

## RESEARCH ARTICLE

# Nursing students' experiences of applying problem-based learning to train the core competence teamwork and collaboration: An interview study

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**Abstract****Aim:** To explore nursing students' experiences of applying problem-based learning to train the core competence teamwork and collaboration.**Design:** The study used a qualitative descriptive design.**Method:** The data were collected using individual interviews with a purposive sample of 11 students and analysed using inductive qualitative content analysis.**Results:** The students' experiences of applying problem-based learning to train the core competence teamwork and collaboration were described in two generic categories: prerequisites to train teamwork and collaboration and abilities practised in the base group. The generic category "prerequisites to train teamwork and collaboration" includes three subcategories: previous experience and education, composition of the base group, and common goals and values in the base group. The generic category "abilities practised in the base group" includes four subcategories: taking personal responsibility, practising role distribution and leadership, developing communication skills and creating togetherness in the base group.**KEYWORDS**

collaboration, core competences, experience, nursing education, problem-based learning, teamwork

## 1 | INTRODUCTION

Problem-based learning (PBL) is a well-known pedagogical model applied widely in the education of health professionals, including nurses (Servant-Miklos, 2019). Barrows and Tamblyn (1980) define PBL as "learning that results from the process of working toward the understanding or resolution of a problem" (p. 18). PBL is a student-centred approach that is practised in small student groups called base groups (BGs), where real-world scenarios provide the stimulus

for a deeper understanding of both the theoretical and practical concepts in focus. A tutor is allocated to each BG and has the task of guiding students in a problem-solving process (Barrows, 1996). PBL is considered to be a promising pedagogical model for nursing education (Compton et al., 2020). However, research about PBL in nursing education has displayed varied outcomes. For instance, in ethics education, PBL was able to significantly improve nursing students' moral development in comparison with lecture-based education (Khatiban & Sangestani, 2014). PBL students performed noticeably

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better both theoretically and clinically than those who only received teacher-led lessons (Zahid et al., 2016). By contrast, Breytenbach et al. (2017) found that increase in knowledge using PBL did not improve relative to that using traditional learning methods in nursing education even if the students found it to be more enjoyable and participated more in learning activities. Through PBL, students practice and develop problem-solving, self-directed learning and collaboration skills (Azer, 2009), which are all important professional skills for a Registered Nurse (RN). Thus, as part of PBL-based education, teamwork and collaboration skills are trained.

Teamwork and collaboration are considered highly important skills for all health care professionals, including RNs, and are vital for providing health care with quality and safety for patients (Reeves et al., 2017). Poor quality of teamwork could negatively affect the quality and safety of healthcare delivery (Rosen et al., 2018). Teamwork and collaboration is also one of the six core competencies in nursing and emphasizes that healthcare professionals must have the ability to work together and complement each other while ensuring a continuity of care to provide patient safety (Institute of Medicine [IOM], 2003; Quality & Safety Education for Nurses [QSEN], 2005). The other five core competencies are patient-centred care, evidence-based practice, quality improvement, safety and informatics (Cronenwett et al., 2007). The core competencies were developed by the IOM (2003) and QSEN (2005) and were founded based on a need to make health care safer. Healthcare professionals need to improve their use of evidence-based knowledge, be able to describe what good care means and identify gaps existing between the current care and good care being provided at their workplaces (Cronenwett et al., 2007). According to IOM (2003) and QSEN (2005), core competencies should be included as the basis of all nursing education, and the meaning and objectives of each of the core competencies should be clearly communicated. Based on the EFN Competency Framework (European Federation of Nurses Associations, 2015) and the Swedish Higher Education Ordinance (SFS, 1993:100), The Swedish Society of Nursing (2015) has developed the "Competence requirements for Registered Nurses" that clarify needed competencies for RNs in Sweden. Six of these competencies are equal to the core competencies described by Cronenwett et al. (2007). In a survey (Carlsson, 2015), it was shown that the core competence teamwork and collaboration was implemented in all Swedish nursing programmes, but to a varying degree.

For teamwork and collaboration to be effective in health care, training is required (Morrison et al., 2010). Thus, it is important that the core competence teamwork and collaboration is trained as a part of nursing education, both during clinical practice and in theoretical courses, to learn how to work sustainably in healthcare teams. PBL could be a promising learning intervention for training nursing students in this competence. A systematic review by Wosinski et al. (2018) highlighted that future research should focus on the usefulness of PBL in enhancing collaboration skills in nursing students. To further this knowledge, one approach could be to explore nursing students' experiences about this phenomenon of interest. However, to our knowledge, no research has been conducted with regard to this research question in the context of nursing education. Knowledge about nursing students' experiences of applying PBL to

train the core competence teamwork and collaboration should be considered important for both nursing educational institutions and healthcare providers. Thus, the aim of the study was to explore nursing students' experiences of applying PBL to train the core competence teamwork and collaboration.

## 2 | MATERIALS AND METHODS

### 2.1 | Design

The study had a qualitative descriptive design employing interviews (Polit & Beck, 2017). The interview data were analysed using inductive qualitative content analysis (Elo & Kyngäs, 2008).

### 2.2 | Setting

This study took place at one of three universities in Sweden that apply PBL in nursing education. The undergraduate nursing programme involved in this study implemented PBL as a pedagogical model in 2001. In agreement with the Swedish Higher Education Ordinance (SFS, 1993:100), undergraduate nursing education in Sweden comprises 180 ECTS and results in both a professional degree (i.e. diploma degree) and an academic degree (i.e. bachelor's degree) to qualify for a licence as RN. At this university, PBL is introduced at the very beginning of the first semester and practised throughout all courses in the programme, where the BG is the central component. The BG comprises 8–10 students and one tutor who facilitates the learning process during BG sessions. The students take turns fulfilling the roles of chair and secretary in the BG. The chair is responsible for leading the group during the BG work to ensure that all participants are actively contributing and to summarize the discussion. The secretary is responsible for writing minutes and the agreed learning agenda and publishing it on the course platform. The student constellation in the BGs changes every semester. In one theoretical course, the students had the possibility to choose the BG constellation by themselves, and in another one, PBL was practised in a large group consisting of three BGs (25 participants) working together with two tutors. A BG session can vary from 1.5–3 hr, depending on the extent of the task, and it is performed once or twice a week. The students work in a systematic approach inspired by the Maastricht Seven Step model for problem-solving, that is, "*Clarify terms and concepts not readily comprehensible, define the problem, analyse the problem, draw a systematic inventory of the explanation inferred from step 3, formulate learning objectives, collect additional information outside the group, synthesize and test the newly acquired information*" (Schmidt, 1983, p. 13).

### 2.3 | Recruitment and participants

The participants were recruited using a purposive sampling strategy (Polit & Beck, 2017). The inclusion criteria were as follows: (a) active as a nursing student at a university applying PBL, (b) studying the

third and final year of the nursing programme and (c) having undergone previous education about nursing core competencies as a part of the nursing programme. Consequently, the participants that took part in this study were students who attended their fifth semester of the nursing programme, had used PBL during four complete semesters and had studied the nursing core competencies in several theoretical and clinical placement courses. More specifically, the participants had studied the core competence teamwork and collaboration theoretically during their second semester (i.e. they had lectures, BG scenarios and examinations) and practised it in a real-life context during clinical placements in the second, third and fourth semesters.

Presumptive participants were given verbal and written information about the study in connection to a lecture. Those who were interested in participating were invited via electronic mail or a message function on the learning platform. Thereafter, the presumptive participants were contacted by telephone to determine the time and place for the interview. Oral information about the research was provided once again, written consent was forwarded, and the participants were given the opportunity to ask questions. In total, 11 participants between the ages of 22–36 years (mean = 28) agreed to participate. None of the students had any previous experience of PBL besides current nursing education, and 10 of 11 students had previous work experience of teamwork and collaboration in a health-care context as an auxiliary nurse or nurse assistant, with experience ranging from 3 months–15 years.

## 2.4 | Data collection

Individual interviews with the students were conducted between February–April 2019. Individual interviews were chosen to obtain as complete and detailed data as possible and to enable the participants to speak about their personal experiences (Polit & Beck, 2017). The interviews were guided by an overarching question: Based on your experience of PBL, how has the practice of PBL in your nursing education trained your ability to collaborate and work in teams? Probing questions, such as “What do you mean?”, “Can you explain?”, “Can you tell me more?” and “Can you exemplify?” were used to support the interview process, encourage narration and check understanding. A pilot interview was conducted to evaluate the validity of the overarching question. As no changes to the questions were warranted, a pilot interview was included in this study. The interviews were performed by the first authors (CA and HD) and took place in an undisturbed room at the university. The interview sessions lasted from 10–30 min and were recorded and transcribed verbatim by the first authors (CA and HD) (with the removal of all identifying information) close to the time of the interview.

## 2.5 | Data analysis

Transcribed interview data were analysed, inspired by Elo and Kyngäs's (2008) description of inductive qualitative content analysis.

Qualitative content analysis is a systematic, detailed examination of various forms of human communication, such as interviews, to obtain a broad, condensed description of the phenomenon under investigation (Polit & Beck, 2017). In the first step, several open-minded readings of the interview texts were conducted to attain immersion in the data. The second step involved open coding, which meant that parts of the interview texts were abstracted into codes. These codes were noted in the margins of the interview texts while reading them, with the study's purpose as a focus. After that, the codes from the margins were compiled into a coding sheet and compared with each other numerous times to check for similarities and differences, resulting in subcategories describing the content.

The first two authors (CA and HD) collaborated to make comparisons to ensure that useful content was not lost. Finally, to avoid bias, the last two authors (EKA and MH) validated the analysis by reading all the original texts and examining the categorization and interpretation of the texts. Through this process, further abstraction was achieved, resulting in two generic categories with subcategories, describing the phenomenon in focus, that is nursing students' experiences of applying PBL to train the core competence teamwork and collaboration (see Tables 1 and 2).

## 2.6 | Ethical considerations

This study was performed in compliance with the established ethical guidelines expressed in the Declaration of Helsinki (World Medical Association, 2013) and was also reviewed by the Ethical Advisory Board in Southeast Sweden (EPK 547–2019). At the time of the study, the authors had no student–teacher relationship with involved participants. Verbal and written informed consent was obtained from all participants before the interview took place. All participants were informed of their right to withdraw from the study at any time, without giving any reason for withdrawal. All participants were provided a guarantee of confidentiality by coding the transcripts and assigning each quotation a code.

## 3 | RESULTS

In the analysis, the students' experiences of applying problem-based learning to train the core competence teamwork and collaboration were described in two generic categories: prerequisites to train teamwork and collaboration and abilities practised in the base group.

### 3.1 | Prerequisites to train teamwork and collaboration

The generic category prerequisites to train teamwork and collaboration included three subcategories: (1) previous experience and education, (2) composition of the base group and (3) common goals and values in the base group.

TABLE 1 Example of parts of the interview texts, codes, subcategories, and generic categories

Parts of the interview texts	Codes	Subcategories	Generic categories
In almost every course it will be new groups...you meet new people, and it is...collaboration in team, that you have different competencies, you are interested in different things, and understand differently. (4)	Different competencies	Previous experience and education	Prerequisites to train teamwork and collaboration
It was a good system, one was in smaller groups, one could focus on the subject...everyone could participate. (13)	Size of the group	Composition of the base group	
You have to understand what to do and come to the conclusion that everyone has the same understanding (of learning objectives), otherwise we may work against each other because we have understood something in different ways. (10)	Common goals	Common goals and values in the base group	
It is a good setup, PBL, you take responsibility yourself... choose your own level, you have the learning objectives. (11)	Own responsibility	Taking personal responsibility	Abilities practised in the base group
The chair's role is to lead the discussion and take responsibility if someone is not participating in the discussion. (7)	Leadership	Practising role distribution and leadership	
I often stand back in a group and do not talk as much in the discussions but through PBL you get forced to do it. (7)	Discussion	Developing communication skills	
One should be open, people should feel that they can say whatever they want to say...People should not feel that they would be judged...it should be relaxed, a good climate...inviting. (9)	Climate in the group	Creating togetherness in the base group	

TABLE 2 Overview generic categories and subcategories

Generic categories	Subcategories
Prerequisites to train teamwork and collaboration	<ul style="list-style-type: none"> <li>Previous experience and education</li> <li>Composition of the base group</li> <li>Common goals and values in the base group</li> </ul>
Abilities practised in the base group	<ul style="list-style-type: none"> <li>Taking personal responsibility</li> <li>Practising role distribution and leadership</li> <li>Developing communication skills</li> <li>Creating togetherness in the base group</li> </ul>

### 3.2 | Previous experience and education

The students described that based on their previous experience and education, they could contribute knowledge important to the BG discussions, which led to increased student engagement and made it easier for the students to find their place in the BG. Individual traits like personality, education, age, previous work experience and competence were described as affecting the students' contributions to the group. Those students who wanted to work on their own to a larger degree were less interested in listening to the other members of the BG, which was described as making teamwork in the BG more difficult and less effective. The students also described how different work rates and different opinions were a barrier. Younger age was described as a possible barrier when training teamwork, as

younger students were sometimes not sure whether it was an RN they wanted to become, and this could result in less motivation and engagement in the BG collaboration.

The students expressed that using previous work experience in BG work gave them the capability to see and understand the value of teamwork to reach desired results. Lack of teamwork experiences made the collaboration in the BG more difficult. The variation in students' different experiences and knowledge contributed to the BG work being more efficient with problem-solving. Former experiences of teamwork positively affected the attitude towards PBL, since the students easily recognized its purpose. Some students described experiences from sports, such as being a team player. This contributed to the understanding of the possibility within the group of what a group could achieve together and the purpose of the group.

I believe you have a totally different attitude towards PBL if you have those experiences, like, been in teamwork together before.

(Participant 6)

### 3.3 | Composition of the base group

The students expressed different opinions about whether the possibility of choosing a BG on their own was advantageous to train the core competence teamwork and collaboration. They described that when they had the possibility to choose, some chose a BG in which they felt comfortable with the other students and were on the same ambition level. This resulted in shared responsibility, increased motivation and improved collaboration. Some students found it educational to be randomly assigned to a BG because it challenged them to further train their collaborative skills. The size of the BG was considered important; a large group (25 participants) was experienced negatively since it was more difficult to participate and make one's voice heard. This led to shallow discussions and inadequate help from the tutor.

So, it [work in a large BG] lost some of its purpose with PBL. So, the purpose is that everyone should discuss back and forth... we were a very large BG, it was like not much discussion.

(Participant 9)

The students described that it was easier to focus on the subject in a smaller BG (eight participants), which facilitated collaboration. Since the BG contained only nursing students, some experienced that this composition led to fewer opportunities to practice teamwork and collaboration compared to previous work experiences of multidisciplinary teams in care work.

### 3.4 | Common goals and values in the base group

Common goals and an understanding of what should be done in the BG were of great importance for collaboration. The students expressed that in their BG, they had an opportunity to customize the goals and together determine the level of knowledge they needed to acquire. Guidelines and common values were described as important in this collaboration. For example, the BG contract was a value system similar to the ethical values that were used in care work and facilitated collaboration. In cases of a lack of common understanding, this could mean that the students in the BG worked against each other, resulting in less effective collaboration.

That is what I mean with the group dynamics in some way, so, both to enter the role but also have an understanding for the process that it is to work in a group, kind of, towards a common goal.

(Participant 12)

### 3.5 | Abilities practised in the base group

The generic category abilities practised in the base group included four subcategories: (1) taking personal responsibility, (2) practising role distribution and leadership, (3) developing communication skills and (4) creating togetherness in the base group.

### 3.6 | Taking personal responsibility

Applying PBL was considered beneficial in training and promoting the students' own responsibility. When fellow students were perceived to take major personal responsibility for their studies, the BG work with searching for information and knowledge became more satisfying. The students expressed that lack of responsibility could manifest itself in lack of preparation before the BG meeting, inability to focus on the discussed subject and failure to do one's part of the work. This could result in frustration among the other members of the BG. Taking responsibility for one's behaviour to promote the best for the group was an important aspect. If the student did not take responsibility, for example, through a lack of commitment, it could result in conflicts.

There, you have a personal responsibility in collaboration in team, you can't just sit and like, think that everyone else should come up with something good. You have to move forward to improve I think."

(Participant 6)

Working in the BG was described as training in both personal development and collaboration, as students were required to actively contribute during the group work, even if it did not come naturally in the beginning. It was described as a kind of nurturing to adapt into the group. This development implied increased maturity, safety and courage to participate in discussions. For students who were initially nervous to speak in front of others, nervousness could be decreased through practice in the BG. This practice was perceived as important in the profession.

### 3.7 | Practising role distribution and leadership

The students described that by applying PBL, they trained role distribution and leadership each time they undertook the roles of chair and secretary in the BG. Role distribution and leadership were described as vital competences to possess in future care work as RN. The insight into one's own role was also of importance for the development of the group. If one student had not entered their role, this could result in insecurity in the group. A leading role in the BG could mean being a chair, and by applying that role, the students trained in the ability to lead. The students described that the chair should help the group move forward, motivate collaboration, have an overall responsibility to include everyone in the group and make use of all students' competencies.

I think that it is the one who is chair, the one who has the chair role that should be able to lead because it always has to be someone, otherwise it would be difficult for the group to collaborate.

(Participant 13)

The chair should be able to invite silent and not-so-active students to participate. They should be aware of the risk of abuse of power and let everyone participate. Leadership ability differed between students; for some, it came naturally, but for others, the role as chair was not comfortable. The students described that if the chair did not take the leading role, it could lead to another student assuming informal leadership. They compared the leading role in the BG with the leading role of an RN, for example coordinating the team, getting everyone involved and showing authority to lead the group towards a common goal.

### 3.8 | Developing communication skills

The students described that communication skills were perceived as important for the ability to collaborate in a team and were developed through applying PBL. Active listening, discussion, non-verbal communication, argumentation and feedback were described by the students as elements that were trained. It was of great importance to listen to other students in the BG, and this ability developed with time. Initially, the students tended to talk a lot, but as time passed, their ability to listen to others improved.

It has like trained me to think a little more on others' perspectives, like listening to others, like get different, it is a lot about perspective I think.

(Participant 8)

The students described communication as a tool for collaborating in teams and reaching the goals of the BG. To avoid misunderstandings, it was important to reconcile with each other to make sure that everyone perceived questions and subjects in the same way. The students described that it was easier to overcome difficulties when they could communicate well, and communication difficulties were described as an obstacle that could lead to conflicts and complicate collaboration. The students described differences between communication in the BG and communication in the care team about what initiated the discussion. In the care team, the discussion was more detailed when there was uncertainty about how to act, in contrast to the BG, where the discussion was more detailed when the students knew the topic. Working with PBL trained students to develop the ability to communicate, argue and put forward positions and thoughts. The students also experienced the development of their communication skills through giving and receiving feedback from others.

### 3.9 | Creating togetherness in the base group

The students described that, by applying PBL in the BG, they created togetherness within the group. In a well-functioning BG, everyone

was important and involved in the work. The BG could be of assistance through support, guidance and managing difficulties; a greater understanding could be reached together when one student understood and helped to explain what another student had not understood. The students strived to take care of each other. It was important to be available to those who wanted to ask questions but also to have the courage to ask questions to others. The helpfulness of the group could lead to personal development, and it was beneficial for all students when helping each other.

The students in the BG felt that everyone should reach the goals of the course. If there was a risk that a student would not reach the goal, the group tried to help that student. Feelings of frustration and exclusion were described in groups with a lack of togetherness and when a student "feathered their own nest" or dominated the group. When the collaboration in the group was less functional, it resulted in less personal commitment.

The students expressed it as important to respect and show consideration to all members of the BG, irrespective of opinions, values or competence. This was demonstrated by not interrupting each other, waiting one's turn, and adjusting to the group and the task that needed to be solved. Regardless of whether the members knew each other or not, open-mindedness to collaboration was expected.

You should be, like open, like you, people should feel that they can say what they want to. People should not feel like they are going to be judged, or, now I say the wrong thing, or something.

(Participant 9)

The ability to collaborate was a sign of a functional group, and it could be affected by the climate in the group, where a relaxed and good atmosphere was important. By beginning the meeting with some small talk, a good climate could be created. The climate was also affected by how long the group spent together; a sense of greater safety appeared the longer the BG worked together. The students described how a feeling of togetherness facilitated teamwork and collaboration within the group.

In the beginning, knowledge about how the group should collaborate was lacking, but the ability was trained and developed as the semesters went on. The students met many people with whom they should collaborate, and to do so, they had to create relationships and develop an ability to handle differences. During the discussions, divided opinions could emerge, and a need for compromise could arise. The ability to handle conflicts was trained through applying PBL; to visualize and solve conflicts was seen as a collective responsibility.

Through collaboration, a common goal could be reached, and everyone could contribute and see different aspects. The group searched for answers together, and through collaboration, a synergy effect was received.

Everyone has different knowledge, and if you put it together.... it will get much larger than you can create on your own.

(Participant 6)



The students compared togetherness within a BG to a team sport, where it was obvious what a team could reach together. One important element was knowing each other's strengths and weaknesses. The students also compared care work, where people in one profession could contribute with different knowledge, and this combined to create a larger entirety than one person could create on their own, and a deeper knowledge and understanding.

## 4 | DISCUSSION

Our findings showed that variations in student characteristics, such as personality, previous education, age and work experience, were believed to influence the training of teamwork and collaboration. For instance, students with previous work experience could contribute with real-life examples, which facilitated their ability to see and understand the value of teamwork to reach desired results. According to McEwan et al. (2017), it is important to train teamwork, and it also seems beneficial if the training targets different dimensions of teamwork while applying real-life activities. An important dimension described in the findings was that being randomly assigned to BGs challenged the students to further develop their collaborative skills. Thus, we argue that nursing students need to learn how to work with different people in teams, both in their roles as students and RNs in their upcoming professions. The educational effort should thus focus on how to provide opportunities for students to learn how to make use of each other's individual competences in the BG, thus training them to work in a team with diversity. PBL, as a pedagogical model, provides good conditions for practising this ability in real-life activities.

Our findings showed that through applying PBL during nursing education, the students trained abilities in leadership, role distribution and communication, all important abilities for the core competence teamwork and collaboration. These abilities are especially important for newly graduated RNs and therefore need to be trained during nursing education. Research shows that newly graduated RNs are unprepared for leadership in care work (Widarsson et al., 2020) and can find collaboration in patient care, coordination, and leading a team burdensome and challenging (Ekström & Idvall, 2015). Newly graduated RNs could also experience a loss of control and have difficulties structuring their nursing care, leading to nursing care not being prioritized (Willman et al., 2021). Research (Curtis et al., 2011) points out the importance of leadership training during nursing education, as effectively integrated leadership training into nursing curricula has a positive impact on nursing practice. We argue that by applying PBL in nursing education, students are given the opportunity to practice leadership, and it could be a more sustainable way to address the gap that seems evident in the transition from education to clinical practice.

Our findings showed that through applying PBL in nursing education, the students experienced that they trained and developed communication skills, such as active listening, argumentation, and giving and receiving feedback, and these were experienced

as tools in collaboration in the team. Li et al. (2019) presented in a systematic review that PBL in nursing education was more effective than traditional teaching in improving communication competences. Training communication skills seems important, as previous research (Ortiz, 2016; Sterner et al., 2018) shows that newly graduated RNs experience challenging care situations involving communication with other team members, which influences their professional confidence in providing quality patient care.

It is well known that efficient communication is crucial for patient safety (Burgener, 2020) and that adverse events related to communication failures occurring at any time of a patient's care pathway can result in harm, unnecessary suffering and huge costs (Slawomirski et al., 2017). As patient safety is a fundamental responsibility of individual healthcare providers (Slawomirski et al., 2017), we argue that educators and healthcare providers need to cooperate to ensure that students gain basic communication skills during their education. We conclude that applying PBL in nursing education could be a sustainable way of tackling this challenge. Our findings showed that the students had fewer opportunities to practice teamwork and collaboration with students from other professions since their BGs contained only nursing students. According to the World Health Organization (2010), interprofessional education is a powerful learning tool in efforts to improve healthcare delivery. In a systematic review (Dyess et al., 2019), it was argued that interprofessional education is an effective tool for improving attitudes towards interdisciplinary collaboration and teamwork, communication and shared problem-solving. Thus, we suggest that nurse educators who are not able to train students in interprofessional education in theoretical courses instead need, to a higher degree, to offer training in clinical placement courses.

Our findings showed that by applying PBL, the students created togetherness within the BG, which was experienced to facilitate teamwork and collaboration and could lead to personal development. In line with our findings, Ashktorab et al. (2017) argue that students need to learn strategies to create togetherness in nursing education. Improving togetherness can result in a smaller number of nurses abandoning the profession after just a few years of duty. Nunstedt et al. (2020) confirmed that togetherness in teamwork is central to nurses' experience of meaning at work and is an important factor in making the nurses stay in the profession. We argue that through applying PBL, students could practice the ability to create togetherness, and this could be a contribution to reducing the number of nurses leaving the profession.

### 4.1 | Strengths and limitations

Efforts have been made to provide transparent descriptions of the study context, data collection and data analysis process, giving the reader an opportunity to follow the different steps in the research and facilitate reader assessment of transferable findings. The interviews were carefully planned and conducted in a permissive climate

to facilitate openness in the interview process. Some of the interviews were short, which could be considered a limitation. However, the interviews were rich in content.

Quotes lifted directly from the interviews are presented in the results, illustrating the different participants' own perspectives, thus giving the reader the opportunity to judge the interpretation and trustworthiness of the findings. A consideration to be made when reading the results of this study is that the sample involved a relatively small number of participants recruited from a single university in Sweden. This could affect the transferability of the findings to other higher education contexts and to other disciplines.

## 5 | CONCLUSIONS

Different student characteristics were viewed as either a great benefit or a hindrance for efficient training of the core competence teamwork and collaboration. One way to benefit from the students' diversity in BG work could be to provide students with learning opportunities on how they can make use of their different competencies and thus prepare them to work as RNs in diverse healthcare teams. Nursing students need to prepare themselves to practice leadership as part of teamwork and collaboration. It seems that PBL could be a sustainable pedagogical approach for students to practice leadership in a secure environment. Communication skills are practised regularly as a part of PBL and are considered imperative to provide safe and efficient care for patients. PBL offers a systematic pedagogical approach to working with students' communication skills, which benefits the training of teamwork and collaboration. We argue that PBL could provide a sustainable way to address the gap that seems evident in the transition from education to clinical practice for practising teamwork and collaboration. Moreover, nurse educators need to consider incorporating learning activities aimed at learning to create togetherness in teams, such as BGs, as this could be an important strategy to strengthen the team's resilience.

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### CONFLICTS OF INTEREST

No conflicts of interest have been declared by the authors.

### AUTHOR CONTRIBUTION

CA, HD, MH and EKA conceived the study design. CA and HD performed the data collection, CA and HD took the lead in the data analysis and EKA and MH acted as co-analysers. CA, HD, MH and EKA drafted the manuscript. MH and EKA supervised the study.

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