



Collaboration between first year undergraduate nursing students – A focused ethnographic study

Marie Stenberg^{*}, Mariette Bengtsson, Elisabeth Mangrio, Elisabeth Carlson

Department of Care Science, Faculty of Health and Society, Malmö University, SE 205 06, Sweden

ARTICLE INFO

Keywords:

Collaboration
Collaborative learning
Focused ethnography
Nursing education
Nursing students
Skills lab
Socio-cultural theory

ABSTRACT

Aim: The aim was to explore collaboration between first year undergraduate nursing students in a three-year bachelor program during clinical skills lab practices.

Background: The ability to collaborate is important in the nursing profession to ensure patient safety. Thus, efforts supporting nursing students with learning activities emphasizing this ability is crucial in nurse education as a preparation for the requirements of the nursing profession. Collaborative learning models are described as ways that support the students' interaction during education. However, collaboration between students has shown to have challenges such as negative competition and confrontations. This stresses the need to explore the collaboration between students to find ways to support the interaction.

Design: The study was conducted with a focused ethnographic approach.

Method: Data were generated by participant observations during one semester, involving 70 h observation of 87 first year nursing students for 6 months and 24 training sessions in clinical skills lab practices. Two focus group discussions were used to elaborate students' views of collaboration and to provide an opportunity for follow up questions and interpretations from the observations. Field notes and focus group discussions were interpreted as one unit of analysis conducted with thematic network analysis. A global theme were synthesized from organizational and additional basic themes presenting the overall metaphor of the students' collaboration.

Result: The global theme, *Between adaptation and non-conformity*, revealed a field of tension in the nursing students' collaboration. One the one hand, the global theme involved the students' ability to adopt to new knowledge and to being a nursing student in a clinical skills lab and to others' perspective. On the other hand, non-conformity creates a collaboration with less reflection between the students and non-synchronized and time-consuming laboratory work.

Conclusion: Collaborative activities in nurse education fosters and challenges nursing students' collaboration required for clinical practices and later in the nursing profession. By the presented scaffolding efforts, nurse educators can arrange a learning environment that can support the collaboration between students and facilitate the transition into the profession.

1. Introduction

Collaborative learning activities embedded in the curriculum in nurse education programs have been highlighted as important to develop and prepare undergraduate nursing student for the crucial collaborative requirements they will face in the healthcare profession (Jeppesen et al., 2017; Morley and Cashell, 2017; Sandahl, 2009; Yang et al., 2012). Collaborative skills are of utmost importance for patient care and healthcare profession and practice requires the ability to work

collaboratively in a team (Cronenwett et al., 2007; Emich, 2018; Sims et al., 2015). In this study, we define collaboration in nursing as:

an intra-professional or inter-professional process by which nurses come together and form a team to solve a patient care or healthcare system problem with members of the team respectfully sharing knowledge and resources (Emich, 2018, p.569).

However, different goals and expectations within a team have shown to generate collaborative conflicts with consequences highly associated

^{*} Correspondence to: Faculty of Health and Society, Malmö University, Jan Waldenströmsg 25, SE 214 28 Malmö, Sweden.

E-mail addresses: marie.stenberg@mau.se (M. Stenberg), mariette.bengtsson@mau.se (M. Bengtsson), elisabeth.mangrio@mau.se (E. Mangrio), elisabeth.carlson@mau.se (E. Carlson).

<https://doi.org/10.1016/j.nepr.2022.103427>

Received 14 April 2022; Received in revised form 1 July 2022; Accepted 3 August 2022

Available online 5 August 2022

1471-5953/© 2022 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

with patient safety (Brandt et al., 2014; Morley and Cashell, 2017; Reeves et al., 2013). In recent years, collaborative learning has been presented in nurse education programs foremost, focusing on supporting the student learning process (Mamhidir et al., 2014; Pålsson et al., 2017; Stenberg and Carlson, 2015). More so, a recent review concluded that the efforts of introducing collaborative learning activities, for example formative peer assessment, prepares students for the crucial collaboration in the healthcare professions (Stenberg et al., 2021). However, the review emphasizes how collaboration between students can affect their personal relationships in a negative way, stressing the need for further understanding of the collaboration between students (Stenberg et al., 2021). This knowledge could provide valuable implications for educators to consider in future collaborative learning activities.

2. Background

Collaborative learning includes a variety of educational models, for example, problem-based learning, peer learning and peer assisted learning and originates from constructivism and socio-culture learning theories presented by Vygotsky (1962). Socio-culture learning theory emphasizes learning as constructed, meaning students are active participants building new knowledge on the foundation of previous learning and the learning occurs in a socio-cultural context (Vygotsky, 1980). Vygotsky (1980) argues that learning occurs within the student's Zone of Proximal Development. The Zone of Proximal Development describes learning as the distance between what a student can accomplish individually and with the support of more capable others represented by a teacher, a preceptor, or another student (Vygotsky, 1980). Boud et al. (2014) mean that in collaborative learning, students solve problems together, teach each other and reflect with one another. In collaborative learning, the role of the teacher, preceptor, or peer will be to facilitate the learning process (Boud et al., 2014), described by Vygotsky (1980) as scaffolding. Scaffolding represents the support a student needs to master a task otherwise out of reach (Vygotsky, 1980). In collaborative learning, this could be represented by structured learning activities clarifying the connection between theoretical and practical dimensions of nursing care to support student development (Sevenhuysen et al., 2013; Stenberg et al., 2020). It provides clear guidance of what subject to focus, the expectations of the students and role of the observing student, as well as a structure of the reflective process by facilitating questions for constructive feedback between the students (Stenberg et al., 2021). Collaborative learning reports to contribute to personal and professional development of undergraduate nursing students (Abdullah and Chan, 2018; Markowski et al., 2021), enhance technical skills and theoretical knowledge (Zhang and Cui, 2018), communications skills (Baghcheghi et al., 2011) and support self-confidence, collaboration- and leadership abilities (Stenberg and Carlson, 2015, Zhang and Cui, 2018). However, even though collaborative learning models describe situations where interaction among students are expected to occur, there are no guarantees that this will be the case (Dillenbourg, 1999). Recent studies have reported challenges in student collaboration, stressing the need to explore the collaboration between students (Le et al., 2018; Stenberg et al., 2021). These challenges have been described as hierarchical structures, disrespect, confrontations (Aase et al., 2014), non-compatible students or competitive relationships between students (Nygren and Carlson, 2017; Ravanipour et al., 2015; Stenberg and Carlson, 2015) and, anxiety that the peer collaboration may affect social relationships in a negative way (Stenberg et al., 2021). Le et al. (2018) stresses that the obstacles for collaboration can be explained by higher education, focusing on individual learning rather than collaborative learning, with the consequence that the social interaction between students is neglected. The importance of understanding social interaction and collaboration between students has previously been highlighted along with the concerns of developing ways to increase the probability of interactions (Berger et al., 2019; Emich, 2018; Zhang and Cui, 2018). However, this must start with defining the

phenomenon of the collaboration where it actually appears – in the interaction between students. Collaborative learning activities have primarily been presented in medical education but are scarce in nursing education (Stenberg et al., 2021). Therefore, we argue that this understanding is of importance for further development of collaborative learning in nurse education programs to support and prepare nursing students for the crucial collaboration in the profession. Therefore, the aim of the present study was to explore the collaboration between undergraduate nursing students during clinical skills lab practices.

3. Method

To gain an in-depth understanding of the collaboration between the nursing students we used an ethnographic approach suitable when exploring processes, behaviors, methods and perceptions that occur within a group in a specific socio-cultural context (Hammersley and Atkinson, 2007). More specifically, we used a focused ethnographic design since the study was conducted in a smaller community during a short but intensive period over one semester with the observer (MS) possessing previous knowledge of the context (Knoblauch, 2005). The research fieldwork comprised participant observations to answer the research question: How do nursing students collaborate with each other during clinical skills lab practices? Focus groups interviews were performed to gain a deeper understanding and confirmation of findings (Hammersley and Atkinson, 2007). The analysis of data involved interpretation of meanings, communications, actions, body language and consequences of activities according to an ethnographic approach (Hammersley and Atkinson, 2007).

3.1. Setting

The observations were conducted in a skills lab at a university in southern Sweden during the first year in a three-year Bachelor of Nursing programme. The reason for conducting the observations in a skills lab was that the environment provides practice of collaboration between students (Jeppesen et al., 2017). In the first semester, nursing students practice technical skills in a specially equipped skills lab before entering clinical practice in their second semester. The activities include 1/basic hygiene routines 2/feeding 3/vital signs 4/venous blood sampling 5/injections 6/intravenous cannulation and, 7/catheterization of the urine bladder. Each session is preceded by a lecture and a demonstration by a teacher. Additionally, educational films presenting each skill procedure are available for the nursing students on a learning platform. The students are then divided into groups and remains in the same group throughout the semester. The practices in the skills lab are facilitated by a written case explaining the patient's situation and symptoms. Thereafter, the students are expected to practice the skills and provide feedback to each other. The students take alternate roles as nurse and observer. During some practices, mannequins are used instead of 'patients'. Attending the skill practice is mandatory and ends with an Objective Structured Clinical Examination (OSCE) at the end of the semester. Passing the examination is required for attending the clinical practice the following semester.

3.2. Participants

The course, nursing and preclinical skills, involved 140 first year undergraduate nursing students divided into 16 groups. They were verbally informed of the purpose of the study by the first author (MS) and through written information at a learning platform. Of the students, 108 expressed their willingness to participate. Consent was required from all students in a group to be included. Thus, 87 nursing students were included, divided into eleven groups. The purpose of the study and the role of the observer was repeated by the first author (MS) when attending the first observation in each group. We did not collect demographic data since students' background was not connected to the

aim of the study and we did not intend to contrast the result to explicit background variables.

3.3. Data collection

A pilot observation by the first author (MS) initiated the fieldwork, by getting a first impression of the environment and on how to write field notes. The pilot observation provided valuable understanding of when to observe, when to write and when to focus on details. In addition, it gave an insight on where to be in the room without disturbing the students, while at the same time be able to observe and capture the conversations. The observations were conducted by the first author (MS) taking the strict role as an observer without conversations or active interactions with neither the nursing students, nor the lecturers. The fieldwork was performed during 70 h of observation at 24 different occasions during one semester between January and May 2020. The observations were documented by descriptive field notes taken during the observations as part of the data collection and analysis. The data collection and the initial analysis took place simultaneously, following an ethnographic approach (Hammersley and Atkinson, 2007). To avoid the risk of memory bias, the field notes were transcribed immediately after the observations. To ensure dependability, additional reflections about the observer's role were written after each session and discussed within the research team. When the course was completed, students were invited through e-mail and the learning platform to participate in a focus group interview. Two focus group interviews were conducted with altogether six of the observed students. The focus group gave an opportunity to ask follow up questions of what have been observed during the field studies, allowing for elaboration of students' views and experiences (Denzin and Lincoln, 2008) and to check the interpretations from the observations. Due to the corona virus pandemic, the interviews were conducted through a secure digital platform (Zoom) without video recording and were recorded on a Dictaphone for verbatim analysis. The first discussion lasted for 1 h and 10 min and the second for 1 h and 20 min. A guide as presented by Krueger and Casey (2002) was used in the interviews and an observer (RR) was present. The students in both groups were asked to talk about their thoughts of the collaboration between each other during the activities in the skills lab. Probing questions as: Can you tell me more...What do you mean by...? Can you further develop... were used for deepening the understanding of what was asked and to help students elaborate their thoughts.

3.4. Data analysis

The analysis of field notes and interviews was conducted as a thematic analysis organized according to thematic network as presented by Attride-Stirling (2001). Thematic network analysis aims to understand social phenomena and dynamics and presents a visual representation of the data with findings presented as starting from basic themes to organizational themes and finally summarized as a global theme (Attride-Stirling, 2001). In the unit of analysis, field notes from the observations and data from the focus group interviews were interpreted to seek for relationships in the whole data material. To ensure credibility, the written field notes and the transcript from the focus group interviews were read and discussed by the entire research team. Segments from the transcribed field notes and focus group discussions were reduced to codes independently by the first (MS) and last author (EC). Saturation was considered when no further codes could be identified. The list of codes was then abstracted and similar themes were refined and organized into basic themes representing the lowest order premises from the text. The basic themes captured a broad set of ideas. They were explained and clarified from the original data to confirm that they were representative and non-repetitive. The basic themes were brought together into similar, coherent organizing themes summarizing more abstract principles (Table 1). Finally, the organizing themes were rearranged into a global theme summarizing the principal metaphor in the

text (Attride-Stirling, 2001).

To verify credible interpretation or inconsistencies, the transcribed text was read again through the lens of the basic, organizational and global themes and were discussed throughout the analysis process in the research team. These discussions also allowed for addressing reflexivity (Hammersley and Atkinson, 2007) based on the first authors earlier experiences of being a teacher in skills lab and the interaction between the researcher and the students. The result was presented with quotes using fictional names from the focus groups discussions and segments from the field notes.

4. Ethical considerations

Written informed consent was obtained from the nursing students in accordance with the World Medical Association (2013). Permission to carry out the study was given by the Head of Department. The students were informed in writing and orally, the purpose, the method and publication of the study, that participation was voluntary and that they could withdraw from the study at any time without affecting their studies. Furthermore, the students were informed that the members of the research team would not be involved as lecturers in the course. In a separate meeting, the lecturers involved during the skills lab training sessions were verbally informed of the purpose of the study and the role of the observer, stressing on the fact that the observations only focused the students' interactions. None of the authors were teaching or assessing and grading the students during the time of the study. All names in the quotes are fictional to protect student confidentiality. Ethical approval was obtained by the Ethical Review Agency Sweden (Dnr 2019-04474).

5. Findings

Exploring the collaboration between the undergraduate nursing students during skills lab practices exposed a field of tension, presented in each theme (Fig. 1). The two basic themes: *Negotiate or decide*; and *Prepared or unprepared* identified the organizational theme *Rhythm and disharmony*. The basic themes *Informed or misinformed* and *Support or undermine* identified the organizational theme *Trust and mistrust*. The two organizational themes contributed to the all-encompassing global theme *Between adaptation and non-conformity* representing the overall metaphor of the field of tension when the nursing students are collaborating.

6. Basic themes: negotiate or decide and prepared or unprepared

6.1. Negotiate or decide

Students verbalize their thoughts and reflections and thus, peers confirm or provide additional perspectives that seem to facilitate proceeding in actions. Instead of turning to the present teacher, they discuss and negotiate with each other to find solutions. Feedback occurs as a natural element in the communication:

I think we understood that the purpose of reflections was to provide further development, not for pointing a finger at each other, but more as reflecting together. It was more as, we missed this, or, this is what we have to do, this is very important and so on. (Focus group 2, Student 4).

The decisions are shared between the students and they value and listen to others' opinion before taking a decision. On the other hand, in some groups, self-appointed leaders take charge and decide without confirmations from their peers with the consequences of disoriented students, misinterpretation and misunderstandings:

Table 1
Examples from the analysis of the field notes and the focus group discussions.

Codes	Themes	Basic themes (evident in the text)	Organizational themes (the abstract principles)	Global theme (the principle metaphor)
Reasoning Discussing Shared decision making Sharing and setting mutual goals Planning performance in advance Recapture together Synchronizing performances Involvement Division of labor discussed	1. Communication providing shared decisions, plans, goals and division of labor 2. Discussions and involvement for a synchronized performance	Negotiate or decide	Rhythm and disharmony	Between adaptation and non-conformity
Self-appointed leaders Telling others Going solo No role distribution No discussions Different goals Different priorities Unsynchronized performances	3. Taking own decisions and deciding for others without prior discussions 4. Different goals, priorities and lack of role distribution creates an unsynchronized performance			
To discuss demands to be prepared To give constructive feedback demands to have knowledge in advance Prepare in advance for alleviate nervousness Preparing important for having control Needs to be prepared when being observed by peers and receiving feedback.	5. Preparations important to be able to discuss and give feedback 6. Preparations for feelings of having control of the situation	Prepared or unprepared		
No learning opportunity or discussion if not prepared in advance Cannot give feedback to peer if not prepared Those unprepared are seen as free riders Prepared for the skills but not educated in how to give or receive feedback	7. Being unprepared hinders discussions, feedback and learning 8. Unprepared for giving and receiving feedback			
Invite others for collaboration Openness and shared feelings Being chosen as a peer Being responded to Receiving honest feedback Receiving constructive feedback Using a friendly tone Creating a safe room Making physical space for everyone Body language being consistent with what is verbal expressed Honesty Support by sharing knowledge Complete was has been agreed upon Providing feedback in a positive way Non-verbal encouragement Small groups Having fun	9. Support is created by being incorporated in the collaboration and by inviting others 10. Non-verbal gestures important to create feelings of safety. 11. Feedback needs to be honest, constructive and given in a positive way.	Support or undermine	Trust and mistrust	
Not being chosen as a peer Not receiving any response Language barriers The attitude of superior others Feelings of insecurity Lack of professional experience gives a feeling of being at a disadvantage and is stressful. Neutral body language Being left out in the social conversations Blaming others when failing Taking up all the space in the room	12. Being excluded by not being chosen as a peer or responded to undermining the collaboration. 13. Lack of professional experiences, neutral body language and language barriers undermining collaboration.			
Providing evident information to peer Being in time and physical present Open about lack of knowledge or information Ask others for information Informed of how to use the artefacts in healthcare Informed of the medical language	14. Providing evident information and use others for further information 15. Informed of artefacts and the medical language	Informed or misinformed		
Providing incorrect information Guessing Relying on previous non-evident knowledge from healthcare Seeks no information from others Repeat incorrect facts even when being corrected.	16. Providing and repeating non-evident or incorrect information 17. Not using others for information.			

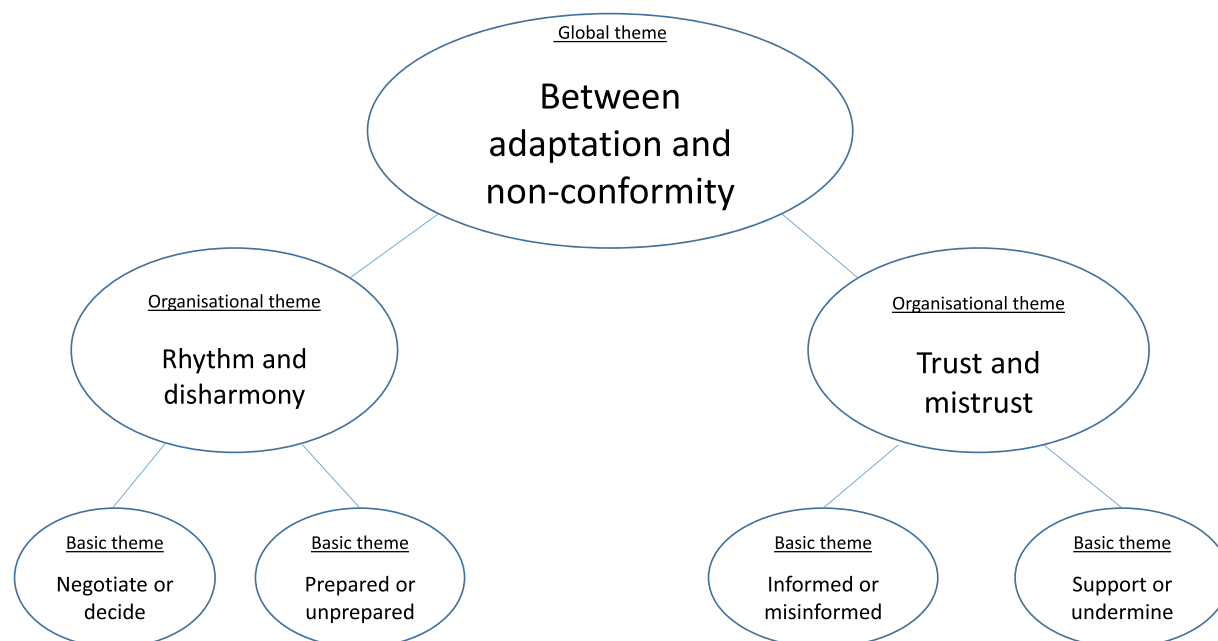


Fig. 1. Thematic network visualizing the collaboration between first year undergraduate nursing students.

Laura and Joan will provide personnel hygiene to a “patient” (a third student). Without discussion, Joan goes to pick up a clean shirt and sheet. Laura gently asks if it is not better to wash the patient first. Joan answers with a determinant voice: -“No, we change the shirt and sheet first”. Laura looks insecure: - “But if we spill water maybe...” The rest of the practice continues with Joan taking the decisions and Laura trying to reason and ending up in mistakes that makes them having to start over again. (Field note, February 2020).

6.2. Prepared or unprepared

Some students seem well prepared for the skills training. They refer to the literature of the course and the instruction films and the acquisition of knowledge allows them to provide constructive feedback. The conversations merely focus on the present activity and offer additional knowledge. Furthermore, being prepared helped the students to control the situation and to decrease their sense of nervousness when performing with other students:

I would have been very nervous in the skill lab sessions if I had not been well prepared. You are nervous about doing mistakes in front of the others in your group and that they shall judge you. (FG1 S1).

6.3. Organizational theme: rhythm and disharmony

Conversely, being unprepared hinders the students to take part in the discussions. They are silent and the body language becomes minimal or neutral, which seems to be perceived or misinterpreted as being uncommitted.

Through communication and by altering between listening and speaking, nursing students construct a rhythm in their collaborative performances. They structure and organize the activities between each other until reaching a shared decision so that everyone knows how to proceed with their actions. The role distribution is clarified between the students and therefore, they perform the activity towards a set common goal facilitating a flow and synchronization in the performances. However, requires the students to be prepared for the task. Rhythm is further created by a coherence between what is verbally expressed and the non-verbal expressions. On the other hand, when there is a lack of rhythm the

students have to recap before being able to proceed with their actions. It is time consuming and creates disharmony, especially when the students approach a task in different ways without first consulting each other:

Sarah and Anna focus on the task and pays no attention to what happens in the rest of the room (it is noisy and a lot of movement). They quietly discuss before they decide how to proceed. Together they go to pick out the material. Their attention are on the material and on each other. They place the material in order on a trolley. They go through the procedure before starting to perform the activity. The group next to them are loudly laughing, joking, talking about private matters and occasionally goes to check their cell phones. They seem unsure of what to do and are frequently asking the teacher. The material is in a mess on the trolley and a lot of material is missing. When Sarah and Anna has finish the activity, the others still have a lot left to do. (Field note, March 2020).

7. Basic themes: support or undermine and informed or misinformed

7.1. Support or undermine

A supportive atmosphere seems to be a fundamental factor for feedback. The students support each other by giving tips and hints. Being included in conversations, someone asking for your opinion, sharing private matters and laughing together, seem to contribute to camaraderie. The peers are open to each other about feelings and insecurity:

Thanks to us being so close, we have been able to support each other. I have been able to give feedback to my peers without being seen as mean. We have expressed the feedback in a nice way with the attention to support each other and then we have talked about it afterwards. If we had not been that close, you would have been more careful with your comments. (FG2 S4).

Communication between students concern both the verbal and non-verbal language. The non-verbal language is inclusive by students seeking eye contact, making physical space for everyone in the room and expressing support by a simple nod or a smile. In pressed or nervous

situations, they try to calm each other by using non-verbal signals as a hand on the shoulder or thumbs up sending supportive messages. However, small gestures or words can easily undermine the effect:

Catherine, who has previous experiences as an assistant nurse, is working with Michelle. Catherine is acting as a patient when Michelle practices blood sampling for the first time (from a dummy attached to Catherine's arm). Michelle succeeds at the first attempt. She smiles and exhales in relief. Catherine looks disappointed, snorts and say in a harsh tone. – Do not think it is that easy in reality. (Field note, March 2020).

Occasionally, the students are told to independently choose a peer instead of the teacher, when organizing their groups. Students being left out from collaboration receive no opinions and feedback from others and have no one to turn to when not knowing how to proceed. They eventually become silent in the conversations and insecure affecting their performance. In the same way, language barriers seem to undermine the collaboration as expressed by a student:

I suddenly became very lonely. It felt...what is this? Is it the distance, is it where we live that matters, or is it my language that matters? I am aware that language can be a barrier to get close to others. (FG2 S6).

7.2. Informed or misinformed

Students with previous experiences in health care express their knowledge by telling stories and using expressions not familiar to those without previous experiences from healthcare. They are perceived as 'superior to others' and as owners of important information from 'the real world'. For others, this creates feelings of unequal conditions and disadvantages, which negatively influence the collaboration. However, when seemingly experienced students are proved to be misinformed or when they are contradicted, the peer eventually seems to turn to someone else's proven knowledgeable for confirmation:

During a group discussion Mark and Lisa starts to argue about the correct way to handle a situation with a patient. Lisa is persistent in her argumentation and tries to convince the others in the group by expressing her experience of being in the situation for several times. The teacher joins them and supports the arguments from Mark. From that on the others in the group seems to listen more to what Mark has to say and less on Lisa. (Field notes, February 2020).

7.3. Organizational theme: trust and mistrust

Trust is created by a genuine presence, both physically and mentally. This includes attending the lessons, arriving on time, focusing on the subject at hand, proceeding and finishing what has been agreed up on between the peers. The students seem to gain trust from others by expressing evident knowledge, constructive feedback and being honest and open when knowledge is lacking:

John appears stressed and is struggling with the correct order when conducting the catheterization of the urine bladder. Caroline helps him by asking him to take a deep breath and think the moment through before proceeding. When he has finished, she provides him with some advice about what he should think about the next time he is about to perform a catheterization. From that moment on, he starts to observe how Caroline is taking on a mission and turns to her when he needs help. (Field notes, May 2020).

On the other hand, students that provide feedback such as 'you were great, well done', when it was obviously not the case, seems to be

perceived as not being reliable and honest, eventually leading to mistrust.

8. Global theme: between adaptation and non-conformity

The theme involves students' ability to adapt to being a nursing student in a clinical skills lab. Students with previous knowledge in healthcare adapt to the fact that their knowledge is limited and not always evident and thereby seem to accept new knowledge. However, some students persistently adhere to what they already think they know, argue and try to convince others, (even the teachers) and find it difficult to accept others' perspectives. Furthermore, some students have difficulties conforming the 'personal me' into a collaborative context in knowing when to speak and when to listen, when joking is appropriate or not, when letting others perform by taking a step back and by seeing those alone and in need of support. When students have the freedom to choose whom to collaborate with, the group ends up being homogeneous. Those ending up alone eventually seem to accept the situation of being left out and stop trying to become a part of the collaboration:

Personally, I do not think it takes very much to connect to each other. However, when you have tried to give, give and receive nothing in return, then you stop trying. (FG1, S2).

9. Discussion

The result exposed a field of tension between adaptation and non-conformity that may contribute to further understanding of challenges in student collaboration presented in previous studies (Nygren and Carlson, 2017; Ravanipour et al., 2015; Stenberg et al., 2021), such as competitive relationships, anxiety and non-compatible students. The global theme in the current study reveals the importance of adaptation in the collaborative situations. This allows for natural feedback, discussion and shared decision-making between the students through communication. Communication interacts as an important element and as the key determinant of the collaboration (Souza et al., 2016). Additionally, the adaptation in the communication makes the students reach a common goal, which, in its extension, creates and time efficient way in the collaboration and rhythm in their performances. Adaptation is recognized as essential for teamwork in the healthcare profession, where shared decision-making and goals must be discussed in respect and with acceptance of others opinion (Souza et al., 2016). However, some students have difficulties finding mutual goals, sharing decisions and providing supportive feedback to each other, providing a non-conformity in the collaboration. Beran et al. (2014) emphasize adaptation as important for learning, but also highlight the consequences when the accuracy of a group's opinion or poor skills are not challenged. Therefore, we recommend educators to consider introducing scaffolding efforts and include instructions requiring the students to plan, structure and agree on role division of the performance before taking action in the peer activity (Wosinski et al., 2018). This may support students' collaboration with each other and their development associated to the crucial interdependence in healthcare when planning interventions for and with patients and related parties, as a team. However, positive interdependence can only be achieved when each group members' goals is understandable (Vygotsky, 1980). Furthermore, nurse educators could support students by including formative peer assessment as a required scaffolding activity in collaborative learning (Boud et al., 2014), especially to support the collaboration (Han and Ellis, 2021; Stenberg et al., 2021). Providing and receiving constructive feedback to each other when being observed or being the observer has recently been presented as important due to students mirroring their knowledge and development in others (Carlson et al., 2017; Homberg et al., 2019). Not least for the argument that the aim of formative peer assessment in healthcare education is to prepare students

for the collaborative requirements within the profession (Stenberg et al., 2021). However, students favor to work together with homogeneous others when they have the possibility to choose with whom to collaborate. Therefore, to facilitate the development of collaborative abilities, we recommend nurse educators to challenge students by organizing them in predetermined groups, to avoid groups based on friendship and mirrored in homogeneous personalities. This may support students with further perspectives and prepare them for the multi-faced interactions they will meet in the nursing profession and in clinical practices (Morley and Cashell, 2017). Furthermore, it may prevent the potential risk of some students being left out in the collaboration as exposed in the basic theme, support and undermine. Lawson (2004) warns that in the development of collaboration, there is a risk of exclusion. The consequence may be that a student not involved, not chosen, responded to, or not self-engaged in the collaboration, can promote negative emotions that may lead to early redemption from education (Perander et al., 2020). Additionally, our study reveals the importance of support. Equal findings are presented by Levett-Jones and Lathlean (2008) and Liljedahl et al. (2015), illuminating belongingness as a prerequisite for students' learning, motivation and engagement in the clinical practice environment. We acknowledge support within the same sphere as belongingness when it comes to students' collaboration in the skills lab setting. We argue that nurse educators could facilitate the collaboration between nursing students by the above presented scaffolding efforts and thereby contribute to, not only a structure for the collaboration between nursing students, but also a supportive learning environment. For example, Beran et al. (2014) suggested that a supportive environment allows students to present different opinions without the consequence of just adapting to the majority, or the 'strongest' voice in the group. We believe that these efforts can enhance the socialization into the profession, improve the transition into practice (Ruth-Sahd, 2011), challenge students' development of their interactions with others and thus develop in their Zone of Proximal Development (Vygotsky, 1980) in a supportive learning environment.

10. Limitations

The observations have been limited to a single setting due to the corona virus pandemic. Observations of collaboration between students in other settings may have provided a deeper understanding and representativeness of the findings. However, an ethnographic design generally favors a small-scale study to facilitate in-depth exploration of the social interactions between humans and there was a large number of cases observed that provides a basis for generalization (Hammersley and Atkinson, 2007). We acknowledge the small sample for the focus groups that we tried to increase through sending out reminders. However, since it was not possible for conversations and interactions with the students during the sessions in the skills lab, the focus group interviews provided this and additional understanding to the extensive field notes. Further, the pandemic made it impossible to meet the students face-to-face in the focus group discussions and were thereby conducted during a secured digital platform. This may have affected participation. Moreover, we acknowledge the risk of dependency in the focus group interviews associated with the first author being a lecturer at the nursing programme. However, the participating students seemed comfortable and vividly shared their opinion and experiences. The present observer (RR) at the interviews also confirmed this.

11. Conclusion

This study presents scaffolding efforts that can challenge students' Zone of Proximal Development and thereby contribute to their development of collaborative skills necessary for safe patient care. For example, we recommend nurse educators to present students with clear instructions on how to negotiate their mutual goals to enhance accuracy in a collaborative activity. Next, introducing formative peer assessment

will support reflective practices and the ability to assess planned and performed activities. Furthermore, to decrease the risk of exclusion and early redemption, educators should take responsibility for dividing students into groups to allow for collaboration with peers they would not choose themselves as a means to prepare for the often complex interactions in the nursing profession.

Ethical approval

Ethical approval was obtained by the Ethical Review Agency Sweden (Dnr 2019-04474).

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRedit authorship contribution statement

MS led the design, observations, and focus group discussions, and the conceptualization of this work and drafted the manuscript. MB, EM, and EC were involved in the conceptualization of the design and analysis, and provided feedback on the methodology and the manuscript. All authors gave their approval for the publishing of this manuscript.

Acknowledgment

The authors thank the participating students for sharing their time, experiences, and Rathi Ramji for attending as an observer in the focus group discussions. The author also would like to thank the faculty and teachers in the clinical skills lab for making this study possible.

Conflict of interest

None.

References

- Aase, I., Hansen, B.S., Aase, K., 2014. Norwegian nursing and medical students' perception of interprofessional teamwork: a qualitative study. *BMC Med. Educ.* 14 (1), 170.
- Abdullah, K.L., Chan, C.M., 2018. A systematic review of qualitative studies exploring peer learning experiences of undergraduate nursing students. *Nurse Educ. Today* 71, 185–192.
- Attride-Stirling, J., 2001. Thematic networks: an analytic tool for qualitative research. *Qual. Res.* 1 (3), 385–405.
- Baghcheghi, N., Koohestani, H.R., Rezaei, K., 2011. A comparison of the cooperative learning and traditional learning methods in theory classes on nursing students' communication skill with patients at clinical settings. *Nurse Educ. Today* 31 (8), 877–882.
- Beran, T.N., Kaba, A., Caird, J., McLaughlin, K., 2014. The good and bad of group conformity: a call for a new programme of research in medical education. *Med. Educ.* 48 (9), 851–859.
- Berger, S., Whelan, B., Mahler, C., Szecsenyi, J., Krug, K., 2019. Encountering complexity in collaborative learning activities: an exploratory case study with undergraduate health professionals. *J. Interprof. Care* 33 (5), 490–496.
- Boud, D., Cohen, R., Sampson, J., 2014. *Peer Learning in Higher Education: Learning from and with Each Other*. Routledge, London.
- Brandt, B., Lutfiyya, M.N., King, J.A., Chioreso, C., 2014. A scoping review of interprofessional collaborative practice and education using the lens of the Triple Aim. *J. Interprof. Care* 28 (5), 393–399.
- Carlson, E., Stenberg, M., Chan, B., Ho, S., Lai, T., Wong, A., Chan, E.A., 2017. Nursing as universal and recognisable: nursing students' perceptions of learning outcomes from intercultural peer learning webinars: a qualitative study. *Nurse Educ. Today* 57, 54–59.
- Cronenwett, L., Sherwood, G., Barnsteiner, J., Disch, J., Johnson, J., Mitchell, P., Warren, J., 2007. Quality and safety education for nurses. *Nurs. Outlook* 55 (3), 122–131.
- Denzin, N.K., Lincoln, Y.S., 2008. *Strategies of Qualitative Inquiry*, Vol. 3. Sage Publications, Thousand Oaks, CA.
- Dillenbourg, P., 1999. What do you mean by collaborative learning? In: Dillenbourg, P. (Ed.), *Collaborative-Learning: Cognitive and Computational Approaches*. Elsevier, Oxford, pp. 1–19.
- Emich, C., 2018. Conceptualizing collaboration in nursing. *Nurs. Forum* 53 (4), 567–573.

- Hammersley, M., Atkinson, P., 2007. *Ethnography: Practices and Principles*, Vol. 3.
- Han, F., Ellis, R.A., 2021. Configurations of collaborations based on learning orientations amongst medical students. *Adv. Health Sci. Educ.* 26 (2), 581–598.
- Homborg, A., Hundertmark, J., Krause, J., Brunnée, M., Neumann, B., Loukanova, S., 2019. Promoting medical competencies through a didactic tutor qualification programme—a qualitative study based on the CanMEDS Physician Competency Framework. *BMC Med. Educ.* 19 (1), 1–8.
- Jeppesen, K.H., Christiansen, S., Frederiksen, K., 2017. Education of student nurses—A systematic literature review. *Nurse Educ. Today* 55, 112–121.
- Knoblauch, H. (2005). *Focused ethnography*. Paper presented at the Forum qualitative sozialforschung/forum: qualitative social research.
- Krueger, R.A., & Casey, M.A. (2002). *Designing and conducting focus group interviews: St Paul, Minnesota, USA*.
- Lawson, H.A., 2004. The logic of collaboration in education and the human services. *J. Interprof. Care* 18 (3), 225–237.
- Le, H., Janssen, J., Wubbels, T., 2018. Collaborative learning practices: teacher and student perceived obstacles to effective student collaboration. *Camb. J. Educ.* 48 (1), 103–122.
- Levett-Jones, T., Lathlean, J., 2008. Belongingness: a prerequisite for nursing students' clinical learning. *Nurse Educ. Pract.* 8 (2), 103–111.
- Liljedahl, M., Boman, L.E., Fält, C.P., Laksov, K.B., 2015. What students really learn: contrasting medical and nursing students' experiences of the clinical learning environment. *Adv. Health Sci. Educ.* 20 (3), 765–779.
- Mamhidir, A.-G., Kristofferzon, M.-L., Hellström-Hyson, E., Persson, E., Mårtensson, G., 2014. Nursing preceptors' experiences of two clinical education models. *Nurse Educ. Pract.* 14 (4), 427–433.
- Markowski, M., Bower, H., Essex, R., Yearley, C., 2021. Peer learning and collaborative placement models in health care: a systematic review and qualitative synthesis of the literature. *J. Clin. Nurs.*
- Morley, L., Cashell, A., 2017. Collaboration in health care. *J. Med. Imaging Radiat. Sci.* 48 (2), 207–216.
- Nygren, F., Carlson, E., 2017. Preceptors' conceptions of a peer learning model: a phenomenographic study. *Nurse Educ. Today* 49, 12–16.
- Pålsson, Y., Mårtensson, G., Swenne, C.L., Ädel, E., Engström, M., 2017. A peer learning intervention for nursing students in clinical practice education: a quasi-experimental study. *Nurse Educ. Today* 51, 81–87.
- Perander, K., Londen, M., Holm, G., Tiihonen, S., 2020. Becoming a university student: an emotional rollercoaster. *Högsk. Utbild.* 10 (1), 1–12.
- Ravanipour, M., Bahreini, M., Ravanipour, M., 2015. Exploring nursing students' experience of peer learning in clinical practice. *J. Educ. Health Promot.* 4 (46) <https://doi.org/10.4103/2277-9531.157233>.
- Reeves, S., Perrier, L., Goldman, J., Freeth, D., Zwarenstein, M., 2013. Interprofessional education: effects on professional practice and healthcare outcomes. *Cochrane Database Syst. Rev.* (3).
- Ruth-Sahd, L.A., 2011. Student nurse dyads create a community of learning: proposing a holistic clinical education theory. *J. Adv. Nurs.* 67 (11), 2445–2454.
- Sandahl, S.S., 2009. Collaborative testing as a learning strategy in nursing education: a review of the literature. *Nurs. Educ. Perspect.* 30 (3), 171–175.
- Sevenhuysen, S.L., Nickson, W., Farlie, M.K., Raitman, L., Keating, J.L., Molloy, E., Haines, T.P., 2013. The development of a peer assisted learning model for the clinical education of physiotherapy students. *J. Peer Learn.* 6 (1), 4.
- Sims, S., Hewitt, G., Harris, R., 2015. Evidence of collaboration, pooling of resources, learning and role blurring in interprofessional healthcare teams: a realist synthesis. *J. Interprof. Care* 29 (1), 20–25.
- Souza, G.C. d., Peduzzi, M., Silva, J.A. M. d., & Carvalho, B.G., 2016. Teamwork in nursing: restricted to nursing professionals or an interprofessional collaboration? *Revista da Escola de Enfermagem da USP*, 50(4), 642–649.
- Stenberg, M., Carlson, E., 2015. Swedish student nurses' perception of peer learning as an educational model during clinical practice in a hospital setting—an evaluation study. *BMC Nurs.* 14 (1), 48.
- Stenberg, M., Bengtsson, M., Mangrio, E., Carlson, E., 2020. Preceptors' experiences of using structured learning activities as part of the peer learning model: a qualitative study. *Nurse Educ. Pract.* 42, 102668.
- Stenberg, M., Mangrio, E., Bengtsson, M., Carlson, E., 2021. Formative peer assessment in higher healthcare education programmes: a scoping review. *BMJ Open* 11 (2), e045345.
- Vygotsky, 1980. *Mind in Society: The Development of Higher Psychological Processes*. Harvard university press.
- Vygotsky, L., 1962. *Thought and Language*. The MIT Press, Cambridge, Massachusetts.
- World Medical Association, 2013. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *J. Am. Med. Assoc.* 310 (20), 2191–2194.
- Wosinski, J., Belcher, A.E., Dürrenberger, Y., Allin, A.-C., Stormacq, C., Gerson, L., 2018. Facilitating problem-based learning among undergraduate nursing students: a qualitative systematic review. *Nurse Educ. Today* 60, 67–74.
- Yang, K., Woome, G.R., Matthews, J.T., 2012. Collaborative learning among undergraduate students in community health nursing. *Nurse Educ. Pract.* 12 (2), 72–76. <https://doi.org/10.1016/j.nepr.2011.07.005>.
- Zhang, J., Cui, Q., 2018. Collaborative learning in higher nursing education: a systematic review. *J. Prof. Nurs.* 34 (5), 378–388.