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RESEARCH ARTICLE

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Nursing students' experiences of what influences achievement of learning outcomes in a problem-based learning context: A qualitative descriptive study

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Abstract

Aim: This study aimed to describe nursing students' experiences of what facilitate or impede the achievement of learning outcomes in PBL-based nursing education.

Design: A qualitative descriptive design was used.

Methods: Data were collected from individual semi-structured interviews with 18 undergraduate nursing students in Sweden and were analysed using Burnard's qualitative content analysis.

Results: The results were organized into three categories: (a) understanding of the required level of knowledge depth (b) tutor's engagement and (c) student base group interactions. These categories represent essential components of PBL that could either facilitate or impede students' achievement of learning outcomes in nursing education. To improve the students' opportunities to achieve the learning outcomes, proper introduction of and a continuous education on PBL as a pedagogical method provided both to students and tutors should be considered important.

KEYWORDS

learning outcomes, nursing education, nursing students, problem-based learning

1 | INTRODUCTION

Problem-based learning (PBL) was introduced in the 1960s (Barrows & Tamblyn, 1980); since then, it has been implemented worldwide in health professional educational programmes (Neville, 2009), including nursing. PBL as a pedagogical method aims to assist students in developing competencies, such as problem-solving, collaboration, motivation and self-directed learning. Baker (2000) argued that PBL has excellent potential in nursing education, and the competences being trained align well with needed competences of professional practice. Further, nursing students need evidence-based instruction to care for their patients, and PBL could be very helpful in that regard.

Problem-based learning is practised in small groups of students called "base groups." Each base group is assigned a tutor whose main role is to guide the students in a problem-solving process (Barrows, 1996). For each base group, the starting point involves authentic, real-life scenarios that must be solved. By doing practical work on a given scenario and by tackling their reflections during base group discussions, students are given the

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opportunity to develop their learning skills (Yew & Goh, 2016), to identify knowledge gaps and to identify additional problems they may need to solve (Kong et al., 2014). As part of the base group work, students should learn how to formulate hypotheses, how to implement a critical approach and how to conduct evidence-based work (Azer, 2009). PBL can also be useful in order for students to learn how to place specific situations in a broader perspective, for instance, how students relate a specific situation to more general and theoretical concepts and how they place knowledge in a clinical context (Nilsson & Silén, 2010). In PBL, students must acquire the skill of taking responsibility for their own learning (Azer, 2009), which can enhance their ability to solve real-life problems and prepare them for their future professional life (Alrahlah, 2016; Barrows & Tamblyn, 1980).

Although PBL is considered a promising pedagogical method for nursing education that supports student-centred learning and enhances critical thinking (Compton et al., 2020), the reported outcomes of PBL vary. For example, Preeti et al. (2013) and Zahid et al., (2016) showed that PBL students perform noticeably better both theoretically and clinically than those who only received teacher-led lessons. By contrast, Breytenbach et al. (2017) found that increase in knowledge in PBL did not improve relative to that in traditional learning in nursing education. Moreover, Prosser and Sze (2014) pointed out that students must understand PBL as a pedagogical method and the learning processes it involves because their understanding of PBL influences how they prepare for their studies and how well they grasp course objectives. Thus, a proper introduction to and a clear understanding of PBL are important as these aspects may affect nursing students' achievement of learning outcomes. Additional research from the nursing students' perspective is warranted regarding how the usefulness of PBL is perceived (Spiers et al., 2014). More specifically, in a qualitative systematic review, Wosinski et al., (2018) recommended that future research should focus on exploring what strategies nursing students use to succeed with PBL. Knowledge about aspects that contribute to the nursing student's understanding of PBL and how they approach their studies in PBL is important since a lack of understanding of PBL can be disadvantageous in the students' achievement of learning outcomes (Prosser & Sze, 2014). Therefore, this study aimed to describe nursing students' experiences of what facilitate or impede the achievement of learning outcomes in PBL-based nursing education. The research question was as follows: Which learning conditions in PBL-based nursing education facilitate or impede nursing student's achievement of learning outcomes?

2 | METHODS

2.1 | Design

This study employed a qualitative descriptive design (Creswell & Poth, 2018). Data were collected from individual semi-structured interviews with 18 undergraduate nursing students in Sweden. Data were analysed using Burnard's (1996) qualitative content analysis to gain a deeper understanding of the students' experiences.

2.2 | Setting

This research was carried out at a single university in Sweden from February to April of 2019. Undergraduate nursing education in Sweden involves 180 ECTS (European Credit Transfer and Accumulation System) credits in accordance with the Swedish Higher Education Ordinance (SFS, 1993 1993:100), and results in both a professional degree (i.e. diploma degree) and an academic degree (i.e. bachelor's degree) qualifying for a licence as a registered nurse. The programme requires completion of six semesters and is comprised of both theoretical (approximately 60%) and clinical practice courses (approximately 40%).

The undergraduate nursing programme involved in this study implemented PBL as a pedagogical model in 2001, and it follows the Maastricht seven-jump process (Wood, 2003). PBL is introduced to the nursing students at the start of the first semester and is then practised in all courses throughout the rest of the programme. A base group is comprised of 8–10 students and one tutor, and the students' constellation of the base groups changes every semester. The tutor is a teacher who helps facilitate the learning process during group sessions, which are typically conducted 1–2 times a week, varying from 1.5–3 hr. At the start of each session, a chair and a secretary are elected. The chair ensures that the base group members follow the seven-jump process, that everyone gets to speak and that the time limit for the session is followed. The secretary documents the discussion and provides notes to the group. Each session starts with a scenario, which can vary in form, such as a written patient case or a video. Based on the scenario, the students come up with learning objectives and identify the learning resources that will aid them in gaining knowledge based on these objectives. During the subsequent group session, they provide answers and discuss and apply their acquired knowledge depending on the objectives and on the scenario.

2.3 | Participants and procedure

Participants were recruited through convenience sampling (Creswell & Poth, 2018). The inclusion criteria were as follows: being a nursing student at a university that applies PBL and being in the middle of their nursing education, that is, enrolled during the third semester. The rationale behind choosing students in their third semester was that they needed to have at least one-year of experience practising PBL in nursing education. A letter detailing relevant information about this study was sent to 48 potential participants, and 18 students agreed to participate in individual interviews. Prior to the interviews, all participants signed a consent form. A semi-structured interview guide (Creswell & Poth, 2018) was used to guide the interviews. The interview questions revolved around what "facilitates"

and what "makes it difficult" to achieve a course's learning outcomes in a PBL-based education. The recorded interviews were performed by three authors (JS, AA and EKA), lasted from 10–45 min and were transcribed verbatim. The authors did not have any relationship with the students. The participants (women $N = 16$, men $N = 2$) were between the ages of 20–44 years.

2.4 | Data analysis

Data from the 18 interviews were analysed according to Burnard's (1996) qualitative content analysis, which was performed in four steps. In the first step, the transcribed interview texts were read individually by JS and AA several times to gain an overall understanding of the data. Meaning units, that is, words and phrases related to the study's aim, were highlighted. These meaning units were then compared and discussed. In the second step, the meaning units were condensed, that is, redundant words were removed. These condensed meaning units were compared again against the original interview texts to ensure that no important words had been removed. In the third step, each meaning unit was assigned a code that described the content of the meaning unit. The codes and the meaning units were subsequently compared to determine similarities and differences with one another. Finally, three categories were identified that constituted the manifest content of the data.

2.5 | Ethics

This study was conducted in accordance with the ethical guidelines in the Declaration of Helsinki (World Medical Association, 2013). Ethical advisory was received from the Ethical Advisory Board in South-East Sweden (No: 549–2019). All participants received both written and verbal information that presented the study's purpose, the implementation and the confidentiality of the collected data. All participants signed informed consent before participating in this study.

3 | RESULTS

In the analysis, the students' experiences of what facilitates or impedes their achievement of learning outcomes in their PBL-based nursing education were described in three categories: (a) understanding of the required level of knowledge depth, (b) tutor's engagement and (c) student base group interactions.

3.1 | Understanding of the required level of knowledge depth

The students described that the PBL facilitates their understanding of the required level of knowledge depth; they understood that they themselves need to take great responsibility for their own learning. For some students, the process of independent searching for knowledge, preparing one's own notes and creating well-formulated questions based on the base group work facilitates self-learning and understanding of the required level of knowledge depth in a particular course. According to one participant,

> It is very much your own responsibility to learn.... It usually makes it easier for you to write it down so you usually learn better.
>
> (Participant 14)

At times, the students found it difficult to understand the level of knowledge depth they needed to achieve, particularly, when the learning outcomes were broadly defined. This issue impeded their understanding and caused them to fail to identify the focus of their knowledge acquisition prior to taking their examinations. Those students who found the course literature to be too broad and difficult to understand tended to just commit pieces of information to memory, which, according to them, was "superficial learning." Some students described the importance of a clear syllabi for their knowledge gathering; when their syllabi were unclear, they worried about not completing the course and ultimately, about failing to complete their nursing education because of PBL. Indeed, a lack of understanding of the required knowledge depth makes learning difficult and impedes a student's understanding of the questions related to the real-life scenarios that need to be asked and answered.

> ... To know how deep to read. It is a little difficult to just, sure it is in the syllabus, but it still does not say how deep you should go.
>
> (Participant 9)

3.2 | Tutor's engagement

The students described that learning was facilitated when the tutor was engaged, actively providing guidance on which knowledge area they should focus and corrected them when they were on the wrong track. Moreover, the students experienced that if their tutor acknowledged them as individuals this could facilitate their learning. Also, an engaged tutor who asks relevant questions and who strikes a balance between being active and inactive during a base group session facilitated group interaction and made learning easier.

The students also described that when a tutor was perceived to be skilled in pedagogy and passionate about teaching, the base group session was more fulfilling and interesting. By contrast, the students expressed that when they felt that their tutor did his/her work only because they were obliged to, the base group session was less inspiring. Another aspect described by the students was the ability of their tutor to use and apply his/her own clinical experience during base group work that could facilitate students' learning of a particular subject. Overall, the students experienced a sense

of security whenever they were guided by an engaged tutor in the entirety of the course, which facilitated their learning.

> They [the tutors] are wonderful, pedagogical in their teaching, you notice that they not only possess knowledge, they possess so much that they can also present it in a pedagogical way to those [students] who do not understand and I think that is wonderful.
>
> (Participant 16)

The students described their learning as impeded when their tutor did not want to answer their questions during a base group session and instead directed them to find answers on their own in the course literature. Such instances were described as frustrating as the students had already exerted great effort looking for answers to the questions by themselves. Also, they found that their learning was impeded when their tutor simply sat quietly and was not engaged, did not interact with the base group or did not give any hint as to whether or not they were on the right track. Moreover, the students described that the varied interpretations of their tutors of the course's assessment criteria could lead to different requirements. This uncertainty influenced their chances of achieving the desired learning outcomes.

> … Some [tutors] may be completely silent, which I find very difficult. You don't know if you are heading in the right direction….
>
> (Participant 12)

3.3 | Student base group interactions

According to the students, the base group composition changed every semester, and this practice developed their ability to work in teams given that they had to learn to interact with different students. Their ability to collaborate with others was enhanced, which was believed to prepare them better for their nursing profession.

Moreover, they described that their learning was facilitated when one of the students in the base group took on a leading role and ensured that the discussions included relevant topics. They also described that varying the base group composition to include students with extensive and limited experiences in health and social care work facilitated their learning. Such group compositions were believed to have encouraged more active discussions and thus have enhanced the students' chances of achieving the learning outcomes.

> … since I have not worked in healthcare before, I still didn't have that much knowledge, so I find it very educational to take part of others because there are different levels and different knowledge in the base group….
>
> (Participant 2)

According to the students, a small number of base group members increases the chances that each one's voice is heard and that each of them is acknowledged, thereby facilitating learning. By contrast, a student in a larger group does not have the same chance of being acknowledged as an individual. The base group work facilitated learning as the students took part in discussions and in the sharing of experiences and knowledge with other students. The students found that all group members must grab the opportunity to actively participate in discussions during base group work, and their active participation enhanced their learning. For the group discussions to become relevant and meaningful from a learning perspective, it was important that all students had prepared themselves for the topics to be discussed. Moreover, during discussion, trying to understand the other students' points of view could broaden one's perspective.

The students described that those instances wherein some students were quiet or when some spoke continuously and did not give others a chance to participate could impede learning. This issue is made worse when other students were perceived to be incompletely prepared as the depth of discussion became shallow, impeding the acquisition of a higher level of knowledge. If the base group members do not collaborate efficiently and the group dynamics do not function well, conflicts could arise between students, taking time away from knowledge acquisition. The students described such situations as time-consuming and as impediments to the progress of the base group work.

> I think it takes a lot of time away from knowledge gathering when conflicts and other things arise.
>
> (Participant 2)

Nevertheless, the base group work promoted the students' ability to reflect, to discuss and therefore to understand the meaning and ramifications of a subject matter, leading to deeper contextual knowledge.

4 | DISCUSSION

Our findings showed that the students experienced difficulties in understanding the level of the required knowledge depth when the learning outcomes were broadly defined, the real-life scenarios were too vague or the course literature was too broad and difficult to understand. Smith and Coleman (2008) confirmed that PBL students could feel uncertainty regarding what they had actually learned, what level of knowledge depth was required in relation to a subject and for how long they would remember the acquired knowledge. Yang and Yang (2013) argued that students may feel insecure when they do not understand the threshold concepts in a course, causing them to gather irrelevant information. Meanwhile, our results showed that the students experienced struggles adjusting to the shift from traditional learning approaches to PBL, and this impeded their understanding of the required level of knowledge depth. Other researchers (Khatiban & Sangestani, 2014; Spiers et al., 2014) have pointed out that PBL requires nursing students to develop the ability

to become active and self-directed learners. Thus, we argue that a proper introduction to PBL for newly enrolled nursing students is vital given that PBL needs to be incorporated into the students' learning approach. Research by Baker et al., (2007) indicated that PBL could stimulate a student's ability to achieve deep learning and to grasp abstract concepts by working with real-life scenarios. Further, Nilsson and Silén (2010) argued that PBL increases a student's ability to reflect and to focus on learning and on what and how they have learned. Our findings indicate that the pre-requisites to achieving deep learning are clarity and consistency of the presented learning outcomes and of the real-life scenarios. Thus, to provide the right pre-conditions for PBL, a tutor must ensure that the students understand what is required of them regarding the course's learning outcomes, and those outcomes must be aligned with the learning activities and examinations.

Our findings demonstrated that student learning was facilitated when their tutor was engaged and actively provided guidance on which knowledge areas they should focus. Similarly, research by Paige and Smith (2013) and Yang and Yang (2013) indicated that when activities in a base group work intertwine students and tutors, they learn from each other's perspectives. Thus, a tutor must strike a balance between being active and being passive during base group work, as the students must explore a subject matter by themselves and must be encouraged to find answers to the questions that arise during the base group work. A tutor must be able to resist the urge to "save" the students by giving them the answers, which would impede the learning process the students need to undergo as a part of PBL. The need for such a balance as a part of the base group work is also confirmed by our findings. Some students experienced that if the tutor was too active, it could result in not having the time to reflect on and discuss their own perspectives, thereby impeding their learning process. Moreover, according to Yang and Yang (2013), it seems important that tutors give encouragement, such as nodding and smiling, as it makes the students feel more relaxed and reassured during base group work. Gestures of encouragement are important because, as Mete and Yildirim Sari (2008) have argued, tutors' behaviour and engagement affect students' motivation and success in PBL. Students have expectations of their tutors; for instance, tutors should demonstrate good social skills, should display group dynamics skills and should be knowledgeable on various subjects. Further, tutors should be able to encourage group members to seek answers to the problems at hand by themselves. Yang and Yang (2013) pointed out that once students have gained a deeper understanding of PBL, they start to see their tutor as a resource and do not approach him/her only to get answers, but also to reason out and to discuss problems. We argue that tutors need to be active and engaged in different ways depending on how far their students have progressed in terms of their own PBL development, independence and self-learning abilities.

Our findings showed that the students appreciated it when the base group composition changed every semester as it developed their ability to interact and work with other students. A mix of students with extensive and limited experiences on healthcare and social work was found to facilitate the students' learning, consequently broadening their perspectives. Previous research (Khatiban & Sangestani, 2014; Smith & Coleman, 2008) confirmed that PBL can increase a student's ability to work with other students and collectively find solutions based on real-life scenarios. Our findings showed that group interaction is relevant and meaningful from a learning perspective when all students had prepared themselves for a discussion on a certain topic and when everyone was active during the base group work. Kim et al., (2018) found that students may experience difficulties in PBL when some students are silent and when others dominate discussions. These characteristics were found to influence teamwork, causing problems to arise within a base group. Conflicts within a base group, as our results showed, could emerge when group interaction is not satisfactory. Moreover, research by Borg et al., (2011) showed that conflicts could appear when students have different goals or if the course objectives were not clearly defined. Paige and Smith (2013) found that it is important to manage conflicts in a base group and that students should be encouraged to solve their conflicts by themselves. We argue that it is the base group members' responsibility to identify the root of the problem and to work together to solve any conflicts in order to make the base group work sustainable. Tutors have a responsibility to provide support to the base group during conflicts, and considering that conflicts may appear because of unclear course objectives, tutors must render the course conditions understandable.

4.1 | Strengths and limitations

This study has both strengths and limitations. One strength is that the setting and the different stages of the research process, namely, data collection and analysis, were clearly described so readers could follow the process, enhancing the credibility and transferability of this study. Quotations directly lifted from the interviews were included in the results section to illustrate that each of the categories originated from the student's perspective, thus creating transparency in the content analysis. A consideration to be made when reading the results of this study is that the sample involved a small number of students 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 | CONCLUSION

The findings of this study highlight the importance of nursing students' understanding of the required level of knowledge depth, tutors' engagement and student base group interactions as essential components of PBL. These components could either facilitate or impede students' achievement of desired learning outcomes in nursing education. Our findings call for a balance in the above-mentioned components; for instance, a tutor needs to be supportive and analytical to distinguish the different needs of a

base group and at the same time be aware of the group process in order to know when to be an active or passive tutor. Further, the findings illustrate the need for balance both in terms of the base group composition, wherein students' previous experiences must be considered, and a need of students to be active during base group work, regardless of whether they are talkative or reserved. Thus, a shared responsibility is needed to ensure everyone's voice is heard. In order for students to strike a balance in their self-directed learning, a constructive alignment in the course design must be established amongst the learning objectives, learning activities and examinations. A proper introduction of and continuous education on PBL as a pedagogical method directed towards both students and tutors are warranted in order to strive towards sustainability in PBL-based nursing education.

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Ethical considerations

This study was conducted in accordance with the ethical guidelines in the Declaration of Helsinki. Ethical advisory was received from the Ethical Advisory Board in South-East Sweden (No: 549–2019).

CONFLICT OF INTERESTS

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

JS, AA, EKA and MH designed the study. JS, AA and EKA collected the data. JS and AA took the lead in the data analysis and EKA and MH acted as co-analysers. EKA and MH supervised the study. JS, AA, EKA and MH wrote the manuscript.

DATA AVAILABILITY STATEMENT

The data sets generated during and/or analysed during the current study are not publicly available due to promised confidentiality of the participants.

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