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Students' Interprofessional Collaboration in Clinical Practice: Ways of Organizing the Patient Encounter

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Abstract

As health care increases its focus on collaborative practice, universities must provide students with opportunities to learn how to collaborate with different professions and translate this knowledge into practice, known as interprofessional education. Simultaneously, researchers struggle to understand the full complexity of interprofessional education and must therefore conduct multiple-site studies, employ observational work, and apply theory throughout the research process.

This paper draws on focused ethnographic fieldwork at two different sites focusing on how students organize collaboration during interprofessional clinical placements. Findings indicate that the way students organize their collaboration is intertwined with how patients were introduced during handovers and involved mobilizing knowledge as "betwixt and between" familiar student practices and unfamiliar clinical practices. Findings also show

how authentic situations, artifacts and spatial features supported students to mobilize collaboration.

Keywords

Interprofessional education, focused ethnography, practice-theory, clinical placement

Introduction

Increased demands for safety and quality, a need to balance limited resources, and making healthcare more effective all reinforce a call of change in health care, and interprofessional education (IPE) is considered as a part of the solution (Frenk et al., 2010; World Health Organization [WHO], 2010). The rationale is that learning together as health care students improves working together as health care professionals and increases their ability to *"effect change, enhance quality of care, ensure safety and optimize deployment of human resources"* (Interprofessional.Global, n.d.). Including interprofessional competence as part of professionalism in health care has therefore been stressed and several competency-frameworks for interprofessional collaboration in health care practice have been developed (Rogers et al., 2017). In general, interprofessional competence concern knowledge about roles, teamwork, ethics, and communication (Thistlethwaite et al., 2014).

Drawing on ideas by Reeves (2010), Xyrichis (2020) detect interprofessional research reaching maturity.

As a scientific field, interprofessional research has advanced and scientific knowledge is successively gained across several areas of interests. However, current knowledge on IPE shows a diverse picture. For instance, reviews by Abu-Rish et al. (2012) and Fox et al. (2018) conclude there is a heterogeneous range of IPE-activities included in interprofessional research. Combined with a lack of detail when describing IPE-activities, educational approaches and outcome measures, it is difficult to compare between programs and get an understanding of how to arrange IPE so students learn what they need.

Further, research focused specifically on IPE in clinical practice, such as interprofessional training wards (IPTW) (see Lindh Falk, Hult, Hammar, Hopwood, & Abrandt Dahlgren 2013; Wahlström, Sandén, & Hammar 1997) is dominated by student self-report studies. Results indicate increased abilities regarding teamwork, communication and understanding of client-centered care (Brewer & Stewart-Wynne, 2013; Morphet et al., 2014). Students also report a positive change in their knowledge of, trust in and attitudes towards each other (Hallin & Kiessling, 2016; Naumann et al., 2021). Thus, previous research has mostly focused on attitudes and perceptions, showing that students seem to appreciate opportunities for IPE in their programs. Research on how IPE is enacted in practice is, however, less common. One example is Bivall, Lindh Falk, & Gustavsson (2021) who examined interprofessional

learning in the workplace showing that boundary objects served as prerequisites for negotiating and coordinating collaborative work. Another is Gudmundsen, Norbye, Abrandt Dahlgren, & Obstfelder (2019) who showed that students took on collaboration when they were given the responsibility and opportunity to do so. They did so with focus on sharing professional perspectives, doing collective assessment, and making joint decisions. Still, more research needs to focus on practice through observational work, the translation of IPE-activities to collaborative behaviour, and broaden the empirical interpretations through multiple-site studies.

Purpose and aim

The overarching purpose of this study is to explore how interprofessional collaboration and learning practices emerge in health care settings designed to enable students' interprofessional learning during clinical placements. More specifically the research question is: How do students organize their collaborative work in interprofessional student teams, and how do emerging elements interact? To exemplify how collaboration is enacted we chose to analyze handover situations as these are arranged to trigger interprofessional collaboration.

Theoretical framework

Designing and organizing IPE within health care is challenging in many ways. From an educational perspective, it is well known that *the intended curriculum*, i.e., what educational authorities formulate as learning objectives, will play out differently depending on how these objectives are embodied in teaching, *the implemented curriculum*. And subsequently what students learn, *the attained curriculum* (McKnight, 1979). Over the years there has also been a shift in considering learning as a process situated in practice rather than a process of mind (Lave, 2009). Which in turn relates to organization theory and how organizing is seen as an unfolding process where actors collectively do activities in a relatively ordered manner (Czarniawska, 2010; Hopwood & Jensen, 2019). Hence, there is a need to investigate how the processes of IPE are enacted and organized in practice to understand the impact of curricula and how it supports students to translate IPE into collaborative behavior.

Gherardi, Jensen, & Nerland (2017) suggest that the metaphor of "shadow organizing" can be used for exploring the dynamics of organizing as an ongoing process, i.e. the emerging *"effect of multiple elements that intra-act with each other, always affected or affecting each other in an interdependent relationship"* (p. 3). Drawing on Barad (2007), they define intra-activity as the relationship between elements, human and more-than-human, that do not have clear or distinctive boundaries. The "shadow" in shadow organizing refers to the symbolic meaning of taking place "betwixt and between" practices, i.e., beyond the surface of the organization (Gherardi et al., 2017). By using the metaphor of shadow organizing one can understand how parallel processes going on in the same practice are

intertwined, and how new arrangements or ways of working can be integrated without interfering what is valuable in already existing practices (Hopwood & Jensen, 2019).

When the concept of "shadow organizing" is applied in this study, it implies that objectives of a formal interprofessional curriculum should not be taken for granted. Students' collaborative learning processes will be enacted beyond the surface of the intended curriculum and will shape how IPE is enacted in practice. Hence, professional learning and knowing-in-practice are seen as embedded in practice. A practice-oriented perspective of health care views collaboration in practice as being embodied, relational and intertwined with ethical reasoning and materiality (Schatzki, 2012).

Method

Study design

A focused ethnographic approach inspired by Higginbottom, Pillay, & Boadu (2013) was applied. Ethnography has been suggested as being particularly suitable for studying and understanding the practices of interprofessional learning and collaboration (Reeves, Boet, Zierler, & Kitto 2015). The focused approach, commonly used within medical ethnography, enables strategic and pragmatic decisions regarding situations to observe as well as length of field work. The decisions are based on prior research results and knowledge, practicalities in the studied context, or theoretical framework (Higginbottom et al., 2013). This study is based on field studies comprising participant observation of, and informal interviews with, students in clinical placement practice specially organized to promote students' interprofessional collaboration and learning.

Settings

The study involves two health care settings, *The Health Center (HC)* and *The Interprofessional Training Ward (IPTW)*, where students from different health care educations come together for IPE in form of interprofessional clinical placements. IPE from differently organized sites enable contrasting results, which may be helpful for understanding each site separately as well as identifying features that apply across sites.

At both sites, patients constitute authentic scenarios for students to learn with, from and about each other. After handovers, student teams are requested to plan and execute relevant examinations, suggest interventions, and support the patients in daily care. Throughout the interprofessional clinical placements students are encouraged to reflect on their actions and collaboration. These activities are displayed in a schedule provided to the students during the introduction.

In line with focused ethnography, the sites were pragmatically chosen based on established research collaboration between two Scandinavian universities. See table 1 for an overview of the sites.

Site		Health Center, Norway		Interprofessional Training Ward, Sweden	
Students		*n*		*n*	
	Male	4		4	
	Female	7		5	
Programme		*n*	*Semester (out of)*	*n*	*Semester (out of)*
	Dentistry (Den)	2	9(10)	-	-
	Medicine (Med)	3	11(12)	3	9(11)
	Nursing (Nur)	3	5(6)	4	6(6)
	Occupational therapy (OT)	1	5(6)	1	6(6)
	Pharmacy (Pha)	2	9(10)	-	-
	Physiotherapy (Phy)	-	-	1	6(6)
Team 1		1 Den, 2 Med, 1 Nur, 1 OT, 1 Pha		2 Med, 2 Nur, 1 Phy, 1 OT during morning shift	
Team 2		1 Den, 1 Med, 2 Nur, 1 Pha		1 Med, 2 Nur, 1 OT during morning shift	
Patients		2		6	
Work hours		8.00-15.00		Morning shift: 6.45-15.30 Afternoon shift: 13.00-21.30	
Duration of IPE		2 days		2 weeks	
Supervisors		2 team supervisors		2 team supervisors 4 profession specific supervisors	
Field observers		ALF, TT		PT	

Table 1. Site overview

The Health Centre (HC) is a recently started community-based and interprofessional health unit in Norway. It focuses on an advanced form of medical care and rehabilitation, such as geriatric, palliative, and psychiatric care, in between hospital-based and home-based care.

Students from different programs scheduled to do clinical placements at the *HC* come together during two days of IPE. This interprofessional clinical placement is not part of an IPE-curriculum, however, the students had prior experience of IPE as they began their first semester with an interprofessional course. Students were prepared through an introduction the first morning.

Students form teams responsible for one geriatric patient per team and work during the morning shift, while regular care staff take over during evenings and night shifts. Designated team rooms for the students are located outside the ward. These team rooms are equipped with a computer, a projector, and a table. Students also have access to the nursing station at the ward.

The interprofessional activities are planned in cooperation between university teachers and personnel at the *HC*. Specially assigned employees oversee student activities, including introducing assignments and supervising. The supervisors have training in interprofessional supervision.

The Interprofessional Training Ward (IPTW) is a hospital-based geriatric ward in Sweden. The concept of IPTWs was first established 25 years ago as part of an interprofessional and problem-based learning (PBL) curriculum (Wahlström et al., 1997). Students from different programs come together for two weeks of interprofessional clinical placement. All students had prior experience of IPE as the *IPTW* is the third and final module of their IPE-curriculum. Students were prepared through a full day introduction the first day.

Student teams alter between morning and evening shifts, taking care of six to eight patients. During nights and weekends regular staff take over. A wing of the geriatric ward is dedicated

to the *IPTW*, including a student team room. The room is equipped with workstations holding computers, a table, whiteboard, medical equipment, and routine documents.

Designated supervisors are present during the shifts, available for students when needed. The structure of the *IPTW* is planned in cooperation with university teachers and health care staff at the ward.

Data collection

Access to the field

Access was gained through establishing contact with student coordinators at the clinics, then the Head of the care unit at both sites approved the study. Concerning the *HC*, ALF, MAD, and TT visited the site six months ahead of data collection to plan and organize observations. The *IPTW* is familiar to the researchers as part of the regular IPE-curriculum at their home university. PT and TT joined regular meetings with staff prior to the study to inform and discuss the research project. The student coordinators then supported communications between researchers, unit managers, students, supervisors, and patients.

Recruitment of participants

Suitable time periods for the field work were chosen in agreement with each site. At the *HC*, the IPE was conducted for two days, recurring four times during the semester. At the *IPTW*, the two-week IPE-periods followed each other over 14 weeks consecutively. Students at both sites were first informed about the study via e-mail then verbally at the start of the observations.

For both sites, supervisors and other care staff were first informed about the study at the previously mentioned meetings, then at the start of the observations. Patients were informed by care staff, both by written information sheets and verbally. Each student, supervisor and patient signed an informed consent form and were told that they could withdraw their consent at any time without having to specify why or with any reprisals concerning their studies, work, or care. No one withdrew their consent.

Field work

Field work at the *HC* was carried out by ALF and TT for two weeks. During the two-day long IPE, ALF and TT observed one team each, from morning to afternoon, generating approximately 22 hours of observations with the students. PT also joined for half a day to get acquainted with the site. At the end of the IPE informal group interviews were conducted with respective teams. In addition, time was spent at the site prior and after the IPE-days to understand the full arrangement of the HC. We joined different meetings, as well as conducted informal interviews with supervisors, student coordinators, and representatives from the university.

Field work at the *IPTW* was carried out by PT, observing two teams for nine days. Observations took place during both morning and evening shifts. Over the nine days, approximately 39 hours of observations were conducted. Informal interviews with students were conducted throughout the period when appropriate. Observations took place at different locations, in specially allocated team rooms, at the nursing station, in corridors, patient rooms, and the dining room at the ward.

Fieldnotes were taken by hand and transcribed adjacent to the observations. To support the fieldnotes, drawings and sketches of how students, supervisors and patients sat and moved around in the rooms were included. Verbal memos were recorded to support transcribing fieldnotes. Participants were treated confidentially and are referred to in the text, for example, as nursing student 1 or occupational therapy student 2.

Data analysis

The analysis is based on an iterative, cyclic, and self-reflective processes (Higginbottom et al., 2013), see figure 1 for the specific steps taken. As the field work was done by three researchers at two sites, we followed Clerke & Hopwood's (2014) suggestions for team ethnography. Data were anonymized, catalogued, coded systematically, and kept in a password protected data base.

The handover situations were chosen as they occurred multiple times throughout the two IPE clinical placements and gave us a rich set of data. They were also planned as IPE-activities to trigger interprofessional collaboration and was therefore of interest to our research question. Preliminary interpretation and theorization were initiated already during fieldwork and then during the process of transcribing and organizing data. Our iterative process meant working with data both individually and collaboratively. This way of working with data can be described as exploring immediate metaphorical thinking (Gherardi et al., 2017) which enabled us to delve deeper into the data, and from there also theorize observations (Hammersley & Atkinson, 2019; Swedberg, 2012). Fieldnotes together with informal interviews made up a rich and complex range of situations and activities possible as starting points for the analysis. When going through data we were looking for signs and expression of collaboration, e.g., how students were acknowledging each other's competence and making joint decisions.

In the following, we present the findings from each site separately using excerpts to showcase examples from our data, followed by a contrasting analysis to identify differences as well as common features across the two sites.

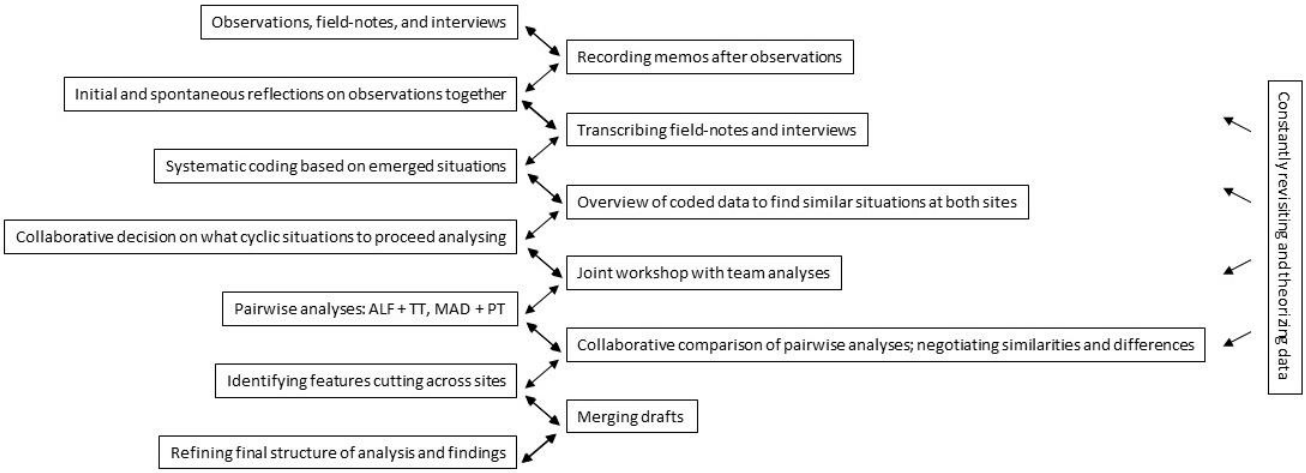

Figure 1. The iterative process of analysis applied in this study

Ethical considerations

Ethical considerations have been given regarding both Swedish and Norwegian regulations (The Act on medical and health research, 2009; The Act concerning the Ethical Review of Research Involving Humans, 2004). In Sweden, the study has been approved by the Regional Ethics Committee in Linköping (2018/46-31). In Norway, the study did not need ethical approval according to results of a self-report to The Norwegian Centre for Research Data.

Findings

Following different handovers, students at both sites started planning and preparing what to do during the shift, organizing their collaboration. However, contrasting the two sites showed that this was done differently and that students end up betwixt and between known practices from previous profession-specific clinical placement and the new and unknown interprofessional clinical placement. Contrasting also identified three features intertwined with the students' process of organizing collaboration when being betwixt and between practices: authenticity, artifacts, and spatiality.

In the following section we will present excerpts from situations at both sites exemplifying these findings. We will then elaborate on the features cutting across the sites.

Health Center

At the HC, patients were handed over to the students differently throughout the two days. On the first day, when the patient was first introduced, students were given short information about the patient on a piece of paper. They then continued by preparing

collaboration in sequential turn-taking and inventorying each other's competences. The next day, when they began work the patient was handed over in a morning report at the ward. Then the students organized their work by ethically considering the patient's needs and adjusting the scheduled plan of what to do.

Situation 1, Introducing the patient by handing over information on a piece of paper

Following an introductory session in the morning, the student teams gathered after lunch to start planning their upcoming work with the assigned patient. In Team 2, they sat around a table in the allocated team room outside the ward

> The supervisor started: "Now, have you seen patients together with some other professions before?". "I have", said the nursing student, "I have worked with a patient together with a physiotherapist once during a previous clinical placement." The medical students mention they have seen patients together with nursing students, which is quite common. The supervisor then picked up a small piece of paper from her pocket," This is the patient you will work with during the next couple of days". The paper provided short information regarding sex, age, and reason for admission. One of the medical students immediately asked, "Was the patient referred from a general practitioner?". The supervisor had no answer to the question, and instead said "Now you must plan what to do when meeting the patient in about an hour. The nursing student has additional knowledge about the patient, so you have that resource". The nursing student nodded and confirmed that he had been partly responsible for the patient before. The occupational therapy student then asked the others "What information do we need about the patient? Should the medical students be responsible for the assessment?" The other students started mentioning what they found important from their respective perspectives. The pharmacy student mentioned she knew what pharmaceuticals the patients had, and the dentist student said: "I probably want to look at oral health and do "some" assessments".
>
> Excerpt 1, from fieldnote HCt2d1:2

The fieldnote above shows how the students received very brief information about the patient. Through meetings and interviews with the supervisors, it was understood that the approach of having brief written information representing the patient was intended to stimulate collaborative work as the students must collect more information as a team. The students then started enacting collaboration by asking the question *"What do we need?"* and inventorying what each team member would like to focus on in the process of getting more information. However, as seen in the excerpt, both the pharmacy student and the dentistry student comment, *"I probably will do some assessments".* This gives the impression of a more general understanding of what their professions could do rather than

being tailored to the patient in focus. By expressing their general understanding of pharmacy and dentistry, the students appeared to adopt profession-specific perspectives by being "representatives" of their profession. Also, the excerpt shows how there was a presupposition that the medical students should take the lead during the patient encounter, even though it was indicated that the nursing student had prior knowledge about the patient.

In Team 1, a similar situation was displayed. After receiving the paper with short information about the patient, the medical student initiated preparations by raising general questions and mentioning examinations to do when seeing a new patient. Then the medical student turned to the nursing students, asking what they wanted to ask or examine, having the other students follow. After noting that there was no specific equipment available for oral examinations, the dentistry student concluded that she would have to settle with a simpler examination. The team continued by focusing on the order in which they would do things, deciding to ask all questions first starting with the medical student and then performing examinations. Preparing collaboration after having the patient handed over on a piece of paper can therefore be seen as a matter of taking turn in sequence, rather than intersecting different perspectives.

Situation 2, Organizing the patient encounter

Early morning of day 2, the students in Team 2 agreed to meet at the ward. Following their schedule, they joined the morning handover to get an update on "their patient" and how the evening/night had been. Their assignment was to help the patient with morning care and breakfast. Afterwards the students were supposed to return to their allocated team room to work on their written and oral reports.

> The two medical students, the dentistry and nursing student participated in the short morning handover. A staff member said: "The patient had a good afternoon yesterday and was very pleased to meet you. However, the patient has not slept much overnight and is tired now in the morning". The students then returned to the assigned team room where they started planning the day's work. The occupational therapy and pharmacy student also joined, and everyone gathered.
>
> One of the medical students informed the others what was said during the morning report and argued about how to proceed. "It is unethical for us to go and wake an old person when they have only slept for three hours." The occupational therapy student added "Yes and we won't get a correct image of what the patient can and cannot do if they are very tired". They decided to postpone morning care and do this later when the patient had woken up.
>
> After an hour, the nursing student asked: "Is it time to go back to the patient and see if he/she is awake?" The students went to the ward to discover the patient's room

> empty. The students gave the impression of being disappointed and frustrated, "What shall we do now?" They went to the dining room where they found the patient dressed and eating breakfast.
>
> Excerpt 2, from fieldnote HCt2d2:1

In this situation, we can see how the information from the morning handover made the students deviate from what they originally were assigned to do (provide morning care). Instead, they made a judgement call based on the patient's needs and their professional knowledge. In contrast to Situation 1, the patient was presented to the students as a human being, rather than as a few lines on a piece of paper. The patient was no longer something vague and distant, but rather a person with individual needs to consider.

This was noticeable when one of the medical students adopted an ethical perspective arguing that they should not wake a patient up after having only slept for a few hours. The students' attention turned towards what could be described as collaborative, professional reasonings and decisions. This is also shown in the follow-up comment from the occupational therapy student when she added a remark about prerequisites for a good evaluation of a patient's capabilities, and the risks of collecting information on non-representative terms. Thus, the concrete reality of the morning report supported the concept of students being a collective decision-making unit, which can be referred to as a "we".

This situation illustrates how the students set aside the schedule provided by the supervisors and the educational practice. Instead, they stepped into the interprofessional practice, caring for the patient. However, they became disrupted by the ongoing regular ward routines that seemingly did not consider the students' work.

The interprofessional training ward

At the IPTW students were tossed into the reality of the ward from the beginning. At the start of every shift, they were given a handover from either the night staff or the other student team. The students had no specific instructions on what to do during the handover or after, other than to get working together. The following shows us how they started preparing for collaboration by drawing on traditional ways of organizing clinical placements.

Situation 1, Introducing patients by handing over responsibility as if colleagues

It is early morning day 2, the students were about to take over from the night shift. Everyone was sitting in the allocated team room, waiting for the handover.

> 6:50 a.m. Everyone was sitting by a computer reading the medical records of the four patients included in today's work, except the physiotherapy student who arrived a little late and found no available computer. Two of the night

> staff came into the room for the handover. They briefly told the team about the four patients currently on the IPTW. Two patients had slept well. The blood sugar values had been registered for one of the patients. Two patients had not slept so well. One of them was given a sleeping tablet. Team supervisor 2 turned to the night staff and asked if the patient had been worried. Nursing student 4 asked the night staff about the blood sugar values. The night staff responded. Medical student 2 discussed with the team supervisor: "What about the insulin units, has there been any change there?" The room turns silent for a while. The night staff left, and the students were required to take over the work. At first there was a moment of silence and stillness. When the dialogue started the following took place:
>
> Nursing students 3 and 4 stated verbally that they had divided the patients between themselves, and they had done this yesterday. Then the medical students 2 and 3 said that they have done the same, they too have divided the patients between them. The occupational therapy and physiotherapy student were not included in this discussion.
>
> Excerpt 3, from fieldnote IPTWt1d2:1

In the handover, one nursing and one medical student mobilized knowledge from previous clinical placements where each had been learning about their respective professional perspectives. They asked questions that were important for understanding the patients' condition and for future assessments and seemed to know what was professionally expected of them in the handover situation. The physiotherapy and occupational therapy student in the team were not active in the handover. In this case, neither one of them had previous experience of clinical practice at a hospital ward. Hence, while the nursing and medical students were enacting familiar professional practice from previous clinical placement experiences, the physiotherapist and occupational therapist students were in an unfamiliar practice situation.

Then, the students prepared to meet the patients by drawing on profession-specific conventions of organizing clinical work, such as dividing responsibility for the patients between the team members. The idea of dividing the responsibility between them can be seen as the 'usual' student practice in clinical placements: the students usually work individually with their patients at the ward, and there is no focus on sharing information or joint planning between professions. The occupational therapy and physiotherapy students were not included in this division of labor, which is also in line with what is "usual" as they most often appear at the ward when patients are in specific need of their competence.

In the following excerpt the students continue to draw on familiar ways of organizing clinical work following the tradition of a master–apprentice model.

> Shortly after the handover various discussions broke out in small groups. Medical student 3 claimed to have a poor understanding of what fluid registration means. Nursing student 4 said: "We have to put our heads together". Medical student 2 turned to the physiotherapy student and asked: "You've worked in health care before, haven't you? Should we divide ourselves so that we follow those who are used to health care work?" The feeling was uneasy and there was a lot of chatting going on. Nursing student 4 and the physiotherapy student went to the whiteboard and looked at the displayed time schedule.
>
> Excerpt 4, from fieldnote IPTWt1d2:1

In this situation, the first indication of collaboration emerged when students talked about themselves as "we", implying "we as a team". Previous experience of health care was acknowledged when medical student 2 suggested that the team should organize themselves so that those with previous experience took the lead, with the others following. This can be seen as a traditional way of organizing work. Medical students in particular follow their supervisors when on clinical placement, watching and learning as the supervisor sees patients.

Situation 2, Organizing the patient encounter

The scene below follows the night staff leaving but the team supervisor still in the team room.

> After the night staff left, there was a moment of stillness in the room. Nobody did anything and everyone was silent. After a while, nurse supervisor 2 pointed to the whiteboard and said: "You've got the board for your planning where you can write what you want to do." Then medical student 2 turned to the others in the team and asked if there were medications to be distributed that morning. Then the team supervisor 2 said, "I will do it now".
>
> Excerpt 5, from fieldnote IPTWt1d2:1

Once the team was left to take responsibility for the patients there was silence, no one initiated action. Interprofessional collaboration, at least in this way, was seemingly unfamiliar to the students and they had to enact a new practice. The supervisor intervened by pointing to tools that can be used in planning (whiteboard and schedule) and thereby engaged with the artifacts to mobilize students' collaboration. At first there was no reaction to the supervisor's intervention, then this followed.

> Nursing student 4 and the physiotherapy student started writing down the plans for each patient on the whiteboard. The physiotherapy student wondered:" Should we plan for just now or for the whole day?" Nursing student 4 said:" We could do either way." Nursing student 3 turned to medical student 3 and wondered: "How should we go in when we're getting them out of bed?" More students rose from their chairs and joined the pair at the whiteboard, forming two sub-teams: Sub-team 1: Physiotherapy student, medical student 3 and nursing student 4. Sub-team 2: Occupational therapy student, nursing student 3 and medical student 2. After a moment the students looked at the watch on the wall. The physiotherapy student said: "OK, we still have some time, do you think we should start, or could we chill out for a while?" Several students were talking, medical student 2 asked straight into the air: "Who was it again that had slept poorly?" She got no response. Sub-team 1 stood by the whiteboard, planning. Sub-team 2 was spread out; the occupational therapy student and nursing student 3 sat together talking, while medical student 2 sat on her own, turned towards the room.
>
> Excerpt 6, from fieldnote IPTWt1d2:1

Not all students participated in the sub-teams. However, the movement from the first positions (sitting by the table) to the second (standing by the whiteboard) seemed to enable some students to turn to each other and start negotiating what to do, initiating interprofessional collaboration. This made the notion of the team, "we", appear again. The schedule on the whiteboard specified time points throughout the day and the students used that as a foundation when planning and organizing their work. It seemed to give them awareness of time and a sense of control. When the students realized they had more time on hand than they first thought, a shift of focus occurred and mobilized other practices. The line *"Should we start, or could we chill for a while"* can be interpreted as temporarily moving from a clinical placement practice into a private practice. Meanwhile, the question *"Who was it again that had slept poorly?"* indicates that aspects of a professional practice still were considered.

Features identifiable across the two sites

When revisiting and contrasting the findings, it appears as if students end up betwixt and between practices: the known practices from previous profession-specific clinical placement and the new and unknown interprofessional clinical placement. It is also possible to identify three features cutting across the two sites: authenticity, artifacts, and spatial features. As it turned out, these features seem to have an impact on how students organize interprofessional collaboration and coping with being betwixt and between practices. The features both mobilized and impaired organizing interprofessional collaboration.

The feature of *authenticity* involves presenting the patient, including the history and actual status, to the student team. As seen in excerpt 2 and 3, this was done 'as if' the students

were colleagues. Thus, authenticity seemed to mobilize interprofessional responsibility as well as ethical considerations among the students. While in excerpt 1, it was done on a piece of paper, resulting in students taking turn in sequence and putting on the role of representing their profession in general terms.

Recognizing and using artifacts from safe and well-known educational practices, such as the white board at the *IPTW* (see excerpt 4-6), and the schedule at the HC, seemed to have an impact on the students´ collaborative work. The artifacts supported the students to structure their daily tasks and unite them as a "we" in ways both mobilizing and impairing collaboration.

The allocated team room is a *spatial feature* and seemed to act as a threshold between the educational practice and the health care practice. When the room was located outside the ward, as seen at the HC excerpt 2, students appeared to become distant from the health care practice that kept going on as usual not intertwined with the student work. At the same time the allocated rooms seemed to serve as a safe place to retreat and unite as a team. All three features hints toward students having to balance being betwixt and between practices.

Discussion

We have been able to showcase how students interprofessional collaboration emerge in practice and how it is intertwined with features as authenticity, artifacts, and spatiality. The interprofessional clinical placement becomes a site for intersecting practices and the students were betwixt and between known practices from previous profession-specific clinical placement and the new and unknown interprofessional clinical placement. Also, the features gave the students directions on what to do and thereby enabled them to mobilize interprofessional collaboration.

The metaphor of shadow organizing (Gherardi et al., 2017) help us understand what is enacted in students' interprofessional clinical placement practices. According to Hopwood & Jensen, (2019) there are two approaches to the metaphor, the first focusing *"on parallel organizational arrangements, in which the metaphor of shadow emphasizes mimicry or copying."*, while the other focus on understanding shadow organizing as *"a device to understand overlooked features of organizing more generally, emphasizing metaphors of liminality, secrecy, and performativity."* (p. 199). This study has mainly focused on liminality.

Liminality (Gherardi et al., 2017), or the uncertain position students take during IPE, locate them between their roles as students and as practitioners. This uncertainty between roles, both established and in the process of being developed, may be perceived to have a threshold which separates or unites familiar student practices and unfamiliar clinical practices. In turn, liminal activities refer to activities taking place at the threshold between canonical and non-canonical practices (Gherardi et al., 2017). Canonical practices refer to

professional work as following standardized care plans. Non-canonical practices refer to professional work becoming individualized, based on the unique needs and complexity of the person. Students at both sites seemed to take part in liminal activities when moving between familiar experiences of patient encounters from previous profession-specific clinical placements and encounters with a patient in an unfamiliar interprofessional clinical placement.

Another example of the threshold between profession-specific and interprofessional practice, is the situation where the physiotherapy student and the occupational therapy student moved "betwixt and between" practices during the morning report (see excerpt 3 *IPTW*). The canonical practice can be understood as the morning routine with a handover and participating in the morning routine was an unfamiliar practice for them. This situation is an example of authenticity supporting the students' engagement in interprofessional practice. The same was seen at the HC as described in excerpt 2. Prior to receiving information about the patient's status, students had planned to do other activities. Adjusting their plans to current circumstances enabled them to mobilize their collaborative work. Gherardi et al. (2017) described shadow organizing as similar to "*an activity taking place in a grey zone, in a space and time of ambiguous definition and of mutable relations, as in the tidemark between the sea and the sand, or in the liminal space of the threshold.*" (p. 8). At the *HC*, the situation with ethical discussions regarding how to handle the patient´s need is an example of a situation when the students moved from "betwixt and between" different practices to being on "dry sand" (excerpt 2). These findings relate to what Gudmundsen et al. (2019) found on collective assessments and joint decisions leading to collaborative work and taking responsibility.

Artifacts seem to initiate students' interprofessional collaboration as they made the students mobilize previous experiences of practices. Artifacts serve as epistemic objects (Nerland & Jensen, 2012) supporting liminal activities between different practices. They usually involve multiple perspectives and are therefore flexible in their nature, enabling contextual adaption. As seen in excerpt 4-6 from the *IPTW*, the whiteboard served as an artifact initiating interprofessional practice. The whiteboard seemingly mobilized familiar experiences from the educational practice of PBL, i.e., to make use of a whiteboard for brainstorming about a patient. Similarly, at the *HC* the patient communicated on a piece of paper seemed to mobilize a familiar practice known from previous educational experiences. The students organized themselves and their collaborative work by sequential turn-taking, which is a common way to take on an assignment. As these factors interact with each other they enable shared use of objects as well as taking on tasks around which students can mobilize their collaboration. Similar results were found by Bivall et al. (2021) who could show that students negotiated and coordinated their collaboration around a boundary object. However, our findings show that this does not occur by itself as the students ended up "betwixt and between" practices.

Furthermore, our findings indicate that the allocated team rooms were important for the students, irrespective of where they were located, and that they were a safe place to which students retreated. Other studies have also highlighted that dedicated space for students is of great importance for building personal relationships as well as developing collaborative work (Brewer et al., 2017). Throughout the interprofessional activities, the students returned to the team rooms when they had to mobilize their collaborative work. In a sense, this indicates the room's function as "the dry sand" where the students can return from "the sea" (Gherardi et al., 2017). However, in the spatial arrangement where the room was physically separated from the ward, the students as a group moved 'betwixt and between' practices as they became distant from the ward. This resulted in them struggling to become incorporated in the daily care of patients and to know how to mobilize their collaborative work.

When considering the findings in light of interprofessional competencies (Thistlethwaite et al., 2014), arranging interprofessional clinical placement as an educational practice within health care practice is challenging. Despite a well-organized curriculum there are no guaranties that students enact what is intended, nor attain the intended knowledge (McKnight, 1979). Students struggle with mobilizing their interprofessional collaboration as they move "betwixt and between" different practices. Though they struggle, they clearly try to establish a team. It seems as if it is a process of going back and forth, returning to known practices when experiencing new ones.

Conclusion and further research

In line with Reeves's (2010) ideas about research focusing on practice, the translation of IPE-activities to collaborative behavior, and multiple-site studies, we set out to explore how practices of interprofessional collaboration and learning emerge in health care settings designed to enable interprofessional learning. Through ethnographic observational work we have contrasted two clinical placement sites analyzing empirical findings with the concept of "shadow organizing" (Gherardi et al., 2017).

In conclusion, planning IPE requires considering different features as students end up betwixt and between practices. First, how different authentic situations allow students to make decisions based on professional assessments, as these decisions mobilize students' collaboration. There is also a need for artifacts to be considered carefully when planning IPE, as we have shown how students gather around them to mobilize their collaboration. Finally, considerations need to address where to place students physically to include them fully in the practice in which they will be working.

The knowledge we have been able to generate can also be used when preparing students for IPE as a way of exemplifying how interprofessional collaboration can be enacted. For an even richer understanding of students organizing interprofessional collaboration in practice, research should continue contrasting different IPE. We

focused on two sites equal in the sense of including final-year students. Further research should strive to do more longitudinal contrasts by studying students participating in an IPE-curriculum and explore how multiple IPE-modules has an impact on students' collaborative work.

Limitations

In this study, the two sites enabled different opportunities considering length of field work due to their various ways of arranging the clinical practice, which can be seen as an asset as well as a limitation. In the case of the HC, we were not present at the field for a long period of time, as the students themselves were not. Instead, we chose the focused ethnographic approach to be able to study students interprofessional collaboration and still generate rich data.

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Declaration of interest

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