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## ORIGINAL PRACTICE DEVELOPMENT AND RESEARCH

### Nursing students' longitudinal learning outcomes after participation in a research project in a hospital

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***The authors' position is one that comes from outside what might be considered as the usual practice development perspective and readers should bear this in mind as they read and critique the paper***

#### Abstract

**Background:** Policy documents challenge educational institutions to involve students in research so they learn more about practice development attitudes and skills. There is limited research on longitudinal learning outcomes of undergraduate nursing students who take part in research.

**Aim:** To gain insight into the long-term outcomes for third-year student nurses after active participation in research during their second year, and what influenced such learning.

**Settings:** All 52 nursing students who had taken part in a research study in a hospital setting were invited to share their thoughts and comments about their learning outcomes after a year.

**Methods:** A total of 30 pages of comments from 36 students were analysed using qualitative content analysis.

**Findings:** The theme of this study was 'Reflection as a guide to quality in nursing'. Four categories described students' learning outcomes: increased awareness and attentiveness in practice; being constructively critical to their own and others' clinical practice; increased contextual awareness; and becoming a novice researcher.

**Conclusions:** Supervised active participation in a research project increased student awareness and attentiveness to the subject of study. They found themselves being more constructively critical of their own and other nurses' practice related to the subject matter, as well as more aware of contextual influences. Participation supported and enthused them to become more familiar with research.

**Implications for practice:**

- A successful research study in clinical practice, involving nursing students, requires faculty and nurse leaders to plan the study carefully and inform all relevant parties
- Offering undergraduate nursing students opportunities to gain an in-depth understanding of the phenomena they are studying helps to engage them in clinical research
- Allowing students to be part of the full circle of research – planning, data collection, analysing findings and writing up a report – provides them with tools for continued reflection in and on practice and therefore to engage in practice development

**Keywords:** Nursing students, pre-registration nursing education, research, active learning, clinical practice nursing research, practice development

## **Background**

There is an increasing focus in many countries on research and development in healthcare and an increasing demand that nursing students be involved in research so as to nurture a culture of research-mindedness as part of undergraduate nursing training (Green et al., 2017). According to the US National Advisory Council of Nurse Education and Practice (2008), healthcare is becoming more complex, demanding increased scientific competencies in nurses. Nursing education must build the capacity for critical thinking to enhance students' skills in the areas of analytic thinking, problem solving and clinical reasoning. Such skills provide further professional development, facilitate understanding of more complex patient situations and prepare nurses for a broader scope of practice. In Norway, the Ministry of Education (2008), the Norwegian Association of Higher Education Institutions (2015) and the Norwegian Nurses Organisation (2017) have all emphasised the importance of student involvement in research and development projects throughout the education process, to enhance their competencies and prepare them for continued learning in the workplace. In nursing, such learning can also be seen as a part of practice development, where students learn to reflect on factors that contribute to person-centred care and services that are safe and effective (Canterbury Christ Church University, 2019). Transforming care and services to become more person-centred must involve students, since developing such competencies starts in undergraduate nursing education.

This article discusses the longitudinal learning outcomes that nursing students reported in the third year of their bachelor of science in nursing degree, after participating in a research project into oral handover at various hospital units (Giske et al., 2018) during their second year. McCormack et al. (2013) present nine core principles to guide practice development activities, three of which were actively used in the project that forms the background for the study reported in this article. In collaboration with leaders and nurses from the relevant units (micro level), the content of the project, roles of the students and nurses and ethical processes were discussed and agreed. All those involved shared a common interest in developing knowledge about the factors that promote and inhibit the flow of information related to patient safety and quality of care – in other words in advancing knowledge about developing cultures of person-centred care.

Four cohorts of students participated in the research project – groups of 12 and 15 in 2014, and of 13 and 12 in 2015. Students were invited to volunteer for this project, which lasted three weeks for each cohort. In the first week, students received instruction and training in the research process and observation as a method. In week two, they conducted participatory observation at different units in a hospital. Before this began, representatives from each hospital unit, together with the second author (TG), discussed and decided which patient each student should follow and observe over three days. The students' focus was primarily on nursing care for their allocated patient but they also followed the flow of information throughout their shifts and during oral handovers between shifts. In the third week, the students conducted qualitative content analysis (Graneheim and Lundman, 2004) by coding their written field notes from their week-two observations. This was done under supervision of the authors (KAE, TG). Students developed categories and wrote up their findings in a report as a group. For months after their research experience, students regularly told the authors how much they had learned from taking part in the observational study and how they continued to reflect on oral handovers. Therefore, the authors wanted to investigate more systematically their longitudinal learning outcomes from the research project. It is these outcomes that are covered in this article.

## **Literature review**

A total of 10 studies were found that report nursing students' involvement in research during their undergraduate education. They recruited students in different ways. For one study, students volunteered to become research assistants (Davies et al., 2002). In another longitudinal study, undergraduates took part in data collection and analysis, as a part of their clinical practice (Niven, 2013). Two studies reported student involvement in using the Quality and Safety Education for Nursing Project (QSEN) as a framework to develop clinical improvement projects (Kane et al., 2015; Monsivais and Robinson, 2015). Another reported baccalaureate nursing students' involvement in a specially designed research

internship programme where they worked alongside a researcher in the field (O'Brian and Hathaway, 2018). In four further studies, nursing students took part in research projects as a part of learning about research methods: Kessler and Alverson (2014) invited a few students who exhibited strength and leadership skills during their second year to join their research team in their third year; Naylor et al. (2014) placed groups of six students in teams with research nurses to observe and take part in clinical trials at two hospital trusts in the UK NHS. In the third of the four, 15-20 undergraduate mental health students attended an optional module to develop clinical research (Green et al., 2017); in the last, a larger group of 126 students participated in data collection in their third year (Hench et al., 2014).

Most of the studies reviewed reported on the learning outcomes of participating in research during nursing education. Only three covered the learning outcomes related to the topics of the research projects. Davies et al. (2002) reported that students learned about mental health service users' views on the treatment they received. In Niven et al. (2013), students shared that the research experience taught them about the independent nature and lifestyle of the older population they studied, and Hench et al. (2014) reported that their students learned about inpatients' concerns and stress when admitted to the hospital.

According to Hench et al. (2014), students gave a positive evaluation of participating in data collection as part of learning about research methods. However, students highlighted the importance of being well prepared for involvement in the research. Some reported a deep level of learning, suggesting their active participation had brought a comprehensive, meaningful and long-lasting learning. To determine whether experiential learning improves deep learning, Hench et al. called for more studies where students gain comprehensive experience with research, take part in reflective observations and develop abstract concepts. In Kessler and Alverson (2014), the few selected students worked with a research team to review literature, develop research questions, gather and analyse data and implement interventions. They reported feeling pride at being part of the nursing profession and that the research experience had empowered them to become more confident, independent and better prepared for research. Students who used QSEN as a framework for more patient-centred care teamwork, collaboration, evidence-based practice, and improvements in quality and safety thought QSEN useful for teachers and supervisors to develop students as researchers (Monsivais and Robinson, 2015). Kane et al. (2015) also used the QSEN framework to develop clinical improvement projects and the students involved reported having learned to reason and use critical thinking, alongside the six QSEN skills. The students who worked with research nurses (Naylor et al., 2014) stressed the value of good preparation before the research placement in order to maximise the learning possibilities. They gained insight into the role of the research nurse and the whole research process, acquiring knowledge to use in future research. Davies et al. (2002) also reported that students learned about the research process, data collection and analysis as part of their clinical practice, alongside interviewing skills and ethical considerations. Niven et al. (2014) said students gained insight into research theory and methodology from their hands-on experience. More recent studies have concluded that participation in practice-related research can enhance undergraduate students' interest in lifelong learning and stimulate new strategies to improve clinical practice (Rosedale et al., 2016) and provide meaningful hands-on skills that generate interest in a researcher career (O'Brian and Hathaway, 2018).

This international review shows that student participation in research can be a successful strategy for learning, as it increases interest, knowledge and understanding. Students also are more likely to pursue academic education and recognise the importance of participating in and applying clinical research and evidence-based practice. To the best of the authors' knowledge, though, no research has described how participation in research projects has helped to raise student awareness over time, in relation to either the learning process or the research topics.

The main question for this study was: what longitudinal learning outcomes did supervised active participation in a research project during their second year produce for third-year bachelor of nursing students?

## Aims

The study aimed to gain insight into the longitudinal learning outcomes of third-year student nurses' active participation in research during their second year, and what factors influenced such outcomes.

## Method

### Design

As the aim of the study was to gain insight into students' learning outcomes and our material was students' open comments, a qualitative design with qualitative content analysis was chosen (Graneheim and Lundman, 2004). Qualitative content analysis is used to interpret data, in this case written text, to develop concepts that are contextual and value bound. The trustworthiness of the findings rests on the credibility, dependability and transferability of the study (Graneheim and Lundmann, 2004). Credibility was sought by motivating as many students as possible to participate in the study to ensure that our data covered a wide range of experiences. This study also aimed to establish credibility by developing concepts that have a good fit with data. The same questions were used for all four cohorts to minimise inconsistency in the data and thereby promote dependability. To increase transferability, details have been provided about the background and context of the study together with information on the participants and on the data analysis.

### Participants and data collection

Towards the end of their third year, all the students (n=52) who had participated in the observational study during their second year were invited to share thoughts and comments about their learning outcomes. The authors discussed how to capture the students' learning processes and developed six specific questions, with a seventh, more open, invitation to share their comments, see Table 1. To keep the answers anonymous, no background information was sought from the students. All 52 received the questionnaire on paper and 36 (70%) filled it in by hand and returned it in a sealed envelope. The comments provided 30 pages of text to analyse.

Table 1: Questions for 36 students regarding learning outcomes from a research project

	Question	No. of students providing comments
Q 1	How did the observational study affect your awareness of oral handovers?	30
Q 2	To what extent did the project contribute to your understanding of the importance of oral handovers on nursing quality?	31
Q 3	To what extent did the project affect your reflection on oral handover in clinical studies after you participated in the project, both in the second and third year, and possibly in the job you have outside the university?	27
Q 4	To what extent did the project help you do develop a critical eye of the nursing profession?	36
Q 5	To what extent did the work process (weeks one, two and three) in the project contribute to your understanding of qualitative research methodology?	22
Q 6	To what extent did the work process (weeks one, two and three) in the project increase your skills when writing your bachelor's thesis?	27
Q 7	Any other comments related to the project	16

### **Data analysis**

The participants' comments were typed into a document and analysed using qualitative content analysis (Graneheim and Lundman, 2004). Both authors read the comments individually and coded them manually, then met to share codes and discuss which ones belonged together. Through discussions and by condensing the material, five initial categories were developed. The material was re-read to ensure that all the nuances in the data were covered when we presented our categories. In this process, two of the categories were merged. When the four categories were finalised, discussions and search continued about the main theme/latent meaning of this study. Different ways of expressing the theme were tried to make sure it covered the data.

### **Ethics**

All 52 students who had taken part in the observational study a year earlier received information both orally and in writing about the study, and were told participation was voluntary. As the group was small, no background information about the respondents was sought to keep the answers anonymous. Since it was not known which students had responded, all were contacted once in writing after the deadline for returning their written answers, to achieve the highest participation possible. Since no personal information was sought, ethical approval from the Norwegian Data Protection Office was not needed. The return of the questionnaire was considered to indicate informed consent.

### **Findings**

This study aimed to gain insight into the longitudinal learning outcomes of third-year student nurse active participation in research during their second year, and what influenced their learning. The results showed that the main theme of the study was 'Reflection as a guide to quality in nursing', which covered four categories:

1. Increased awareness and attentiveness in practice
2. Being constructively critical to one's own and others clinical practice
3. Increased contextual awareness
4. Becoming a novice researcher

In the extracts used below, the participants have been given numbers to illustrate that quotes from a wide range of them have been used.

#### ***Increased awareness and attentiveness in practice***

Many participants used the words 'awareness' and 'attention' to describe how the observational study influenced their perception of oral handovers. The participants became more aware and attentive to the components of oral handovers, which had significance for their subsequent learning. They became aware of strengths and weaknesses in report situations and what improved the quality of nursing care. Several participants discovered that it was important to remain calm during oral handovers and that it was also important for the reporting nurse to speak clearly to the incoming team taking over patient responsibility:

*'I have become more observant of conditions related to the oral handover, what hinders the information from coming out clearly; the gaze, how the reporting nurse sits in the group and the use of voice' (Participant 6).*

Another participant described how the project was still in her mind when she participated in oral handovers during shifts:

*'Every time I listen to an oral handover, I think of the same elements in the project... In addition, I have become more aware of myself, how I receive the report, how I listen and show that I'm listening, and I do not interrupt unless something is unclear' (Participant 29).*

### ***Being constructively critical to one's own and others' clinical practice***

During the project, the participants discovered the importance of providing good oral handovers to ensure nursing quality. The observational research study had provided the participants with tools to recognise the key components of good and bad handovers, and they continued to reflect on these discoveries in their third-year clinical placement and work outside their studies. Most of the participants' comments conveyed that they had become constructively critical of how oral handovers were conducted and that they reflected more on how they should be performed by themselves and others to ensure quality in nursing care. One participant stated:

*'I have become more critical after the observational study; I now ask for a better handover if I feel the report I receive is inadequate'* (Participant 13).

A good structure was seen as important for handover quality – an unstructured or inadequate handover could result in the loss of valuable information that could impact patient care:

*'The better the oral handover, the better the nursing care. A messy handover makes it hard to catch what is of importance for quality'* (Participant 29).

Another participant expressed:

*'Oral handovers provide opportunities that the written report does not provide, such as checking out, asking questions and influencing'* (Participant 4).

The participants had discovered the importance of dialogue in oral handovers, participation in professional discussions and receiving explanations from more experienced nurses. They also saw how asking questions might contribute to their ability to provide patients with holistic nursing care. The project also had broadened their perspective, and they had taken this experience into later clinical placements when reflecting on what was good and what should be changed. As one participant said:

*'I will bring this with me into future clinical placements... to other aspects of nursing... but also as a qualified nurse'* (Participant 21).

However, some participants were unsure whether they had become more constructively critical at all of oral handovers. One expressed uncertainty as to whether the project had contributed to critical thinking, and another that it was difficult to answer this question.

### ***Increased contextual awareness***

The participants confirmed that they had continued to reflect on how the culture and tone during the oral handover might affect the staff's attitudes throughout their shift. They also expressed that, on reflection, they became more aware of their own actions when giving reports. One participant, who had learned from her experiences during the project, described how she continued to reflect as she wished to be more professional in new handover situations:

*'I think a lot about being professional, both in presentations and in my choice of words, to provide a careful impression of the patient to the incoming team. I try to focus on what is important for the next shift'* (Participant 26).

Another observed that it was important to be aware of how other nurses' delivery of oral handovers could communicate their attitudes about a patient:

*'It is important not to adopt other nurses' opinions'* (Participant 32).

The participants continued to reflect on who they endeavoured to become as nurses and what they aimed to convey during oral handovers. They found it increasingly important to be constructively critical of the ethical aspects of oral handovers and how they might affect the incoming team. One participant was concerned about ongoing oral reporting during a shift and another, revealing an awareness of privacy policy and patient protection during oral handovers, said:

*'I have become more aware of where the reporting takes place. Not out in the hallway but in a place where we are not disrupted'* (Participant 27).

### ***Becoming a novice researcher***

The majority of the participants had no previous research experience. The learning outcomes of the observational study varied from becoming more aware of research methods to gaining more understanding of the research process. Many said that being involved and trying out observation in real clinical situations provided them with insight into the research method and what it meant to participate in such research. They discovered that the correct processes for qualitative research could be challenging and time consuming, both in data collection and analysis.

Looking back on the research involvement, students commented that they had learned how to provide correct references and to write an academic text:

*'I have gained insight into how to use references in a text'* (Participant 1).

*'I got insight into what qualitative research means, how to organise a report and what is of importance to communicate to the reader'* (Participant 15).

*'I learned about how to write an academic text, which is relevant for the writing of my bachelor thesis'* (Participant 5).

### ***Limitations***

The students reported on in this article had only actively participated in a single research study, with participant observation as the method of data collection. If different methods to collect data had been used, this study's findings may have differed. It would have strengthened the research if there had been a higher percentage of responses to the questionnaire and if the data had been supported by individual or focus group interviews. To involve undergraduate students in research takes a lot of planning and effort and so naturally, the cohorts are not very big. However, the comments on the questionnaires were quite unambiguous, which can be considered a strength of the study.

### ***Discussion***

#### ***Student learning outcomes after participation in the research project***

After participation in the research project during their second year, the students continued to reflect on what worked well and what could be improved in their clinical studies and work experiences in their third year. One of the main learning outcomes was reflecting on factors that contribute to safe and effective patient care, a key element in practice development (McCormack et al., 2013). Dewey (1960) describe the importance of reflexive thinking as both conscious awareness and a more relaxed focus over time. Data from participants a year after taking part in the research study show that the intervening time, which Dewey (1960, p 284) calls the 'incubation period', can allow facts and principles to be reorganised and integrated, allowing them to fall into place. According to Schön (1983), deviations and errors can be corrected by reflection, which is important for future actions in diverse situations. In other words, reflection contributes to learning. It does not have to happen immediately but can take place over a period of time, from seconds to months, where actions still can make a difference to a situation. Such reflection-on-action can be seen as the core of practice, according to Schön (1983).

This study's findings show that the participants continued to reflect during and after action, on factors important for good quality in patient care. Thus, they made connections between their observations, their own attitudes and their theoretical knowledge, which created new insights. The participants became aware of and reflected critically on factors that affected oral handovers. They continued to learn in and from practice and were constructively critical of themselves, other nurses and the system, which is in accordance with two of the principles of practice development (McCormack et al., 2013). According to Skår (2010), participation in a diversity of working situations is essential for professional development. The learning process changes both the person learning and the environment in which it takes place. The increased reflection and critical thinking highlighted by these findings concur with the observations of Rosedale et al. on experiential learning (2016).

Through inclusion and participation in the research project, students discovered that oral handovers were a social arena where participation affected both the content of the handover and the relationship between the participants. The students stated that they developed insights into the importance of being professional in their patient presentations and gained increased awareness of how one can be influenced by other nurses' attitudes through what and how information is delivered during a handover. Others (Davies et al., 2002; Niven et al., 2013; Henoeh et al., 2014) report similar learning outcomes related to the topic of the research. Some participants commented that they had seen nurses sharing patient information in corridors with little control over who overheard it. Such experiences led to ethical reflections on the importance of patient safety, confidentiality and privacy. Davies et al. (2002) also comment on the ethical considerations students engaged in while participating in research projects. The ability to reflect critically is a key element of students' ethical formation (Norwegian Association of Higher Education Institutions, 2011) and ethical reflection is an important part of students' personal development and professional identities (Molander, 2015).

The participants in the observational study applied the lessons they learned to new and demanding situations. Some students stated that the knowledge they acquired from working with research articles and writing up the project report would help when writing their bachelor's thesis at the end of their third year of study.

### ***Research experience contributes to learning***

The research project provided the participants with tools to observe and reflect systematically on their own and on others' roles and responsibilities. By learning to switch their focus between parts and the whole (Molander, 2015) in preparation for the study, in conducting observations in the hospital and in analysing the process at the university, they became aware of the various contexts in which oral handovers are situated. The students continued to use these skills in their later clinical studies and work experiences, showing they continued to use critical thinking and clinical reasoning, which is key to continued professional development (National Advisory Council on Nurse Education and Practice, 2008). Hansen and Kahn (2016) confirm that the active learning process, when students are involved in a research project, is highly valuable.

Jarvis (1999) described three ways of reflecting: reflective planning, reflection in action and retrospective reflection. All three are important for the learning process. Reflective planning is a proactive reflection, where the person questions the upcoming situation to actively develop new knowledge, values and skills. Retrospective reflection is about what went right or wrong in a situation, leading to new understanding. Participants in this study spoke about their longitudinal learning outcomes, where they had learned to reflect about oral handover, saying they continued to reflect both in action and retrospectively. Skår (2010) and Molander (2015) report similar findings. However, the elements of motivation and uncertainty in participants' experiences seem to influence how deep their learning becomes (Henoeh et al., 2014). Jarvis (1999) distinguishes between reflective thinkers and impulsive thinkers: the former reflect on different alternatives before finding a solution, meaning they reflect both before and after action, while the impulsive thinkers act as soon as they have found a solution to a problem and do not reflect retrospectively on their actions.



Several participants in this study reported gaining more insights into the qualitative research method after the project. The authors ensured that the students, under supervision, actively participated in critical thinking and reflection through data collection, data analysis and report writing (Giske et al., 2018). The participants confirmed that this increased their learning outcomes because engaging in the qualitative research method in practice created a different understanding than reading theory. Niven et al. (2013) and Hansen and Kahn (2016) report similar findings. Skår (2010) suggests professional education must facilitate student learning so they gain insights into, and reflect on, different modes of knowledge, which can be applied later in complex clinical situations. Thus, participation in a research project, such as the observational study of oral handovers, provided students with research experience and theoretical, practical and ethical knowledge. Hansen and Kahn (2016) report that students' involvement in research projects is highly useful in nursing practice. This study's findings support the Norwegian Association of Higher Education Institutions (2015), which argues that it is important for nursing students to participate in research and development projects during their education because it facilitates their development. It also is a crucial way of acquiring new knowledge and to learn to reflect on factors that develop practice and contribute to safe and effective patient care. Research experience also prepares students for professional practice in continually changing environments.

### Conclusion

Supervised active participation in a research project can increase student awareness and attentiveness to the subject of study during later clinical practice. They become more constructively critical of their own and other nurses' practice on the subject, as well as aware of contextual influences. Finally, participation supported an increase in their enthusiasm for research.

### Implications for practice

Based on this study's findings, it is recommended that universities and clinical practice take on the responsibility of facilitating more options for undergraduate students to become involved in research as part of their academic education. A successful research study in clinical practice, involving nursing students, requires faculty and nurse leaders to plan the study carefully and inform all relevant parties. For undergraduate students, engagement in clinical research provides opportunities for in-depth understanding of the phenomena they study. Allowing students to be part of the full circle of research – planning, data collection, analysing findings and report writing – also provides them with tools for continued reflection in and on practice.

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