self-assessment, joint meetings and the sharing of experiences stimulate boundary learning and increase our understanding of professions (Bakker & Akkerman, 2019). On the other hand, lacking the ability or opportunities to take others' perspectives can create misunderstandings that have negative consequences for bridging boundaries (Akkerman & Bakker, 2011).

The fourth learning mechanism, transformation, leads to profound changes and reconsiderations of actions in practice (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019). In this mechanism, the negotiation of boundary objects is knowledge transforming and develops unanimous objectives for different professional groups or practices. Transformation can thus change existing practices and create new ones, targeting so-called in-between or hybrid practices (Engeström et al., 1995) or hybrid learning environments (Zitter, Hoeve & de Bruijn, 2016). Hybrid learning environments require rethinking the educational curriculum to overcome traditional boundaries between education and work (Zitter et al., 2016), such as in healthcare education, in which students navigate across boundaries between the university and healthcare workplaces.

In sum, the theoretical lens of boundary crossing, including the four analytical concepts of learning mechanism, can provide useful ways to explore and understand the complexity of interprofessional learning between students from different professions in the workplace during their clinical placement.

Methodology

Research setting

The study reported on here is part of a larger research project focusing on new ways of organising clinical placement that refers to workplace initiatives of non-traditional clinical placement—not one-to-one supervision. This article particularly focuses on a workplace-driven interprofessional arrangement to promote interprofessional learning between students who performed their clinical placement in a medical emergency ward at a Swedish university hospital. At the ward, the staff worked in care teams consisting of physicians, registered nurses and nursing assistants, providing medical assessment, treatment, and care around the clock. On weekdays, occupational therapists and physiotherapists worked as part of the ward's team with assessment and rehabilitation of patients. The healthcare staff regularly received students from different professional healthcare education programmes who carried out their clinical placements on the ward. The workplace arrangement on the ward was a recurring one-day activity that was initiated and carried out by clinical supervisors once every semester for students placed at the ward to enhance interprofessional work between students. The student group was given responsibility for the treatment and care and rehabilitation of the patients during the morning shift, from 7 am to 2 pm. This included taking on all ordinary activities in caring for the patients, rounds, handovers, communicating with other hospital departments and journal writing. Two supervisors were present to ensure patient safety, but the students were responsible for the ward.

Research design, participants and selection

The research method shares characteristic with focused ethnographies (Higginbottom, Pillay & Boadu, 2013) by its focus on uncovering and describing participants' experiences of taking part in the one-day interprofessional learning arrangement. Data was collected through participant observations and group interviews. The observations made it possible to access actions and discussions that took place between students and the subsequent interviews focused students' reflections on their actions and experiences from the activity. Using multiple data is advocated in focused ethnographies, allowing the researchers to corroborate, contrast and deepen the findings.

Ten students—five nursing students (four female, one male) from semester three, one nursing student (female) from semester six, two physiotherapy students (one female, one male) from semester three, one occupational therapy student (male) from semester four and one medical student (male) from semester eight—and two supervisors—one registered nurse and one occupational therapist—participated in the selected occasion. They were observed regarding activities and collaborative interactions that were carried out during the workplace-driven arrangement. The students had been enrolled on the programmes for different lengths of time, and their experience of clinical placements therefore varied. Following the observation, the students were invited to participate in group interviews. Six of the ten students chose to participate in two mixed-profession group interviews.

Data collection

The participant observation took place over the course of one day between 6.45 am and 3.00 pm and focused on student actions and interactions with one another and other professionals in the ward's public spaces. Students were not followed into the patients' rooms for ethical reason. The participant observations were exploratory in focusing on interprofessional learning between students, i.e., the researchers did not take departure in a specific theoretical account. Nonetheless, the observations were based on the assumption that interprofessional learning is a social accomplishment, and therefore they can be seen as purposefully driven (Higginbottom et al., 2013). Two researchers observed the one-day interprofessional activity by taking field notes focusing openly on when, where and how students carried out tasks and interacted with one another, with whom they did so, and which tools were used. Individually, each researcher followed the students who were moving around the ward's different spaces and interacting with others in changing constellations. Having two researchers present made it possible to cover more of what was going on in this fluid setting.

During the following days, two group interviews with students were conducted to capture the students' reflections on the interprofessional workplace activity. The interviews were used as a way of deepening the understanding of the studied interprofessional activity, letting the participants be experts with their knowledge and experience (Higginbottom et

al., 2013). One group consisted of two nurses and one physiotherapist, and the other consisted of one nurse, one physiotherapist and one occupational therapist. A semi-structured interview guide was used, with topics addressing their thoughts and feelings about dealing with and collaborating around patients' care and being responsible for the ward. The students were also asked to reflect on their learning and moments of interprofessional actions observed by the researchers during the activity, as a way for the researchers to deepen their understanding of the course of events. During the interview, the students discussed some issues together, addressing each other in a direct way, and when answering some questions, they gave their answers directly to the researcher. The interviews were recorded and transcribed verbatim.

Data analysis

The analysis was inductively performed and carried out as a sequence of steps by the authors. First, both researchers' fieldnotes were closely read and situations in which students from two or more professions had to work things out by collaboration was identified. The two researchers' field notes were then placed side by side and were compared to create a more detailed reconstructed description of the course of events (Gherardi, 2012). Categories included, for example, interprofessional collaboration concerning medical issues and treatments or patients' need for care. In the further analysis, we chose to follow one event, in which students negotiated the mobility of a patient, and trace the students' interprofessional discussions and actions as we discovered they were stretched out in time. We started out in the enriched field notes and then turned to the group interviews where the students discussed the same event. This provided us with a sequentially ordered narrative of the students' interprofessional collaboration and their reflections on actions and interactions. In a final step we applied the theory and analysed the data using the boundary-crossing mechanisms described earlier.

Ethical considerations

This study received approval from the Regional Research and Ethics Committee in Linköping, Sweden (2017/493-31). Informed consent was obtained from students and supervisors, including information about the voluntary nature of participation and the possibility to withdraw their consent. Data have been anonymised to maintain confidentiality.

Students' interprofessional learning and collaboration

Before the students participated in the workplace-driven arrangement, they received little information from the supervisors who would carry out the interprofessional learning activity. Although the students carried out their clinical placements on the same ward, they had had little or no contact with each other in advance. When the students gathered in the morning, they had the opportunity to briefly introduce themselves to each other before the activity began.

> It is early in the morning (6.45 am) and the two supervisors welcome the students in the nurses' station located at the centre of the ward. It slowly becomes crowded as they drop in, one by one. The students, an occupational therapist (OTstud), two physiotherapists (PTstud) and four nurses (Nstud), introduce themselves to each other. The medical student will join later. (Fieldnotes)

The framing of the activity was carried out in the morning meeting, as can be seen in the fieldnotes.

> The nursing supervisor (Nsup) starts the activity by describing the schedule for the day. She divides the students into smaller care teams and assigns different patients to them. The Nsup says: "Take care of the patients based on your profession-specific competencies and form a working plan for the day together." The supervisor then does short handovers for each patient. The students listen attentively and take notes. After finishing the handovers, the Nsup says: "Meet the patients first and get a picture before reading their medical records. Talk to your fellow students and plan your work together. Go see the patients early on." (Fieldnotes)

The nursing supervisor's instructions included the formation of interprofessional care teams and the allocation of patient responsibilities. The handovers provided the students with profession-specific information about their patients. Furthermore, interprofessional and collaborative work was emphasised as the supervisor stresses interaction, joint planning and patient interviews as starting points for their work.

Othering at professional boundaries

After the call for collaborative work, the supervisors left the nurses' station. The students picked up on this line of structuring their work and started to talk to each other, within and across professions.

> The PTstud talks to a Nstud and they start planning what to do first. Two other Nstuds talk about profession-specific issues. The OTstud sits down on his own and makes notes. The students ask each other questions and make suggestions about how to coordinate their work. A Nstud is looking for a MEWS trolley and finds out there is only one available. She then suggests to the others: "Let's take the morning control status in order and begin in room 1", to which all agree. The OTstud asks a Nstud about one patient's need for a walking aid. The medical student has not appeared. (Fieldnotes)

Initially, the dialogue focuses on achieving a shared understanding of the set task. They plan how to deal with the task in a serious manner, whilst negotiating professional boundaries by "othering" (Akkerman & Bakker, 2011). The students identify professionally relevant information and tasks to which they give voice when interacting. The physiotherapy and nurse students for example verbalise and share what activities they see as relevant to

pursue and the occupational therapy student asks a nurse student for additional information about a specific patient. By listening to one another, comparing professional skills and tasks, it is possible for the students to identify individual and collective ways of providing patient care. Knowledge sharing was stimulated as they asked questions and suggested directions for the work, contributing to interprofessional collaboration and legitimacy.

Following the sequence above, the students went on together to meet the patients.

Coordinating around an emerging boundary object

The following fieldnote sequence illustrates students' interprofessional coordination around a boundary object. It outlines how students from three professions are able to discuss a patient's ability to walk from different perspectives by means of an emerging boundary object, a beta support which is a kind of walking aid.

> 8.00. The OTstud, PTstud and a Nstud stand in the corridor by the ward, discussing a patient they have just visited. The patient has a cast on one leg and the students discuss the risk of falling and his ability to walk and move. The OTstud focuses on the patient's social situation in general and on how the patient will be able to move around when he returns home. The PTstud points out: "We have to talk to the patient about the cast." The OTstud verbalises an idea about using a beta support as a walking aid, instead of the walking table available on the ward, as it seems that the patient has a beta support at home. The other students agree with this suggestion. The OTstud and PTstud continue to discuss the patient and whether or not to put strain on the plastered leg. The PTstud says: "We have to test and see how the patient walks, because he can't take the walking table home." The students agree to let the patient test the beta support later in the day. (Fieldnotes)

In this situation, the beta support becomes a boundary object that leads to negotiations about what to do for the patient, and why, from different professional angles. With a common focus on the walking aid, the students address multiple professional perspectives. This is visible in how the physiotherapy student's perspective is directed towards the ability to walk safely and the occupational therapy student's perspective on the patient's ability to move around upon returning home. The beta support here becomes a shared meaningful object, which is useful for the coordination of different professional perspectives of both caring and rehabilitation, on the ward and afterwards. It also leads to a discussion about inherent restrictions concerning the cast, which the students are unsure about. The beta support enabled a communicative bridge and increased professional boundary permeability (Akkerman & Bakker, 2011), as it triggered interprofessional deliberation and learning. This is visible in how the students acted together in terms of idea generation for and planning of the continued treatment.

The boundary object also constituted a common ground for collective action, and thus guided the students' work with the patient.

> 9.50 at the nurses' station. A Nstud says to the PTstud that the patient with the cast doesn't want to use the walking table and asks him about the beta support. The PTstud leaves to fetch one. On returning, the OTstud and PTstud decide to meet the patient with the cast together. Before doing so, the PTstud says: "I want to check about the restriction for the patient with the cast. How can I do that?" (Fieldnotes)

> 10.03. The students go into the patient's room and then return to the corridor with him. OTstud and PTstud let him practise his walking. The OTstud asks the patient about his walking equipment at home. (Fieldnotes)

As the nursing student raises the issue of the patient's reluctance to use a walking table as a walking aid and brings up the beta support discussed earlier as an alternative, the beta support is transformed from being an idea discussed between the students into a hands-on plan involving active interprofessional collaboration. In dealing with the patient's mobility, the use and implications of the beta support take on different professional meanings as the students collaborate to examine and assess the patient. The occupational therapy student now talks to the patient about which walking equipment he has access to at home rather than solely relying on information gained elsewhere. The physiotherapy student focuses on letting the patient practise his walking in the corridor. The students collaborate in the execution of patient care, supported, and enabled by their common attention to the boundary object and what it entails in terms of patient mobility. However, it becomes apparent that collaboration around boundary objects necessitates situational understandings in order to function as communicative bridges as the medical student appears in the corridor.

> 10.20. The PTstud and OTstud stand in the corridor planning their work. The PTstud turns to the medical student and asks him about the restriction. The medical student says: "I haven't looked into that, so I'll have to get back to you." He then goes into the nurses' station. (Fieldnotes)

He has not been involved in the student teamwork or in the treatment of this particular patient. As the physiotherapy student asks for his medical point of view regarding the cast's restriction for the patient, he is unable to lean back on the affordances of the previous negotiations of the boundary object and is unable to share professional knowledge that is relevant in the situation. In this instance, the beta support did not function as a boundary object connecting and coordinating different professional competencies.

Reflecting on one's own and others' practices

Verbal reflections of one's own and others' practices were not observed as the students carried out the teamwork. However, in the subsequent focus group interview, the physiotherapy and occupational therapy students reflected on their collective work regarding the patient with the cast.

> "I'm thinking about the mobility function of patients, therein lies the difference. You see the function in a different way to me. I'm thinking more about what the patient is able to do right now, how can we exercise. You think about how the patient will manage at home. That's the function in its entirety but then there are different aspects of it, I think." (Focus group interview)

> "We talked to each other the day after, discussed our professions a bit. Even if we come to the same conclusion, or the same result in the end, maybe we have different ways of getting there. But in some cases, maybe one of us misses an aspect, but then we can complement each other very well there, in having a habilitation perspective with the occupational therapist and rehabilitation perspective with the physiotherapist. That it goes very well hand in hand, I think." (Focus group interview)

The students verbalised their professional stances by using the professional concepts of habilitation and rehabilitation as a way to discern their different yet complementary professional roles at the boundaries between each other's practices. When the students reflected upon their perceived experiences of working together with the same patient, it seems that a comprehensive picture of how their professions linked into each other emerged. This in turn seemed to constitute a basis for interprofessional learning about how their professional knowledge formed part of an entirety, of 'patient care'.

Discussion

The article provides insights into the possibilities of promoting healthcare students' interprofessional learning in order to learn a profession by working together with other students and healthcare professionals in the workplace during the students' clinical placement. The chosen theoretical perspective of boundary crossing enabled us to understand interprofessional learning between students who collaborated in the workplace-driven arrangement arranged by supervisors on the medical emergency ward. The findings draw attention to three points of discussion concerning (1) the design and role of workplace-driven interprofessional arrangements, (2) students' interprofessional learning by negotiating at the edges of professional boundaries, and (3) boundary objects' meaning for students' learning of interprofessional collaboration.

The set-up of the workplace-driven arrangement was a precondition in itself that triggered interprofessional learning and collaboration among the students. The arrangement was a new and unfamiliar situation for the students and went beyond traditional ways of clinical supervising. As an authentic situation created by practitioners in the workplace, it challenged the students' interprofessional and professional learning in ways that differ from activities in the educational context. The arrangement provided the students with patient responsibility and accountability for their actions, which seemed to enhance their professional workplace learning (Baerheim & Raaheim, 2020; Gudmundsen, Norbye, Abrandt Dahlgren & Obstfelder, 2019) as they had to rise to the occasion when they encountered the complexity of professional work practice (Teunissen, 2015). The students learned things in the workplace by necessity as they had to deal with the patients' problems using their professional knowledge in collaboration with one another and in the group interviews the students' expressed enthusiasm about the activity and their learning opportunities to act as professionals.

In this workplace-driven arrangement, the conducive factor was that the supervisors brought together students who were placed on the ward for their clinical placements. The supervisors who organised the activity set aside time and took the opportunity to bring the students together to support their learning and interprofessional teamwork. However, it can be a challenge to arrange such workplace activities, due to students' different schedules, and to find time and staff resources (Furness, Armitage & Pitt, 2012; Morison & Jenkins, 2007). We never got to know why the medical student did not participate fully in the activity. The clinical supervisors played an important role in framing the activity and stimulating the students' learning, but they were also responsive to the need to step back and let the students assume responsibility for the patients.

The supervisors' instructions on meeting the patients first and not reading their medical records seemed to be an important trigger for the students' negotiation at professional boundaries. Delaying reading medical records and starting by seeing the patient was not the usual procedure for the students when beginning clinical work. This gave the students considerable scope for manoeuvre which challenged them in terms of seeing their own professional requirements in relation to the content of the patient report; this was not reported in a profession-specific manner, but rather in a patient-centred manner. The supervisors showed that they trusted the students by stepping back and allowing the students' ideas, actions, and interactions across professional practices (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019) to be at the foreground, regardless of their experiences of clinical placement and level of education.

As the findings indicate, the clinical supervisors' engagement and their framing of and acting in the situation was a precondition for the students to begin to negotiate across professional boundaries. This leads us to the second point of discussion regarding students'

interprofessional learning across professional boundaries when dealing with the patient. The findings demonstrate that, in the negotiation at the edges of the professional boundaries, it was important for the students to have first gone through 'othering' (Akkerman & Bakker, 2011) before going on to coordinate their actions in relation to the patient with the cast. In the phase of othering, the students interacted and conveyed their experiences as well as their own professional competencies in relation to the task at hand. Through attentiveness to their fellow students' professional stances, a shared orientation and legitimacy of how to proceed was enabled in a relatively short time. The students' professional views on the situation at hand were progressed in the light of the others' perceptions of the task. Meetings at boundaries compelled the students to reconsider their assumptions and look beyond what was known and familiar, and this may have led to new insights (Akkerman & Bakker, 2011). As the findings indicate, when the students crossed boundaries, they seemed to learn something new about their own and others' practices. These interprofessional learning experiences enabled them to look upon themselves through the eyes of others, and to explore new information and strategies while encountering unfamiliar areas of practice (Engeström et al., 1995). In comparing professional similarities and differences, the students created a common ground for understanding each other's professional perceptions of the task at hand and being open-minded to ideas from other students.

The learning mechanism of coordinating (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019) was set in motion as the students started to work together with the assigned patients. The learning potential was thus directed towards the students' own and the other students' professional views, as well as making meaning of the task. For example, the students discussed the patient's mobility and his need for a walking aid and followed up these ideas in action together with the patient. The students did not question each other's suggestions about how to take care of the patient. Rather, they added to each other's thoughts and knowledge and, thus, the coordination progressed quite smoothly. However, it was evident that not participating in the negotiating dialogue before coordination impaired the medical student's possibility to establish communicative bridges (Akkerman & Bakker, 2011; Bakker & Akkerman, 2019) with the other students. The medical student arrived later to the workplace-driven activity and was not involved in the first part of the day where instructions were given and 'othering' between students took place. Accordingly, the medical student was not given the same opportunity to participate as the other students and to approach the task as a collective endeavour. When the students returned to this situation of coordinating their actions, they reflected on the benefits of their complementary professional stances.

The reflective learning mechanism seemed to be created in the students' verbalising of their interprofessional task. Patient-focused interprofessional workplace activities combined with facilitated dialogues and reflections have previously been associated with increased

awareness of other professions' competencies (Kent et al., 2017), understanding of professional work in practice (Baerheim & Raaheim, 2020) and seeing the value in working in interprofessional teams (Lingard et al., 2017; Reeves, Xyrichis & Zwarenstein, 2018). In the group interviews, the students' reflections on their professional differences and complementary knowledge of the patient's need for care provided expanded perspectives on what and how their own and others' professional knowledge contributed to the patient's care (Jentoft, 2020). The notions of habilitation and rehabilitation was used to verbalise and express both similarities and differences in occupational and physiotherapy practices, and while acknowledging profession-specific knowledge they also opened up the boundaries between the professions (Christiansen, Taasen, Hagstrøm, Hansen & Norenberg, 2017).

The third discussion point will address the importance of boundary objects (Star & Griesemer, 1989) as objects for stimulating interprofessional learning and collaboration. The beta support became a shared object as it directed the students' attention to finding and performing joint actions from their different professional competencies in relation to the patient's needs. As a boundary object, the beta support became a resource for sharing a collective problem space among the students. The beta support afforded various qualities of meaning for the students and from their different professional perspectives. At the same time, it also created a unifying link between the students as the object was acknowledged recurrently in their interactions, advancing the students' joint actions to find a suitable solution for the patient with the cast. By approaching the beta support from different angles, the students expanded their perspectives by making and taking professional viewpoints at the interplay between the boundary object and the professional perspectives.

Limitations

The theoretical stand of learning mechanisms, as suggested by Akkerman and Bakker (2011) and Bakker and Akkerman (2019), has been useful for the fine-grained analysis of students' actions and interactions for interprofessional learning and collaboration across boundaries. One limitation, however, is that the fourth mechanism—transformation—was difficult to apply to the studied workplace-driven arrangement organised by the clinical supervisors. Our understanding is that this mechanism requires more profound changes in organising clinical placements as a shared commitment between higher education and healthcare services for supporting students' interprofessional learning (Bivall, Gustavsson & Lindh Falk, 2021).

A further limitation concerns the relatively small body of empirical material, focusing on one site (ward) and one specific occasion of the workplace-driven arrangement. Nevertheless, the empirical material allows us to discern details of students' interprofessional learning across boundaries, by following the students' negotiations, actions and interactions when caring for the patient. One strength was that two researchers observed the specific occasion, and, in the analysis, the comparison of field notes led to a reconstructed thicker

description of the chosen activity, a patient's possible need for a walking aid. The description was then validated by using the group interview data to gain a deeper insight and achieve trustworthiness. The findings are not intended to be generalised but rather to provide insights into students' interprofessional learning in the particular context studied.

Conclusions and implications

There are many studies showing a wide range of arrangements to support students' interprofessional learning in workplaces during or in relation to clinical placements. The findings in this article, despite deriving from a small data set, provide insights in a workplace arrangement to promote students' interprofessional learning that was driven by clinical supervisors on a ward. As such, the arrangement was not governed by professional education, but was carried out within the framework of student clinical placements. In the workplace arrangement, the students are in the midst of everyday work activities, requiring them to make professional and interprofessional judgements in order to learn and carry out the work on the ward. One conclusion is thus that when students are given sufficient scope for manoeuvre in authentic workplace situations, they take on the responsibility by dealing with caring for patients. For this to happen, they first need to deal with othering to be able to coordinate their interprofessional competencies and manage emerging challenges while being in charge of the care on the ward.

A second conclusion is that the clinical supervisors have significant importance for setting processes of learning in motion, by stepping back and trusting the students to take over the care on the ward. It is the clinical supervisors and other professionals who can provide students with this kind of room for manoeuvre in everyday workplace activities. This kind of workplace-driven arrangement that supports students' interprofessional learning then becomes an extension of their educational programme for becoming skilled professionals. The implications of the findings of this study demonstrate that local workplace arrangements driven by practitioners have to be recognised as an important part of traditional clinical placements. However, this kind of arrangement does not arise by itself; it has to be organised and carried out as pedagogical arrangements within workplaces. Clinical supervisors also need to be encouraged and supported by professional education, as well as by colleagues and healthcare management. However, more research is needed to discern the significance of organising pedagogical arrangements in workplaces for developing students as skilled healthcare professionals.

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