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Interprofessional Education: Students´ Learning of Joint Patient Care

Abstract: This study examines how patient care is developed in meetings between students of occupational therapy, physiotherapy, nursing and medicine who are allowed to shape their own interprofessional collaboration. We conduct a thematic interpretative analysis of audio recordings and observations from the meetings and informal talks with the students. The analysis draws on traditions in sociocultural learning theory that deal with interaction on something in common between actors with different knowledge bases and the consequences of this interaction. The analysis showed that the students developed collaboration in patient care by sharing, assessing and determining professional knowledge of patients' health conditions collectively. In conclusion, we argue that the students learned to use a multiprofessional knowledge base in the design of patient treatment when they were given responsibility to create the collaboration themselves. This demonstrates that students can be encouraged to independently develop professional collaboration in patient care within interprofessional education.

Keywords: Interprofessional education, collaboration, student meetings, community of practice, joint enterprise, boundary crossing, fieldwork

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In the late 1970s, interprofessional teamwork arose as a global healthcare trend (WHO, 1988). This trend was based on an understanding that health workers with different professional skills work more efficiently in interprofessional teams than individually (WHO, 1988). The World Health Organization (WHO) has since followed up the trend and encouraged interprofessional education (IPE) in the education of health professionals (WHO, 2010). Interprofessional education takes place when students from two or more professions learn about, from and with each other (WHO, 2010). The objective of IPE is for students to learn how to collaborate effectively in interprofessional teams when they start employment and thus help to optimize healthcare (CAIPE, 2017; WHO, 2010).

A recent synthesis of systematic reviews shows that IPE has a positive effect on students (Reeves, Palaganas & Zierler, 2017). The students' attitudes to each other improve and they acquire knowledge and skills in collaboration (Fox et al., 2018; Reeves et al., 2016), especially when participation is voluntary (Reeves et al., 2016). Further, when IPE is facilitated in realistic contexts, it leads to particularly good learning outcomes (Fain & Kennell, 2016; Reeves et al., 2016). The review articles show that students enjoy interacting in authentic learning situations (Granheim,

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Shaw & Mansah, 2017) and that this improves their communication and cooperation skills (Granheim et al., 2017; Kent & Keating, 2015).

However, these positive findings mainly rest on learners' self-reported experience (Granheim et al., 2017; Kent & Keating, 2015; Reeves et al., 2016, 2017). For this reason, more observational studies are needed to show how students learn in IPE (Kent & Keating, 2015; Morgan, Pullon & McKinlay, 2015; Olson & Bialocerkowski, 2014; Reeves et al., 2017). Interprofessional collaboration is complex; we, therefore, need knowledge of what actually takes place in this form of collaboration (Kent & Keating, 2015; Morgan et al., 2015). For example, observational studies have shown that a favourable physical environment and time for the informal talk are important for joint knowledge generation, goals, and decisions (Morgan et al., 2015). Students who are allowed to adopt their own professional role in role-play have a particularly positive view of interprofessional collaboration (van Soeren et al., 2011) and demonstrate complex collaborative skills in direct patient care (Turrentine et al., 2016).

In this article, we explore how students of occupational therapy, physiotherapy, nursing and medicine who are allowed to shape their own interprofessional collaboration learn such collaboration in patient care. In order to gain insight into the students' learning processes, we used ethnographic methods in the data collection and drew on Lave & Wenger's (1991) sociocultural learning theory and the concept of community of practice to explore how basic interaction and collaboration processes can take place. The concept of community of practice is regularly used to describe work in practice in health and social care (Hean, Craddock & O'Halloran, 2009) and to support IPE interventions (Hean et al., 2009, 2018). However, the concept has seldom been used in exploring how learning in IPE takes place (Hean et al., 2009, 2018), which is precisely the goal of our study.

One general assumption in sociocultural learning theory is that learning is achieved through social processes (Hean et al., 2009; Wenger, 1998) which mediate cognition and motivation on the individual level (Schoor, Narciss & Körndle, 2015). A further assumption is that the pursuit of common goals is fundamental to human interaction and can lead to the establishment of communities of practice (Lave & Wenger, 1991; Wenger, 1998). A community of practice evolves when the participants jointly develop and learn its three constituent components, namely *mutual engagement*, *joint enterprise* and *shared repertoire* (Wenger, 1998). The goal is achieved through the shared development and learning of the three components.

In our study, we limit our research to how one of the three components constituting a community of practice, namely joint enterprise, is developed and learned in students' group meetings. Joint enterprise refers to the activities participants implement and commit to in order to achieve a common goal (Wenger, 1998). The goal of interprofessional collaboration is that different professions should share responsibility for problem solving and decisions in patient care (CAIPE, 2017). In order to realize such collaboration, the professions must draw on each other's knowledge by performing work that is not confined to the limits of their own profession. Joint enterprise in interprofessional collaboration can, therefore, be understood as crossing professional boundaries. In order to observe and describe the development of such work among students, we use the concepts of boundary crossing and boundary object from sociocultural learning theory. These concepts indicate sociocultural differences between specialized practices and suggest how links between the practices can still be established (Akkerman & Bakker, 2011). We analyzed the data using the practical iterative framework for qualitative data analysis (Srivastava & Hopwood, 2009). The research question underpinning our study is: How do the students realize the goal of interprofessional collaboration in patient care in group meetings and what do they achieve through their actions?

Based on our observations of the students' group meetings and students' reflections on the activity during these meetings, we aim to describe and explain how the students themselves take on an active role in organizing their collaboration on patient

care in the meetings and what consequences the students' actions have on patient care.

Theoretical framework

According to the sociocultural learning perspective, goal achievement and learning take place through ongoing negotiations about what creates meaning between people, or between people and objects, culture or history (Lave & Wenger, 1991; Wenger, 1998). In pursuit of the goal, people connect what they already know to what they do not yet know (Wenger, 1998). Because different people have different knowledge and skills, it is natural that there should be disagreement and unequal power between people. Learning thus takes place informally and in any context and can create, maintain and change social practices. However, contemporary society rests on a foundation of professional practices. These require specific types of knowledge of the participants, thus creating boundaries for membership. At the same time, societal productivity requires collaboration between different professions to avoid fragmentation and promote development (Akkerman & Bakker, 2011; Wenger, 1998). This implies that people must cross boundaries, that is, create environments to negotiate and combine different expert knowledge to develop new and more complex knowledge (Akkerman & Bakker, 2011; Wenger, 1998). However, boundary crossing does not mean that people adopt each other's basic professional perspectives. In order to cross over into another professional perspective, professionals must have something to collaborate on. The interconnection, therefore, takes place by means of *boundary objects*, that is, various entities that bridge gaps between different professional perspectives (Akkerman & Bakker, 2011; Wenger, 1998). The consequence of the interconnection is that all professions cross their knowledge boundaries and develop knowledge of the object on a multiprofessional basis.

As already mentioned, we focus solely on the development of the component of joint enterprise in the group meetings initiated by the students, that is, the activities students develop and take responsibility for, in order to achieve the goal of interprofessional collaboration on patient care in their meetings. The students represent different professional practices at the start of their practice period, where they are expected to draw on each other's professional knowledge in designing interprofessional patient care. In order to explore how the students reached the goal of interprofessional collaboration on patient care, we used the concept of *boundary crossing.*

In the present article, our premise is that students are goal-oriented individuals who negotiate meaningful activities in order to cooperate interprofessionally during their practice period. We define students' group meetings as *sites of knowing* (Nicolini, 2011), illuminating a point in time and space where we can observe knowledge being developed. We focus our attention on identifying the actions the students implement and take responsibility for in order to collaborate on goal achievement.

The disadvantage of exploring IPE using sociocultural learning theory is that the individual's psychological processes and needs in the learning process receive less attention (Hean et al., 2009; Schoor et al., 2015). Further, illegitimate use of power by participants is interpreted as harmless disagreement and informal aspects of learning arrangements are romanticized (Schoor et al., 2015). Both researchers and consumers of research must be aware of this.

Methodology

In a sociocultural learning perspective, human actions are understood as social and knowledge-based practices in which meanings are continuously created and recreated (Lave & Wenger, 1991; Wenger, 1998). Based on our understanding of learning

and our research question, the students' interaction to find out how to realize interprofessional collaboration was seen to be relevant as a data source. We were therefore inspired by ethnographic methods of data collection and developed process data on student interaction and collaboration through observation of their activity and informal talks with the student groups. We then developed process knowledge about the students' interaction and collaboration through a repeated movement back and forth between the process data and theory to find answers to our research question.

The interprofessional intervention under study

In our study, we investigated students participating in an interprofessional educational intervention facilitated by a university in collaboration with three municipal health services. Fifth-year students of medicine and third-year students of occupational therapy, physiotherapy, and nursing volunteered to participate and were organized into four groups that contained one student from three of the four professions, and five groups that included one student from each of the four professions. The students had not previously collaborated during their studies. Each student group was given joint and independent responsibility for pre-selected patients. The students were asked to work out themselves how to collaborate interprofessionally on patient care on the basis of their particular knowledge and skills at the start of the practice period. The students did not receive any specific training, guidelines or learning outcomes before the practice period to aid their collaboration. Each student group had a two-week practice period between February 2014 and February 2015.

A member of the staff of the local health services served as an interprofessional coordinator. The coordinator introduced the students to the health services, arranged up to two meetings with the student group during the period, answered questions from students on interprofessional issues and facilitated the final discussion. There was also a representative of each of the students' professions to answer specific profession-oriented questions from students. The students also had to report to and collaborate with the health services.

Data collection

The first and second authors generated data from different types of student activity throughout the practice period. The fourth author observed two student group meetings. The authors noted down their observations during or shortly after each student activity. Their notes emphasized in-depth descriptions of what they perceived to be the focus of the students, the content and form of student interaction and any patterns revealed. The students' interprofessional meetings and the first author's informal talks with the student groups after the meetings were audio recorded.

Ethics

The research project was approved by the Norwegian Centre for Research Data (NSD) in July 2013 (Approval No. 34895) and by the Regional Committee for Medical and Health Research Ethics in September 2014 (Approval No. 2014/1659).

Analytical strategy

The data for the thematic content analysis in this article are field notes and audio recordings from twenty-six interprofessional student meetings in six student groups and twelve informal talks between the first author and the six groups. Three of the groups completed the placement in a geriatric rehabilitation ward and the other three groups in a short-term nursing home. Two meetings in each student group were transcribed. The other meetings were listened to several times and compared with the

transcriptions and further compared with the observations recorded in the field notes from the meetings. We specifically searched for how the students took an active role in organizing their collaboration on patient care in the meetings and what consequences the students' actions had on patient care. In the analysis, we moved back and forth between data and theory by following the principles of the iterative questions from "A Practical Iterative Framework for Qualitative Data Analysis" (Srivastava & Hopwood, 2009). The framework guide researchers to ask themselves what the data is telling them and what they want to know. Through the repetitive back and forth movement between data and theory, one main theme and three subthemes emerged in the data. The main theme was the patients' health condition and treatment and the sub-themes were: a) sharing professional perspectives on patient care b) collective assessment of the information shared, and c) joint decisions on patient care. Typical examples of the content of each sub-theme were condensed. The students' reflections on discussions of patients' health condition and treatment in the group meetings in the informal talks with the first author were then listened to several times and compared with the sub-themes and related expressions were condensed. We found that the students collaborated closely on patient care in their interprofessional meetings by developing a multiprofessional knowledge base for patient care. All four authors were involved in the interpretation of the data

Findings

We observed that a typical feature of the interaction in the student groups was that the students spontaneously and immediately stated that they wanted to give the patients care and treatment as an interprofessional group and planned to discuss what to do with the patients as soon as they received information about them. In this way, the students placed the unique situation of the patients in the centre of their shared professional attention and agreed to include each other in the decisions about the patients' care from the start. As one nursing student in group four explained to author A.C.G. in the corridor on the first day of placement:

> We have to get some information about the patients first to know what to collaborate on. We're not going to collaborate just for its own sake, that would be pointless.

After the first group meeting, meetings became the most frequent and regular form of interprofessional interaction in the student groups throughout the practice period. Our analysis shows that the main theme of the students' discussions in the meetings was the patients' situation and treatment. In this context, the students focused on three main areas: a) sharing professional perspectives on patient care b) collective assessment of the information shared, and c) joint decisions on patient care on the basis of the knowledge developed collectively. We describe below how these three focus areas were manifested and how each focus area taught the students to interact with each other in order to reach the goal of working together as an interprofessional group in their meetings.

Sharing professional perspectives

We observed that the sharing of professional perspectives in the meetings was typically achieved by the students spontaneously telling fellow students what they had learned about a patient by reading information, listening to an oral report, talking to the staff on the ward or other people, and observing the patient themselves. They also made sure that all students were given time to share their information before the meetings ended. This was achieved by taking turns and allowing one student to finish

sharing before another took over, and by listening to each other. In the example below from day eight of placement, the students in group five talk about how they experienced the sharing of professional knowledge in their meetings:

> "We listened to each other," said the nursing student. "We wanted to know everything from everyone, so there were four times as much information as there usually is," continued the physiotherapy student. "And we also explained why we do things the way we do," added the occupational therapy student.

Students in all groups reported discovering that they gained more comprehensive and coherent knowledge of patients' health and treatment when they shared knowledge than they could have acquired alone. In the quotation below from the third day of the practice period, the physiotherapy student in group two gives an example of this learning effect:

> The physiotherapy student looked at the nurse student and said, "For example, you've focused on the patient's nutrition and dental status. That's not the first thing I think about. What I think is that the patient is sitting still a lot and it's making him lethargic. In this way, we remind each other that there are several things involved and we avoid having one of us fix one thing while the other one fixes another thing. You can see that things are actually connected and fluid in a patient."

In addition, the students realized that they reached decisions on patients' complete needs for care and treatment more rapidly than they could have done individually. The physiotherapy student in the example above also recognized this effect when continuing her explanation:

> By sharing different situations, different roles, different expectations, you get a more complete view of the patient and so you understand faster what the patient's situation is really all about.

We also observed how students explained the meaning of professional terminology to each other in the meetings. Some students spontaneously altered their language by replacing difficult terminology with everyday words, sometimes when fellow students asked for explanations. In the example below from day two of the practice period, the medical student in group two spontaneously explained "status praesens", a term used in Norway, to other students:

> I thought, but I want to hear what you think about it, I'd do a complete check of status praesens. That means the nerves in the brain, sensitivity of the face, heart, lungs, stomach and all the pulses.

Students in all groups reported finding that they had to explain professional knowledge to fellow students or ask them for explanations. The example below from day seven is part of a reflection among students in group five about terminology:

> "A physiotherapist knows a lot about movements and analysis and can say where the problem lies, whether it's in a muscle or anywhere else. But it's often been a challenge to understand what you actually said and meant. There are so many words and expressions when you describe a patient's functioning," said the medical student, looking at the physiotherapy student. "Yes, we have a slightly different language and it's been challenging to change it into a language that you all understand," replied the physiotherapy student.

Through sharing professional perspectives on patient situations by encouraging turn-

taking, being friendly and interested in communicating and listening, and explaining any professional observations, examinations, assessments, and terminology, the students orientated themselves across professional boundaries and showed how a potential multiprofessional knowledge base was the basis for their practical work with patients.

Collective assessment

We observed that a typical aspect of the students' collective assessment of the knowledge sharing in the meetings was that they spontaneously responded to the information they received from the others. In the quotation below from day three of the practice period, the nursing student in group four explained that interprofessional collaboration is about assessing and exchanging opinions on the information received from one's own professional perspective:

> I'd say that you need to listen to what the others have done and what they think and try to see it from a nursing perspective. Let's say that the occupational therapy student and the medical student are discussing mobilization. Then you have to join in the discussion from a nursing perspective.

We also observed that the students began to jointly assess shared knowledge through polite requests, spontaneity and friendly encouragement in asking questions or discussing or supplementing the information provided. They then received friendly and helpful responses. In this way, they attempted to find out about a patient's situation by gaining insight into the details and depth of the information. This enhanced insight might place the information in a different context from the one originally communicated. The example below is from day two of the practice period. The medical student and the occupational therapy student in group six were reporting their observations from morning care of one of the patients. The nursing student's question places the shared information in a new context and leads to a discussion about possible treatment:

> "He did fine," said the medical student. "Yes! It was easy for him to climb out of bed and stand upright," continued the occupational therapy student. "How was his dizziness?" asked the nursing student. "He didn't show any dizziness," answered the medical student. "Did you ask him about it?" asked the nursing student. "No, we didn't," answered the medical and occupational therapy students in one voice. There was a short pause. "He used a walker and then he walked steadily. He could stand, but he had to hold on to things. He's probably afraid of falling," said the medical student calmly. "I'm sure it'll be good for him to practice walking. Maybe there are steps here we can use for practice," said the occupational therapy student.

The discussions between the students continued until no one had any more to say. The students also spoke in a friendly tone when they disagreed. The example below is from a meeting on day six in group three, and shows how the students handled disagreement:

> "I'm not sure about the quality of his morning care if he had to do it by himself; I've only been with him once," the nursing student said. "As long as he has access to what he needs, he manages it quite well, I think, if it's just basic morning care," the occupational therapy student answered. "Here, it's quite obvious that you as an occupational therapist focus on what he can manage, while I focus on what help he needs. I'm not sure about his fine motor skills in his right hand. What's more, he's not allowed to use his left arm. What quality will there be?" the nursing student said eagerly and looked at the occupational therapy student. "Yes,

> that's the question," the occupational therapy student replied. "That's good then, isn't it? You focus on the help he needs, the weaknesses, while you focus on what he can do without help," said the medical student, looking from one to the other and they all start laughing.

The students in all groups stated that discussing the patients' situation in detail from different professional perspectives gave them insight into other students' perspectives and greater awareness of their own. In the quotation below from the end of the practice period, the occupational therapy student used the example above to explain about the learning that took place in the discussion with the nursing student:

> It's like that example of taking a shower we had before. My lens included resources, limitations and functioning, while the nursing student was looking more at quality. And it's a bit like that in the training we're having now, when we talk together every day we discuss what each one of us has seen. Then my occupational therapy lens gets a new dimension, because it's not just a matter of functioning, resources and limitations.

By collectively assessing a patient's situation, that is, responding to the information shared in a friendly and interested manner, the students negotiated and combined knowledge across professional boundaries and developed new and more complex knowledge about the patients.

Joint decisions

We noticed that students' joint decisions about patient activities typically consisted of a spontaneous clarification of what each of them could do for the patients. In the quotation below from day eight of the practice period, the medical student in group three explained that interprofessional collaboration was about reaching joint conclusions about the work to be done on the basis of the information that all the students had shared and discussed:

> It's important to form your own thoughts and opinion about the patient's situation, discuss these with the others, be open for their input, and jointly reach a conclusion on causes and actions. We should use all the knowledge we have and listen to each other; six eyes and three brains instead of just one.

A further observation was that the students reached joint decisions on assessment and treatment by individually suggesting activities that they themselves, fellow students or several students together could do in relation to parts or the whole of a patient's situation; the other students would then give their opinion on the suggestions. Sometimes the students decided to take a broad view and make an assessment including all the students' perspectives on behalf of the group. On other occasions, they decided to approach the patient's situation on the basis of the perspective of a single student. In the example below from the eighth day of the practice period, the students in group one decided to use two students' perspectives as the basis for their action:

> The medical student had observed the patient during his morning care and felt that his cognitive impairment had deteriorated. He offered to speak to the ward doctor to find out whether the patient should undergo new tests. "I don't think there's been any cognitive change since before the weekend. For example, he could easily remember what he'd done the day before," said the physiotherapy student. "But the patient is worse in your assessment today?" the nursing student asked the medical student. "Yes, that's my impression today," replied the medical student. "I think our impression is different from yours because we've had a lot

> of contact with the patient during his training and so on. You haven't spent as much time in real situations with the patient as we have," said the occupational therapy student to the medical student, referring to herself and the physiotherapy student. The conversation continued about observations of the patient and the physiotherapy student assessed that the patient was still at an early stage of rehabilitation. After a while, the medical student agreed that the students could wait and see how the patient's cognitive state developed and continue the training as planned.

The students stated that they came to realize that patient treatment quality depended on the fact that they all ensured that decision-making processes had a broad knowledge base. On day seven of the practice period, when group six were reflecting on what they had learned, two students said:

> "You're responsible for your own field, other students don't always suggest what needs to be done, so then you have to suggest it yourself," said the physiotherapy student. "And if you don't know what the others can do, you don't know what's the most sensible solution," said the medical student.

By taking joint decisions about their work with the patients, which involved making and evaluating suggestions for care and treatment across professions, the students translated the multiprofessional knowledge arising from their discussions into care actions.

The students received spontaneous support from the interprofessional coordinator, the ward staff and the management of the health services for spending time to get together and talk; there were no objections to their meetings, they were given meeting rooms and the patients received adequate care while the meetings were taking place.

Discussion

We base our analysis on the notion that a community of practice is constituted by a number of individuals pursuing a common goal and developing mutual engagement, joint enterprise and shared repertoire (Wenger, 1998). By specifically focusing on the dimension of joint enterprise, we were able to reveal that the students had a common goal for their collaboration in the groups and that they realized the goal in a way that concurred with the type of joint enterprise that Wenger (1998) describes as necessary for the development of a community of practice. We answered our research question How do the students realize the goal of interprofessional collaboration in patient care in group meetings and what do they achieve by their actions? by describing and explaining how the students took an active role in exploring and exploiting their different professional perspectives on patient care and learned to collaborate on patient care based on multiprofessional knowledge when allowed to shape collaboration in the student groups themselves. Our findings support previous findings showing that students develop collaborative knowledge and skills by participating in IPE (Fox et al., 2018; Reeves et al., 2017), particularly when IPE is facilitated in realistic contexts (Fain & Kennell, 2016; Reeves et al., 2016).

Joint enterprise is a collective process in which the participants define a goal, negotiate how to pursue the goal and commit themselves to contribute to the achievement of the goal (Wenger, 1998). With the help of the concept of joint enterprise (Wenger, 1998), our data revealed that on the very first day of meeting each other the students declared a common goal of succeeding in collaborating on patient care, in accordance with their mandate for the practice period. By supplementing the concept of joint enterprise with the concepts of boundary object and boundary crossing, our data also revealed that the students defined the patients' health situation as

their area of focus and conducted and committed themselves to a continuous multiprofessional dialogue on patients' health situation to achieve the goal of the placement.

The students developed patient care as joint enterprise by immediately deciding to collaborate on patient care as a common goal. In this way, they explicitly stated that they collectively made the goal of the educational intervention the goal of the group for the practice period. After this, in order to realize the collaboration, the students figured out what to do to achieve the goal. The students agreed that the patients' health situation was the centre of their joint attention and that they had to discuss this in order to collaborate on patient care. In this way, the students made the patients' health situation into what they would collaborate on and through which they would communicate their different professional knowledge to each other. In a sociocultural learning perspective, the patient's health situation could be understood as a boundary object, that is, a relevant interaction focus that all students are interested in and can relate to without having the same profession and without needing to adopt each other's professional perspectives.

Following this, the students decided to arrange an initial group meeting because they as professionals had different focus areas and ideas about the work they could do with patients. In this way, the students spontaneously established a specific setting in time and space for the multiprofessional exchange of knowledge about the patients' health and treatment. According to Morgan et al. (2015), time and space for dialogue are necessary to enable interprofessional groups to create and maintain interprofessional goals, knowledge, and decisions in patient care. By deciding to meet to talk about patient situations, the students laid the foundation for boundary crossing. The students thus drew a parallel between interprofessional collaboration on patient care and the exchange of professional knowledge of a patients' situation to jointly ascertain what the situation of the patient actually was. The students' early decision to hold interprofessional meetings to discuss patients may have enhanced their self-esteem and prioritization of further meetings since they learned that such discussions helped them consider patients' assistance needs from different professional perspectives and develop a multiprofessional informed basis for patient care.

Our interpretation is that the interprofessional discussions started because the groups were given independent responsibility for jointly providing real healthcare to preselected patients and because each student had responsibility for the care provided by his or her own profession. The students, therefore, needed to gain insight into other students' assessments and opinions and to present their own in order to provide comprehensive patient care. By regularly discussing the patients' situation, they developed knowledge that enabled them to provide care individually and as an interprofessional group. The students thus deepened their understanding of the importance of combining knowledge and assessments of a patient's condition across professions. They came to realize the significance of interprofessional dialogue for patient care and they continued to interact in the same way throughout the period. Previous research has also shown that students develop and improve their skills in communication and interaction when participating in IPE that facilitates the practice of cooperation in authentic situations (Granheim et al., 2017; Kent & Keating, 2015; Turrentine et al., 2016). From a sociocultural learning perspective, this can be understood as meaning that the students, as meaning-creating and goal-seeking individuals, linked their prior knowledge with the knowledge they developed in the interaction, thus creating new knowledge and new ideas about what was good patient care and good collaboration.

The rationale of interprofessional health education is that students should learn to practice effective interprofessional collaboration to provide optimal healthcare to patients (WHO, 1988; WHO, 2010). Here, collaboration means joint problem solving and decision making in patient care (CAIPE, 2017). Therefore, a prerequisite for the development of interprofessional collaboration is that the participants define joint patient care as a common goal and draw on each other's resources to achieve

the goal. In order to benefit from each other's professional resources, students must be given the opportunity to exercise their own profession in their training. Previous research has shown that it is important for students to exercise their profession in IPE (van Soeren et al., 2011). The students in our study utilized each other's knowledge and assessment capabilities and developed multiprofessional knowledge in patient care when given independent responsibility for providing care as a group, while each student also had individual responsibility for providing treatment from his or her own profession. The students achieved the common goal by making the patients' health situation the object of joint attention and by crossing professional boundaries in their dialogues on the patients' situation with each other and themselves. Wenger (1998) argues that joint enterprise must be negotiated and learned by the participants. In our view, the discussions developed by the students enabled them to learn to relate and integrate their professions in the group process. The students did this by setting aside time to share, discuss and clarify knowledge, assessments and actions with each other by moving back and forth between professional perspectives and they continued to set aside time for this throughout their practice period. In this way, the students could adjust their individual professional competencies and responsibilities for the care provided to conform to the group thinking. At the same time, they learned the importance of interprofessional collaboration for the optimization of the healthcare provided to their patients. The findings reveal that the students' natural meaning-forming process was exploited by organizing them in interprofessional groups and giving them independent responsibility for providing relevant healthcare to their patients. A further important factor was the support provided by the coordinator, the ward staff and the management of the health services for their choice of spending time on regular discussions. The students' natural negotiation and learning process led to the development of a deep understanding of each other's and their common competence and responsibility to reach the goal of the group. Our findings are also consistent with previous findings in IPE, showing that students not only enjoy, but also improve their communication and collaboration skills, in authentic learning situations (Fain & Kennell, 2016; Granheim et al., 2017; Kent & Keating, 2015; Reeves et al., 2016; Turrentine et al., 2016), especially when participation is voluntary (Reeves et al., 2016) and when they can practice their profession (van Soeren et al., 2011).

We have based our process research on Wenger's (1998) concept of joint enterprise, supported by the concepts of boundary object and boundary crossing, and shown that students in a self-organized interprofessional learning situation are able to collaborate on patient care when they have this as their objective and set aside time to discuss patients with each other. We have also shown how an interprofessional educational intervention can rely on students' prior knowledge on entering IPE and support students' natural learning processes throughout the placement. Our findings contribute new knowledge of what students learn and how they learn, by showing that their joint enterprise and its depth could be observed and articulated among the students as it was being developed in their groups. Our findings also provide new knowledge of how the components of the educational intervention influenced the development of joint enterprise in the student groups. These components were as follows: a predefined mandate, voluntary participation, interprofessional groups containing one student from each profession, final-year students, exercise of one's own profession, clinical practice, independent responsibility for developing collaboration, independent responsibility for patients, availability of resource persons such as an interprofessional coordinator and a contact person for each profession, a two-week time frame, municipal health services as field of practice and support to the students in trying out forms of collaboration. The components may be transferable to other educational interventions. We have not found our description of student learning of joint enterprise in other research on interprofessional education.

Limitations

The students volunteered to participate and were positive and motivated to engage in interprofessional collaboration even before the practice period started. This may have led to a bias in our findings, as voluntary participation in IPE has a particularly positive effect on student learning (Reeves et al., 2016). Some students also expressed a feeling of exclusivity due to the research focus on them. Some students reported achieving deeper reflection on student activity through the informal talks with the researcher during the practice period. Further, the students' collaboration was encouraged by the interprofessional coordinator, the ward staff and the management of the health services during the period. This general positive attitude towards the students from the various actors involved may have strengthened the students' motivation to collaborate in the groups.

Nevertheless, the students developed their collaboration on patient care on the basis of their prior knowledge and skills and ongoing negotiations of meaning with each other and the information and personnel involved. The goal stated and realized by the students in their meetings may, therefore, be seen as their own negotiated response to their particular situation.

In this article, we have limited ourselves to exploring students' collaboration in and reflection on their self-organized interprofessional meetings. This limitation means that we have excluded any impact that other joint student activities might have had on the students' learning and the realization of their common goal in the meetings, and vice versa.

Conclusion and implication

The students developed close collaboration on patient care through the regular discussions they arranged when allowed to shape the collaboration and the learning themselves in group meetings. We believe that the students realized the goal of interprofessional collaboration in patient care by having the opportunity to regularly spend time exploring and exploiting their different professional perspectives on patient care in the student groups in addition to their continuous dialogue with the patients and staff. In this way, they learned about, from and with each other and above all more about the patients. In their discussions in the groups, the students developed a broad knowledge base about the patients and they included more aspects of the patient's health situation in the treatment than an individual student would have achieved.

We interpret the students' development of close collaboration as a result of their prior knowledge and natural quest for meaning in relation to the goal of the placement, and the responsibility and trust given to them at the start of the practice period. In order for interprofessional collaboration to work, it is crucial that the participants are capable of relating and integrating each other's professional perspectives in the group. Interprofessional education must, therefore, provide learning arrangements that support students' initiative to develop a multiprofessional knowledge base in patient care. The learning arrangement we studied relied on the students' prior knowledge and supported their natural learning process when negotiating and implementing activities for joint patient care. Lave and Wenger's (1991) sociocultural learning theory and the concept of joint enterprise (Wenger, 1998) enabled us to focus on the actual activities the students initiated on patient care to reach the goal of interprofessional collaboration. Further, the concepts of boundary crossing and boundary objects enabled us to observe and describe what the discussions required of the students to be able to collaborate on patient care across professions and the consequences of the discussions, that is, that the students could continuously base their initiatives, assessments, and adjustments in patient care on a multiprofessional picture of the patient situation.

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