Nursing students' perceptions of factors influencing their learning environment in a clinical skills laboratory: A qualitative study

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A R T I C L E   I N F O

Article history:
Accepted 17 March 2015

Keywords:
Nursing Education Clinical skills Learning environment Student perceptions

S U M M A R Y

Background: The mastery of clinical skills learning is required to become a trained nurse. Due to limited opportunities for clinical skills training in clinical practice, undergraduate training at clinical skills laboratories (CSLs) is an essential part of nursing education. In a sociocultural learning perspective learning is situated in an environment. Growing student cohorts, rapid introduction of technology-based teaching methods and a shift from a teaching- to a learning-centered education all influence the environment of the students. These changes also affect CSLs and therefore compel nursing faculties to adapt to the changing learning environment.

Objectives: This study aimed to explore students' perceptions of their learning environment in a clinical skills laboratory, and to increase the knowledge base for improving CSL learning conditions identifying the most important environmental factors according to the students.

Design: An exploratory qualitative methodology was used.

Participants: Nineteen second-year students enrolled in an undergraduate nursing program in Norway participated in the study. They took the same clinical skills course. Eight were part-time students (group A) and 11 were full-time students (group B).

Methods: Focus group interviews and content analysis were conducted to capture the students' perception of the CSL learning environment.

Results: The study documents students' experience of the physical (facilities, material equipment, learning tools, standard procedures), psychosocial (expectations, feedback, relations) and organizational (faculty resources, course structure) factors that affect the CSL learning environment.

Conclusion: Creating an authentic environment, facilitating motivation, and providing resources for multiple methods and repetitions within clinical skills training are all important for improving CSL learning environments from the student perspective.

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Introduction

Clinical skills are difficult for students to acquire since they do not exist independently, but are rather composed of components from the psychomotor, cognitive and affective learning domains (Ross, 2012). Skills acquisition is therefore a complex process in which the students have to incorporate practical performance with knowledge and critical thinking. In addition to practice in hospitals and in home care facilities, one of the most common places for nursing students to learn clinical skills is in the clinical skills laboratory (CSL) (Houghton et al., 2012). CSLs are located at nursing schools and the literature documents that both students and teachers find them useful and important for the development of clinical skills (Freeth and Fry, 2005; Houghton et al., 2012; Moule et al., 2008; Wellard and Heggen, 2010). While Benner et al. (2010) argue that different educational strategies and repetitions are needed to accomplish learning within psychomotor skills acquisition, Johansson (2012), points out that since learning is always situational, where the learning takes place is just as important as how. From a sociocultural learning perspective, the CSL environment is therefore vital since it constitutes the context in which learning occurs. Growing student cohorts (Lin, 2013), rapid introduction of technology-based teaching methods and a shift from a teaching- to a learning-centered education (Breymier, 2012) have transformed nursing education (West et al., 2012). These changes that affect CSLs have compelled nursing faculties to adapt to the changing learning environment.

Educational theories now center education on student learning instead of teaching, placing students in a key position within the educational system (Katinka et al., 1998; West et al., 2012). With this increased focus on the importance of student involvement, the expectation of including students' perceptions in evaluating educational programs also arises. Despite the argument that students themselves know best how to learn, we argue that including students' experiences and...
perceptions about educational programs will complement the knowledge base used to improve educational programs (Papathanasiou et al., 2013).

More specifically, nursing faculties should pay attention to the environment in which the learning takes place (Johansson, 2012; Säljö, 2001), and include students’ perceptions of their learning environment. The environment in the CSL is designed to simulate the real clinical learning environment and is as such defined similarly as a practicum environment where students apply theory to practice, acquire critical thinking skills, participate in clinical decision-making, and practice psychomotor and affective skills (Stokes and Kost, 2009, p. 283). Within the nursing literature, numerous studies have explored students’ perceptions of learning environments during clinical placements (Bjørk et al., 2014) while less focus is on the learning environment of the CSL. Existing studies often target students’ perceptions of influencing factors such as positive attitude, time, affiliation to the ward and personalization of learning experiences (Henderson et al., 2011; Loo Chuan and Barnett, 2012; Papathanasiou et al., 2013). Several studies of simulation-based learning discuss learning environment and themes such as fidelity, authenticity and bridging-the-gap (e.g. Bland et al., 2014; Dieckmann et al., 2012; Rettedal, 2009). In addition the literature contains studies of the importance of relationships between students and teachers and the qualities of a good teacher (Heydari et al., 2013; Raaheim, 2013; Robb, 2012; Yung et al., 2013). However, there are few studies focusing on the environment of the CSL as a research topic in itself (Freeth and Fry, 2005; Khan et al., 2011) and of students’ perceptions of the learning environment in such settings. The aim of the study is therefore to explore the students’ perceptions of their learning environment in the CSL. The rationale for this aim is to expand the knowledge base for improving CSL learning conditions and to identify what students consider the most important environmental factors.

### CSL Environment

The study context is a Norwegian CSL environment used for conducting a clinical skills course for second-year students in Bachelor of Science in Nursing. The learning objective for the course is the mastery of 13 clinical skills (see Table 1). All the skills must be done in regard to safe practice, hygiene, practical performance and utilization of available resources in order to pass the course. In addition each skill has its own specific learning objectives designed to strengthen the students’ ability to deliver comprehensive care by applying critical thinking, reasoning and decision-making skills in a non-threatening environment. The Norwegian government provides a framework of competencies that guides the schools in skills selection.

The CSL is designed to resemble a hospital ward to optimize the simulation of clinical learning situations. Besides the ordinary interior and layout of patient rooms, toilets, medical supply room, etc. an auditorium in the CSL seats up to 50 students for demonstration and reflection. The CSL is equipped with all necessary reusable and stationary medical equipment. Single supplies such as nasal cannulas, wound dressings, and syringes are handed out to each student in a free equipment kit at the beginning of the course. If medical supplies are lost or broken, a few replacements are available upon request. Every training room also has a computer. All nursing students must meet uniform requirements at all times when in the CSL. Students are encouraged to practice on peer students when advisable; for other procedures, basic mannequins are provided.

During the course, the students have 9 three-hour supervised training sessions. Every session revolves around one or two case studies concerning specific skills and consists of a three-step routine: the teacher demonstrates the procedure, the student practices the procedure, and reflection after performance. Throughout the course, and in preparation for each session, the students are encouraged to use all the available didactic tools: multiple-choice tests, instructional videos, assigned reading and an internet-based discussion forum. Besides the scheduled sessions, the students can book the CSL for unsupervised training every day of the week. At the end of each course the students take a practical–oral exam where they are tested in any one of the 13 skills by two of the faculty teachers.

### Methodology

#### Design

An exploratory qualitative methodology using focus group interviews and content analysis was used to establish a knowledge base for understanding the CSL learning environment from a student perspective.

#### Settings and Participants

The interviews were conducted in January 2014 in a meeting room in the campus of a Norwegian nursing school between six and nine weeks after the end of the course. All students were recruited through purposeful sampling in collaboration with the lecturers at the nursing school, using an open invitation in class in which the first author was present. The participants were all second-year nursing students who had completed the same clinical skills training course in the same Bachelor of Science in Nursing program. All students wanting to participate were encouraged to approach the first author after class. Sixteen females and three males volunteered. Eight of the females were part-time students enrolled in the long-distance bachelor program and had a mean age of 41 (group A). The remaining eleven students, three males and eight females, were full-time, on-campus students with a mean age of 24 (group B). The full- and part-time students were divided into two groups. This was done to ensure that the participants would be comfortable discussing the topic with each other and that their different, shared experiences with the CSL would generate meaningful discussions (Morgan, 1997). The split was also based on the hypothesis that their difference in study program (long-distance vs. on-campus), age and gender compositions would yield different student perceptions that could provide a range of descriptions or influencing factors of the CSL learning environment (Krueger and Casey, 2009). The participants had previously met the first author at an introduction session. None of the students dropped out of the study.

#### Ethical Consideration

The students received both written information and oral information on the background and aim of the study, including information about the right to withdraw from the study at any point. Written informed consent was collected prior to the data collection. Approval of the study was obtained from the Norwegian Social Science Data Services (reference number 36260) and from the head of the nursing school.
Data Collection

Each focus group interview lasted for 60–80 min. Both groups followed the same interview guide. Interviews were moderated by the first author and assisted by the third author. The interviews commenced with general questions to the students about their training and what they did in the CSL. After the students were comfortable with the interviewers, questions gradually turned to the theme of the study (Krueger and Casey, 2009). Questions pertained to issues that the students enjoyed or found difficult in the CSL environment, their needs, and how training could be improved. Interaction among the students was encouraged with the moderator asking prompting and clarifying questions. Interviews were audio recorded while both the moderator and assistant moderator wrote field notes to complement the audio tape. A third focus group was found to be unnecessary as there was a natural saturation in the data material after the first two group interviews (Denzin and Lincoln, 2011).

Data Analysis

The interviews were transcribed by the first author one or two days after the interviews. The transcripts were then analyzed and coded by the first author using qualitative content analysis in order to structure the collected data (Graneheim and Lundman, 2004). In the first step the interviews were read as openly as possible, trying to get an impression of both the parts and the whole. In the second step, after reducing the number of words while preserving the content, the meaning units were shortened and coded. This step compared the units and sorted the text into themes (Graneheim and Lundman, 2004). In step three the themes were sorted into subthemes. As the authors reviewed and discussed the themes, it became clear that several themes overlapped so some of the themes and subthemes were merged at a more abstract level. Step four consisted of the creation of three main themes and nine subthemes.

To establish trustworthiness throughout the study (Denzin and Lincoln, 2011; Graneheim and Lundman, 2004), the first and third authors conducted the interviews, while the second author formulated critical questions to expand understanding of the data. Different interpretations in the analysis steps were repeatedly discussed and reinterpreted. When presenting the findings, each theme and subtheme from analysis are described as factors and sub-factors.

Findings

Although some differences in students’ perceptions between groups A (mean age: 41) and B (mean age: 24) were found, there was a general agreement both within and between the two groups. The main differences pertained to group dynamics. Group A members were talkative and interruptive and had a personal tone; group B members had a more formal tone, waited politely for their turn to speak and gave the impression of less familiarity among the group members. Overall the factors that students mentioned as most important for their learning environment in the CSL did not differ between the two student groups and were grouped as physical environment, psychosocial environment and organizational environment. A description of each is presented below. The framework of the main factors with their respective sub-factors is presented in Fig. 1.

Physical Environment

The sub-factors of the physical environment are material equipment, facilities, learning tools and standardized procedures. The students’ most pressing issue was to be able to access the material equipment that they needed in order to practice their clinical skills. Lack of equipment, the need to reuse equipment and unfamiliar, old and outdated equipment forced them to improvise, resulting in a false and inadequate training situation: ‘it’s like you are not able to learn it correctly, because you become so unsure when things are not available or you miss that and you miss that’ (B5).

Even when the CSL provided the facilities that the students needed to practice their skills, some of them were unable to use the lab: ‘I have also experienced that we have booked the lab, and when we get there it’s occupied’ (B4). At the same time, the facilities were so valuable to them that students were thankful that the lab was open beyond ordinary school hours: ‘Saturdays and Sundays we’ll be here until 5 pm or 9 pm, to be as effective as we can while we are here. There have been many late nights’ (A1). During training, the students appreciated easy access to learning tools such as multiple-choice tests or videotapes and guidelines, while others preferred discussion with fellow students and teachers.

The majority of students described discrepancies in how to perform some procedures: ‘It’s not exactly coherence between the reality of what goes on in the nursing lab, and what goes on when I work at the hospital’ (B1). These discrepancies made it difficult for them: ‘right now I have so many ways of doing it [the skill]’ (A7). Their lack of confidence and knowledge made it difficult for students to assess which practices were the best and they therefore called for standard best practice procedures: ‘Then you got a procedure that was “the right one”, this is how you do it, this is the recipe!’ (A6).

Psychosocial Environment

The psychosocial environment consists of the psychological and social factors that could affect satisfaction, health and ability to perform within the CSL, as stated by UNESCO (2014). Expectations, feedback and student–faculty relations were characteristic.

The majority of students pointed out the difficulty of understanding what was expected of them: ‘last year I had no clue what was expected from me, and I came to the exam believing I knew, but I had no idea what the examiners expected’ (B7). Another student explained: ‘For instance, I had no idea that so much knowledge on anatomy was required’ (B8). This also proved to be a problem when it came to interpreting the case studies that were given as assignments. The students were often frustrated: ‘what do they mean? What do they think? How do you interpret it?’ (B1). They believed that some of their frustrations could have been avoided had their instructors clearly stated their expectations and provided more thorough information during the skills training sessions.
Feedback referred to the students’ “hunger” for confirmation that they were on the “right track” in regard to both psychomotor performance and their critical thinking skills. They used multiple methods to receive this confirmation, for instance testing each other with questions from textbooks, taking online tests or emailing their questions to faculty. The most urgent issue was: ‘you need something that can give you something in return, that you receive feedback on the spot’ (A1). Some of the students complained that their lack of knowledge made it difficult for them to judge the quality of feedback given by peers, so they therefore wanted feedback from the faculty: ‘Then you know that what you learn is correct’ (B6). They also pointed out that the faculty had limited time to give them the feedback that they wanted: ‘maybe they [the teachers] could prioritize some days throughout the autumn semester where a couple of them are available for questions’ (B3).

The groups of 8–12 students in the CSL created an intimacy in the skills training that did not exist in lectures in an auditorium with 240 students. This intimacy seemed to change the relationship between students and faculty: ‘it has been really positive to experience that teachers are humans, [...] That they did not take themselves too seriously’ (B3). The students also stressed how these relations improved their learning environment in the CSL: ‘if you get like a smile and a nod and ‘come on’ and everything is ok, then it is ... It’s fun!’ (A6) or made it uncomfortable: ‘when you feel like you get attacked for asking questions. It could happen, not everyone is like that, but, then we were so unhappy when we finished’ (B5).

Organizational Environment

Organizational environment consisted of the sub-factors course structure and faculty resources. Organizational environment is here defined as the faculty’s facilitation, allocation and management of work.

The main concern with course structure was the lack of consistency among faculty members. A variety of answers in response to students’ questions led to frustration and uncertainty over what was correct. In addition, the content and delivery of the different classes varied extensively among faculty members, making the students request a common approach: ‘the teachers should coordinate amongst themselves so they tell the same things and are updated, so different groups don’t learn different things’ (B9). ‘I often experience that the teachers says something different from the film or the PPS [Practical Procedures for Nurses] guidelines’ (B11). Some of the students perceived that the differences in the information that they were receiving gave the impression that the faculty was unprepared.

Access to faculty was difficult: ‘when people [teachers] where there [in the lab], we grabbed hold of them, because everyone is so busy, so we grab hold of everyone that comes by’ (A6). In addition many students reported that they did not receive responses from their instructors on the online discussion forum that was intended to be a resource for answers and discussions between teachers and students: ‘there are still questions that are unanswered and then you kind of give up, when they [the questions] have been there for several months’ (A5). Students also desired more time to practice: ‘we should have had more [practice], we should have practiced and practiced, so that we were able to see the entire picture in a way’ (A6). Others clearly were unhappy not hearing back from the faculty: ‘you know you get uncertain, because we are not professionals any of us, so it would be great to have a teacher present once in a while’ (A7).

Although some students accepted that the nursing school was under-resourced, several were dissatisfied: ‘often a teacher was sick, and then we were maybe 10—14 students with one teacher, I think that was a bit too much’ (B11). Students also complained about time constraints: ‘there is no time for questions because we have 20 min on that procedure and 20 min on that procedure and it is like “please do not ask any questions” because they have to show us how the procedures are done’ (A3). Some students reported that faculty members cut the training sessions short: ‘many of the teachers are in a hurry, ‘are you done soon?’ and then we leave after a short time, and we have only used one and a half hour when we could have been there for three’ (B4). Many students believed that they would have done better if they had had more time: ‘the days when we have been there for the entire time frame we have learned much more, because then we have discussed and there has been time for questions’ (B9).

Fig. 1 shows a framework for clinical skills learning environment and the influencing factors. The framework can be used for future CSL improvement efforts.

Discussion

In this paper, we have studied undergraduate students’ perceptions of their learning environment in a clinical skills laboratory (CSL). We have identified the physical, psychosocial, and organizational factors of importance for their learning environment. The results from group A and group B showed consensus both within and across the two study groups, despite the expectation that group composition and dynamics would yield differences in their members’ perceptions of the CSL environment (Krueger and Casey, 2009). Although the reasons for the consensus are unclear, it might indicate that students’ perceptions of being a student are perceived uniformly, smoothing out the differences in age and study program. At the same time, we cannot rule out the possibility that the familiarity among the students in group A created invisible boundaries that prevented certain subjects or collective tacit knowledge from being raised (Morgan, 1997). To prevent this, the researchers made efforts to allow time for all students in the group to present their views. In the following, we will discuss three major issues that cut across several of the identified factors and that are vital components of a CSL learning environment.

Authenticity

Authenticity seems to be especially important to the students, who valued the ability to train in surroundings that resembled the environment of their future workplace. Not being able to train in such surroundings often led to frustration and diminished satisfaction among the students. Wellard et al. (2009) echo these findings, pointing out that students and staff emphasize the importance of creating an environment that resembles the practical nursing setting. According to Johnson (2009), the reason that students need authenticity might be the need to create an environment in which students perceive the realism of the situation and understand its relevance for clinical practice.

The students clearly stated that they felt uncertain in the CSL when equipment was old, reused or unavailable. Rettedal (2009) argues that the professional nurse is aided in a simulation training setting by mental images that he or she has gained through real-life practice. Since the nursing students are undergraduates with minimal practical experience, lack of such mental images could explain why they find it difficult to improvise in a simulated setting. Their need for circumstantial factors that mimic a real environment and up-weight their lack of mental images would explain the necessity of authenticity as a vital component of their learning environment. On the one hand, authentic facilities and equipment should therefore be integrated into realistic training settings. On the other hand, Wellard et al. (2009) note that there is little empirical support for the relationship between CSL training and nurses’ preparedness for clinical reality, indicating a need for further research.

Motivation

Training in a CSL is an important element of preparing students for the professional nursing practice, according to Wellard and Heggen (2010). It is often the students’ first experience with hands-on clinical practice. This novelty might explain the fact that students enjoy CSL training, as supported by Freeth and Fry (2005), Deci and Ryan (1985)
use the term intrinsic motivation to describe activities that give a positive experience to the performer and that are beneficial for learning. Situations characterized by intrinsic motivation are performed for the fun, challenge or positive experience that they entail, rather than the instrumental benefits to the student. The positive experience that the students expressed could imply that they have a natural motivation to train and work in the CSL. However, most activities are extrinsically motivated, according to Ryan and Deci (2000). Performance in the CSL is therefore not solely motivated by the joy of training but also externally motivated by the fear of failing the exam or the reward for passing it.

Motivation to learn is an important factor for learning outcome (Deci and Ryan, 2004), and is therefore an essential component to address in educational settings. Intrinsic motivation can be facilitated through communication, relations and feedback from others in the learning environment, according to Ryan and Deci (2000). Feedback is pivotal because it encourages students to improve by changing their future actions (Giles et al., 2014). Relations are important because of their influence on intrinsic motivation through positive relational enforcement in student groups (Ryan and Deci, 2000). In order to increase students’ motivation, faculty should value support, respect, and care about their students while giving them the challenges and expectations that they need (Raahel, 2013). These values were confirmed by the students in this study.

Acknowledgments

The authors would like to express their gratitude to all students who participated in the interviews and the nursing school faculty for their collaboration. The study was financed by university funds.

References


