

Nursing students' evaluation of a new feedback and reflection tool for use in high-fidelity simulation – Formative assessment of clinical skills. A descriptive quantitative research design

Solheim, E., Plathe, H.S., Eide, H.
University College of Southeast Norway

Dette er siste forfatterversjon av artikkelen før publisering i tidsskriftet

Nurse Education in Practice 2017, 27, 114-120

Forlaget versjon er tilgjengelig [her](#)

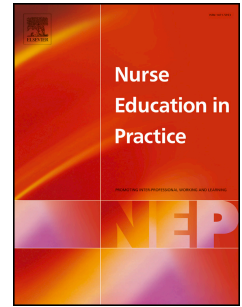
doi: [10.1016/j.nepr.2017.08.021](https://doi.org/10.1016/j.nepr.2017.08.021)

Tidsskriftets forlag, *Elsevier*, tillater at siste forfatterversjon legges i åpent publiseringsarkiv ved den institusjon forfatteren tilhører, med 12 mnd embargo

Accepted Manuscript

Nursing students' evaluation of a new feedback and reflection tool for use in high-fidelity simulation – Formative assessment of clinical skills. A descriptive quantitative research design

Elisabeth Solheim, Hilde Syvertsen Plathe, Hilde Eide



PII: S1471-5953(17)30591-7

DOI: [10.1016/j.nepr.2017.08.021](https://doi.org/10.1016/j.nepr.2017.08.021)

Reference: YNEPR 2272

To appear in: *Nurse Education in Practice*

Received Date: 15 August 2016

Revised Date: 5 August 2017

Accepted Date: 31 August 2017

Please cite this article as: Solheim, E., Plathe, H.S., Eide, H., Nursing students' evaluation of a new feedback and reflection tool for use in high-fidelity simulation – Formative assessment of clinical skills. A descriptive quantitative research design, *Nurse Education in Practice* (2017), doi: 10.1016/j.nepr.2017.08.021.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Title page information

NURSIG STUDENTS` EVALUATION OF A NEW FEEDBACK AND REFLECTION
TOOL FOR USE IN HIGH-FIDELITY SIMULATION – FORMATIVE ASSESSMENT OF
CLINICAL SKILLS.

A DESCRIPTIVE QUANTITATIVE RESEARCH DESIGN.

Elisabeth Solheim, Assistant professor

Department of Nursing and Health Sciences, Faculty of Health and Social Sciences,
University College of Southeast Norway, Drammen, Norway

PoBox 7053, N-3007 Drammen

Phone. +47 31008060

e-mail: Elisabeth.solheim@usn.no

Hilde Syvertsen *Plathe, Assistant professor (Corresponding author)

Department of Nursing and Health Sciences, Faculty of Health and Social Sciences,
University College of Southeast Norway, Drammen, Norway

PoBox 7053, N-3007 Drammen

Phone. +47 31008060

e-mail: Hilde.plathe@usn.no

Both authors are first author

*The last name

Hilde Eide, Professor, PhD

Science Centre Health and Technology, Faculty of Health and Social Sciences, University
College of Southeast Norway, Drammen, Norway

PoBox 7053, N-3007 Drammen

Phone. +47 48243096

e-mail: Hilde.eide@usn.no

WORD COUNT: 3779

Role of funding source: The study is financed by the Research Council of Norway, grant no.
226537 (PraksisVE) and University College of Southeast-Norway.

Highlights:

A feedback and reflection tool for clinical skills has been developed and evaluated
Can be used for assessing learning outcomes
Gives structure and concepts for clinical skills
Enables students to be more accurate and detailed in their feedback
Evaluated as useful for formative assessment of themselves and peers

Introduction

Graduate nurses show a lack of expertise in clinical skills (Bradshaw and Merriman, 2008, Higgins et al., 2010). There is a need for major education changes to enable nursing students to meet future healthcare challenges (Benner et al., 2009), for which the requisite specialization and expertise are constantly changing, and a person-centred perspective in nursing is expected (McCormack and McCance, 2010).

Clinical skills are complex. They involve the ability to perform an action with care based on theoretical and practical knowledge, communication skills, and ethical and moral considerations tailored to the individual patient's needs (Bjørk, 1999, Ministry of Education, 2008). This article will focus on clinical skills training in a clinical skill. The learning takes place in small groups guided by different teachers. In our education programme at University College of Southeast Norway (HSN), we saw that a common understanding of learning outcomes and clinical skills' characteristics optimizes learning. This clarification was important for both students and teachers. Nicol and MacFarlane-Dick (2009) argue that to be successful in formative assessment and promoting student learning in higher education, a robust conceptual framework and principles of good feedback practice must underpin students' clinical skills. To learn the complexities of a clinical skill, all the individual aspects of the skill need to be identified and made visible to students and teachers (Hattie, 2012).

Visible Learning

Teaching occurs when teachers see learning through students' eyes and help them become their own teachers. As a facilitator, the teacher needs to have a clear idea about the effect of their teaching. Almost all teaching interventions provide a learning effect, but a review of educational interventions show that some are more productive than others are. Factors that are expected to have the most influence on learning are students' own perception of their performance level, teacher's credibility, formative or process evaluations, class discussion, teacher clarity and feedback (Hattie, 2012). Learning occurs within the students' proximal zone of learning (Vygotskij et al., 2001). Feedback supports the students' performance at the expected level, and enhances their positive learning experience. Visible learning means an enhanced role for teachers because they become evaluators of their own teaching.

Formative assessment is the ongoing process between the teacher and the individual student in which the teacher supports the student in helping them assess where they are in the learning process (Hattie, 2012). Through working with self-assessment, the participants gain insight into their own learning needs (Hattie and Timperley, 2007).

Effective feedback must answer three questions for either students or teacher (Hattie and Timperley, 2007). The first question is "Where am I going?". This involves clarifying what is the goal of learning, including coping criteria and objectives. The second aspect is "How am I going?". This involves formative feedback related to start and end points focusing on mastery criteria. The third aspect is "Where to next?". This is feed-forward feedback for the next step in learning.

Tools for Learning and Assessing Clinical Skills

A number of assessment tools are used in medicine and nursing education for evaluating

procedures (Bjørk, 1999, Kneebone et al., 2008, Harder, 2010, McKinley et al., 2008, Hegland et al., 2017). In our background research, we found that none of these tools covered the complexity of theoretical and practical knowledge, communication skills, and ethical and moral considerations in holistic and person-centred care for clinical skills training during the first year of the nursing bachelor programme. Therefore, we saw the need to develop a new feedback and reflection tool for formative assessment of clinical skills.

The two aims of the study were: 1. To develop a tool for formative assessment with structured concepts for excellent practice of clinical skills to enhance students' learning process. 2. To evaluate use of the formative assessment tool during clinical skills training using high-fidelity simulation (HFS).

Method

Study Design

The study used a descriptive quantitative research design. Students evaluated the usefulness of the new Competence-development of Practical Procedures (COPP), a formative assessment tool to help them develop their practical holistic competence and person-centred care skills. The COPP tool was introduced to students during high-fidelity simulation.

Development of the instrument – COPP as a reflection and feedback tool

COPP was developed as a generic assessment tool for feedback and reflection, which is applicable to many clinical skills. It is intended to help students in their formative assessment and reflection on themselves and their peers before, during, and after learning clinical skills. In COPP goals and learning outcomes for clinical skills are specified.

COPP is divided into three parts (Appendix 1). The first part shows the expected competence for the performance of practical skills based on updated guidelines for healthcare

workers (CappelenDamm, 2017, GyldendalAcademic, 2017) and is divided into three main areas with subcategories related to updated guidelines: 1) Preparation and planning; 2) Performance; and 3) Supplementary work. The first part “Preparation and planning”, is inspired by the model of practical skill performance (PSP) (Bjørk, 1999, Bjørk et al., 2013), which was developed as a formative assessment model for facilitation and learning in practice. This model specifies six categories of competence for practical skills: 1) Substance, referring to the inclusion of relevant content in the form of movement steps; 2) Sequence, the logical order of a skill; 3) Accuracy, being accurate and precise; 4) Fluency, a customized pace and rhythm in the execution of a skill; 5) Integration of timing and co-ordination, overview and flexibility; and 6) Caring comportment, which implies aspects of communication and interpersonal relationships.

The model is viewed as highly applicable in the planning of learning situations as well as during practice, performance and formative assessment of clinical skills learning (Nielsen et al., 2013). The model also helps to highlight the complexity of mastering practical skills, helps to sequence a learning process that can support the novice student, and contributes to more nuanced feedback.

The second part, called “Overall assessment”, is inspired by the model Practical Skill Performance (Bjørk, 1999) categories, “fluency” and “caring comportment”, and person-centred nursing framework (McCormack and McCance, 2010).

The third part of COPP is the “Knowledge of clinical skill”. This part is divided into five subcategories that are important for students to learn: “Indication/purpose of the procedure”, “Complications that may arise”, “Observations”, “Documentation” and “Ethical challenges”. This part “Knowledge of clinical skill” is closely related to the digital learning platform, practical procedures in the nursing service (CappelenDamm, 2017), nursing handbook (GyldendalAcademic, 2017) and student syllabus. In this paper, evaluation of part

one and part two are presented as these parts concerned all students.

COPP includes three columns to check, “Excellent completed”, “Partially completed” and “Missing”, and a fourth column for writing additional comments. Teachers can use COPP as a structure for debriefing, and students and peers can use it for reflection after a simulation.

Setting

The simulation included various levels of low- and medium-fidelity simulation, such as task trainers, computer games and standardized patients, and high-fidelity simulation with scenarios built into the computerized manikins using psychological responses (Bradley, 2006, Harder, 2010). Using a simulation to learn clinical skills creates a safe learning environment where students can learn and prepare for practice by experiencing several simulations that mimic real-world situations (Hegland et al., 2017, Topping et al., 2015). One important aspect of the simulation is debriefing through guided reflection (Cant and Cooper, 2011, Topping et al., 2015).

Four simulation scenario cases were published in the students’ curriculum at the start of the semester. Students were encouraged to prepare for these cases in study groups beforehand. Earlier in the semester, students had practiced these clinical skills using low-simulation fidelity. Students were introduced to COPP as a tool on the same day as the high-fidelity simulation. Simulation sessions had a fixed format (Table 1), with 55 minutes for each scenario. The patient was a computerized simulation manikin able to communicate via the voice of one of the teachers.

Participants

During spring 2014, one hundred and thirty-four (134) first-year nursing Bachelor degree students participated in high-fidelity simulation using a computerized simulation

manikin. The students were divided into 12 study groups, with 10–12 students in each group.

Development of Questionnaire and Data Collection

Data were collected using a questionnaire on 4 days in May 2014. The students completed the questionnaire after finishing the last simulation case. The teachers ensured anonymity and voluntary participation in the study.

A questionnaire was developed, consisting of 32 statements and 4 open-ended questions related to COPP and its relevance for clinical skills training using high-fidelity simulation. The questionnaire was subdivided into four sub-dimensions with the following number of items: student planning and preparation before simulation (4 item); a structure for students as peers to give feedback during debriefing (11 items); a structure for clinical skills performance (6 items), and a structure for self-assessment to enhance the students' clinical skill learning process (10 items).

All items were scored on a five-point Likert scale with the alternative answers: totally agree, partially agree, either/or, partially disagree, totally disagree. In addition, the students could respond to four open-ended questions to support the research findings. In this article, we will emphasize COPP as a tool for giving feedback as peers, for self-assessment, and for comprehensive understanding and assessment.

Validation of the evaluation questionnaire

The construct validity of the questionnaire was analysed using explorative factor analysis (Pallant, 2016). Scree plot was used to determine the number of factors. We identified three factors. Further analyses tested the rotated component matrix; Varimax with Kaiser Normalization (Table 2). Nineteen questions were used, and loaded on three factors. Two of the factors from the questionnaire were confirmed, but some of the questions emerged

in a new factor, which we chose to name “comprehensive understanding and overall assessment. These three factors form the structure for further analysis in this article. Six items loaded on the component “Structure of self-assessment”. The seventh item loaded on two factors, and was removed from further analysis. Five items loaded on the component called “Structure for peer assessment”. Seven items loaded on the component “Comprehensive understanding and assessment”. As the seventh item was a negative formulated question, it was recoded for analysis purposes.

Scale statistic and Cronbach’s alpha were used to describe the subscale’s sum scores and will be presented in the results section.

Data Analysis

IBM SPSS Statistics 22.0 (IBM, 2013) software was used for the descriptive statistical analyses. The original five-point Likert scale was transformed into numbers, “totally agree” = 1, “agree” = 2, “either/or” = 3, “disagree” = 4 and “totally disagree” = 5.

Factor analysis was used to identify the structure of the questionnaire. Cronbach’s alpha was calculated to determine internal consistencies for the total scale and the subscales. Cronbach’s alpha for the whole instrument was 0.84. Missing data were substituted with the person’s mean score on all the items answered. Nineteen respondents had one to two missing answers in the questionnaire. ANOVA analysis was used to investigate gender and age differences.

The students’ answers to the open-ended questions were analysed qualitatively, and complemented the quantitative results.

Research Ethics

Data were collected anonymously and the Head of University College of Southeast Norway gave permission for the study. Students were informed verbally and in writing about

the purpose of the study, collection and use of data, and they were ensured anonymity (World Medical Association, 2016). Returning the questionnaire was regarded as having given consent.

Results

Student Socio-Demographics

A total of 134 students participated in high-fidelity simulations, of which 131 answered the questionnaire. Two students answered only half of the questions and were removed from the analyses.

Therefore, 129 data sets were used in the further analyses. Respondent's socio-demographic data are shown in Table 3. Women comprised 86.3% of the present sample. The students ranged in age from 18 to 50 + years. Of all students, 51.6% were younger than 23-years old. The mean score for females was 24.7 and for males 27.9.

Structure for Peer Assessment

Five items loaded for peer assessment (Table 4). The majority of participants identified COPP as being very helpful as a structure for peer assessment after the simulation, and helped to clarify what to focus on when giving feedback. The tool made important areas visible such as principles of hygiene, preparing equipment, being more thoroughness in what to assess as an observer, information given to the patient, and completion of work and documentation. Sum score for five items was 6.84 (SD 2.57). The internal consistency of the scale measured with Cronbach's alpha, was 0.760.

Sixty-nine percent of the students answered the open-ended question "How would you describe the usefulness of the tool for you as an observer?". Examples of responses were: "I

found a rhythm in how to observe” and “I think it was a good tool to use as an observer. It created a learning situation” and “It provided guidance and was a resource for feedback”.

Some students experienced difficulty in regard to the manikin: *“Generally, good, but patient participation doesn’t apply since the patient is a manikin” and “I thought COPP was useful, but the ‘overall assessment’ was difficult to complete when the simulation often does not use natural communication”.*

Structure for self-assessment.

Six items loaded on the factor self-assessment (Table 5). It is important for students to learn to assess their own professional level, and the purpose of COPP is to raise awareness among students on what is quality in skills training. Students evaluated the tool to be good as a structure for self-assessment according to indicators for quality performance of clinical skills, complications that may arise, ethical challenges, observations, documentation and excellent for practice in clinical skills. The sum score for six items was 10.65 (SD 4.30). Cronbach’s alpha for these six items was 0.87, confirming internal consistency.

The second open-ended question was “How would you describe the usefulness of COPP for academically assessing your own learning process?”; twelve percent of the students chose to answer. The following are examples of what three of the students wrote: *“Good support for learning about the areas where I am good and not so good”, “I became more aware of what I need to practice more”* and finally, *“I learn more by getting feedback”.*

Comprehensive understanding and assessment

Seven items loaded on the component comprehensive understanding and assessment (Table 6). The students evaluated the tool to be a very good tool for giving feedback to peers; understanding caring behaviour; knowing what to focus on as an observer; understanding how

to assess flow in a clinical skill; understanding concepts that typify clinical skills, and for understanding what is expected of them in performance of clinical skills. This is an overall competence that was made visible for students when using the reflection and assessment tool. The items included better understanding of what was expected in relation to inserting a permanent catheter, inserting a feeding tube, giving subcutaneous injections and inserting a peripheral line, understanding and assessing flow, understanding caring behaviour, knowing what to focus on as an observer and giving feedback to peers. Sum score for 7 items was 9.05 (SD 2.37). Cronbach's alpha for these 7 questions was 0.63.

Testing age and gender differences

There were gender differences in assessing usefulness of COPP; female students' mean score was 24.5 (SD 6.6) compared to male students' mean score of 28.5 (SD 9.0, P value = 0.03), indicating that female students found COPP more useful. As the sample of male students was small, the interpretation of this result is uncertain and must be explored further in future studies. There was no age difference when evaluating usefulness.

Discussion

The overall finding of the current study shows that COPP is useful as a tool to enhance students' own learning and to give specific feedback to peers. Research indicates that students appear to lack the capability to judge their own performance (Regehr and Eva, 2006). It is important to have a learning structure that helps find the correct focus and become a competent nurse (Benner, 2010). Students in the first semester of the nursing Bachelor degree programme are novices learning complex clinical skills (Ravik, 2015)

Structured and Visible Learning Outcomes to Enhance Students' Learning Process

Teachers' strategies are significant for learning. Structured and clarified learning outcomes are important to ensure that teachers and students share a common understanding of the purpose of teaching (Hattie, 2012, Vygotskij et al., 2001). The purpose of COPP is to make visible the relevant knowledge concepts for skills and attitudes to enable practicing excellent clinical skills. In this study, students found that COPP provided a supportive structure for their learning and assessment of themselves and their peers. These findings are in line with those of Hattie and Timperly (2007), who emphasized the importance of students knowing the expected learning outcomes.

Concrete and structured feedback is challenging. The concepts in COPP are intended as a structure that teachers can use to facilitate students to think more deeply about the characteristics of clinical skills. Hattie (2015) argued that teachers must collaborate more and conscientiously facilitate students' learning. As a reflection tool, COPP aligns facilitation and feedback, and stimulates students' reflection on the relevant learning outcomes.

When clinical skills are divided into individual parts and concepts, there is a risk of losing the holistic view of humanity and a person-centred approach. Therefore, the "overall assessment" aspect of COPP highlights the importance of the relationship and communication between the patient and nurse. COPP is intended to be a feedback and reflection tool where students together with teachers and peers can reflect on and assess their learning in relation to excellent clinical skills practice. Clinical skills require an in-depth understanding of the detail, while also having a comprehensive overview (Topping et al., 2015, Jeppesen et al., 2017). The students in our study confirmed this importance of overall assessment (Table 6).

COPP used for Peer Assessment

An important finding of this study is that students evaluated COPP as being very useful for peer assessment in debriefing. Peer assessment aims to improve both the quality of

learning and to empower students (Topping, 2009, Nicol and MacFarlane-Dick, 2009, Hattie, 2015). Earlier in the year, we experienced that peers often praised each other in debriefing. They gave feedback like “you did well”, “good information” and “good completion”. However, there was a lack of academic, concrete and complementary feedback. It is important to distinguish between praise and feedback. Providing feedback without praise was shown to increase learning achievement (Hattie and Timperley, 2007). The dilution effect that praise has on learning has been confirmed in studies and can at best be neutral or show no effect when students succeed, and show a negative effect when students do not succeed (Kessels et al., 2008, Skipper and Douglas, 2012). This kind of flattering feedback can be overcome by use of good structure and clear criteria aligned with the learning outcomes (Cantrell, 2008, van Hattum-Janssen and Maria Lourenço, 2006). In this study, the students confirmed that they became more thorough in what they should assess and gave each other more detailed feedback.

Students evaluated that being observers while also simulating nursing benefitted their learning greatly. Observing other students performing in a simulation also increases peers’ learning (Stone et al., 2013). When peers assess other students’ clinical skills, they also benefit in the development of their own clinical skills through self-awareness and learning about communication (Ramm et al., 2015). Giving feedback to peers is challenging. Students found COPP useful as a reflection and feedback tool for assessing each other. This process was stimulating and valuable because it enabled them to become more aware of their own strengths and weaknesses. Other studies confirm that this encourages the development of deeper learning and critical thinking skills (Ewertsson et al., 2015, Rush et al., 2012). During peer assessment, students are in a proximal zone where they have an ongoing reflection with themselves, other students and the teachers about “where to next” (Hattie and Timperley, 2007, Vygotskij et al., 2001).

COPP used for Self-Assessment

The concepts and structure stated in COPP helped students to assess their own clinical skills. By dividing clinical skills into preparation and planning, performance and supplementary work, overall assessment and knowledge about clinical skills, they obtained an understanding of its complexity, the expected learning outcomes, and how to get there. This kind of self-assessment relates to the start- and end-points of students' learning and clarifies a common understanding of how to achieve learning outcomes (Hattie and Timperley, 2007). A key message from Hattie (2012) is that the more the student becomes their own teacher and the more the teacher becomes the learner, the more successful the achievement of outcomes. The clarifications provided by COPP create the potential to help students become their own teacher.

The student evaluated COPP highly on knowledge related to “excellent practice”, “indications/purpose for the clinical skills” and “observations”, but gave lower scores for “complications”, “documentations” and “ethical challenges”. The reason for these lower scores might be that these concepts were unfamiliar to the first-year students. The individual parts of learning clinical skills need to be identified and made visible (Hattie, 2012, Hattie, 2015). The implementation and use of COPP and its concepts from the beginning of the semester may have resulted in better understanding of and reflection on all of the individual parts and the complexity of clinical skills.

Limitations

This study was performed in a single nursing school in Norway. Therefore, one question is whether these findings can be applied in other contexts. Further studies could be relevant to test this tool in similar contexts in other university colleges and to study the

teachers' experiences with the use of COPP. It could also be exciting to explore whether supervisors in a clinical setting could benefit from COPP as a reflection and feedback tool for formative assessment. The evaluation questionnaire was validated by the explorative factor analysis, and indicate that it is useful for evaluation in future studies.

Conclusion

As a tool for formative assessment, COPP has been demonstrated to be very useful for first-year student nurses learning clinical skills during high-fidelity simulation. This study shows that students evaluate the concepts for excellent practice as useful for peer assessment. It helped them be more accurate and detailed in their feedback. The tool provides structure and concepts for clinical skills, and value for students' formative assessment of themselves and peers. This article supplements simulation literature and supports a tool that can be used for demonstrating peer learning, which is essential for nurses in practice. The potential for developing skills in giving feedback, and the difference between praise and feedback is important. The study shows the tool has potential for enabling students to learn about reflection, deep learning, critical thinking and developing skills for guiding others in practice after they have graduated.

CONFLICT OF INTEREST

None declared.

FUNDING

The study is financed by the Research Council of Norway, grant no. 226537 (PraksisVEL) and University College of Southeast-Norway.

ACCEPTED MANUSCRIPT

References

- BENNER, P. 2010. *Educating nurses : a call for radical transformation*, San Francisco, Calif, Jossey-Bass.
- BENNER, P., SUTPHEN, M., LEONARD, V. & DAY, L. 2009. Educating Nurses: A Call for radical transformation. *San Francisco, CA: Jossey-bass*.
- BJØRK, I. T. 1999. Practical skill development in new nurses. *Nursing Inquiry*, 6, 34-47.
- BJØRK, I. T., LOMBORG, K., NIELSEN, C. M., BRYNILDSEN, G., FREDERIKSEN, A. M. S., LARSEN, K., REIERSON, I. Å., SOMMER, I. & STENHOLT, B. 2013. From theoretical model to practical use: an example of knowledge translation. *Journal of Advanced Nursing*, 69, 2336-2347.
- BRADLEY, P. 2006. The history of simulation in medical education and possible future directions. *Medical Education*, 40, 254-262.
- BRADSHAW, A. & MERRIMAN, C. 2008. Nursing competence 10 years on: fit for practice and purpose yet? *Journal of Clinical Nursing*, 17, 1263-1269.
- CANT, R. P. & COOPER, S. J. 2011. The benefits of debriefing as formative feedback in nurse education.(SCHOLARLY PAPER). *Australian Journal of Advanced Nursing*, 29, 37.
- CANTRELL, M. A. 2008. The Importance of Debriefing in Clinical Simulations. *Clinical Simulation In Nursing*, 4, e19-e23.
- CAPPELEN DAMM 2017. VAR healthcare, by healthcare workers. <https://www.varnett.no/portal/> (Accessed 16.06.17).
- EWERTSSON, M., ALLVIN, R., HOLMSTRÖM, I. K. & BLOMBERG, K. 2015. Walking the bridge: Nursing students' learning in clinical skill laboratories. *Nurse Education in Practice*, 15, 277-283.
- GYLDENDAL ACADEMIC 2017. Nursing Handbook. <https://www.shb.no/info> (accessed 16.06.17).
- HARDER, B. N. 2010. Use of simulation in teaching and learning in health sciences: a systematic review. *J Nurs Educ*, 49, 23-8.
- HATTIE, J. 2012. *Visible learning for teachers*. London: Routledge.
- HATTIE, J. 2015. The applicability of Visible Learning to higher education. *Scholarship of Teaching and Learning in Psychology*, 1, 79-91.
- HATTIE, J. & TIMPERLEY, H. 2007. The Power of Feedback. *Review of Educational Research*, 77, 81-112.
- HEGLAND, P. A., AARLIE, H., STROMME, H. & JAMTVEDT, G. 2017. Simulation-based training for nurses: Systematic review and meta-analysis. *Nurse Educ Today*, 54, 6-20.
- HIGGINS, G., SPENCER, R. L. & KANE, R. 2010. A systematic review of the experiences and perceptions of the newly qualified nurse in the United Kingdom. *Nurse Education Today*, 30, 499-508.
- IBM 2013. IBM SPSS Statistics for Windows (Version 22.0). . Armonk, NY: IBM Corporation.
- JEPPESEN, K. H., CHRISTIANSEN, S. & FREDERIKSEN, K. 2017. Education of student nurses - A systematic literature review. *Nurse Educ Today*, 55, 112-121.
- KESSELS, U., WARNER, L. M., HOLLE, J. & HANNOVER, B. 2008. Threat to identity through positive feedback about academic performance. *Zeitschrift fur Entwicklungspsychologie und Pädagogische Psychologie*, 40(1), 22-31.
- KNEEBONE, R., NESTEL, D., BELLO, F. & DARZI, A. 2008. An Integrated Procedural Performance Instrument (IPPI) for learning and assessing procedural skills. *The Clinical Teacher*, 5, 45-48.
- MCCORMACK, B. & MCCANCE, T. 2010. *Person-centered nursing. Theory and practice*. West Sussex, Wiley-Blackwell.
- MCKINLEY, R. K., STRAND, J., WARD, L., GRAY, T., ALUN-JONES, T. & MILLER, H. 2008. Checklists for assessment and certification of clinical procedural skills omit essential competencies: a systematic review. *Medical Education*, 42, 338-49.
- MINISTRY OF EDUCATION 2008. *National curriculum for nursing education.*, https://www.regjeringen.no/globalassets/upload/kd/vedlegg/uh/rammeplaner/helse/rammeplan_sykepleierutdanning_08.pdf (accessed 16.06.17).

- NICOL, D. & MACFARLANE-DICK, D. 2009. Rethinking Formative Assessment in Higher Education: a Theoretical Model and Seven Principles of Good Feedback Practice. *Higher Education Academy, York*.
- NIELSEN, C., SOMMER, I., LARSEN, K. & BJØRK, I. T. 2013. Model of practical skill performance as an instrument for supervision and formative assessment. *Nurse education in practice*, 13, 176.
- PALLANT, J. 2016. SPSS survival manual. . 6th edition. Berkshire; Open University Press.
- RAMM, D., THOMSON, A. & JACKSON, A. 2015. Learning clinical skills in the simulation suite: the lived experiences of student nurses involved in peer teaching and peer assessment. *Nurse Educ Today*, 35, 823-7.
- RAVIK, M., HAVNES, A., BJØRK, I. T. 2015. Exploring nursing students' transfer of peripheral venous cannulation from skills centre to the clinical setting. *Journal of Nursing Education and Practice*, Vol 5, No 3 (2015)
- REGEHR, G. & EVA, K. 2006. Self-assessment, self-direction, and the self-regulating professional. *Clin Orthop Relat Res*, 449, 34-8.
- RUSH, S., FIRTH, T., BURKE, L. & MARKS-MARAN, D. 2012. Implementation and evaluation of peer assessment of clinical skills for first year student nurses. *Nurse Educ Pract*, 12, 219-26.
- SKIPPER, Y. & DOUGLAS, K. 2012. Is no praise good praise? Effects of positive feedback on children's and university students' responses to subsequent failures. *British Journal of Educational Psychology*, 82, 327-339.
- STONE, R., COOPER, S. & CANT, R. 2013. The value of peer learning in undergraduate nursing education: a systematic review. *ISRN Nurs*, 2013, 930901.
- TOPPING, A., BOJE, R. B., REKOLA, L., HARTVIGSEN, T., PRESCOTT, S., BLAND, A., HOPE, A., HAHO, P. & HANNULA, L. 2015. Towards identifying nurse educator competencies required for simulation-based learning: A systemised rapid review and synthesis. *Nurse Educ Today*, 35, 1108-13.
- TOPPING, K. 2009. Peer Assessment. *Theory Into Practice*, Volume 48, 2009
- VAN HATTUM-JANSSEN, N. & MARIA LOURENÇO, J. 2006. Explicitness of criteria in peer assessment processes for first-year engineering students. *European Journal of Engineering Education*, 31, 683-691.
- VYGOTSKIJ, L. S., ROSTER, M. T., BIELENBERG, T.-J. & KOZULIN, A. 2001. *Tenkning og tale*, Oslo, Gyldendal akademisk.
- WORLD MEDICAL ASSOCIATION 2016. Declaration of Helsinki, 1964. <http://www.wma.net/en/30publications/10policies/b3/> (16.06.2016).

Table 1. Four scenarios and contents of high-fidelity simulation.

The Scenarios	Preparation phase 10 minutes	Scenario performance 25 minutes	Debriefing 20 minutes
<p>1. Male, 19 years old. Car accident. Patient waiting for operation. Insert permanent catheter.</p> <p>2. Same patient, 3rd postoperative day. Pain, nausea and low appetite. Insert feeding tube.</p> <p>3. Female, 45 years old. Prepare an anxious patient for hysterectomy. Insert a peripheral line.</p> <p>4. Same patient. Patient has been waiting several hours for operation. Administer a subcutaneous injection</p>	<p>Briefing with information about</p> <ul style="list-style-type: none"> • The case • The manikin • The equipment • How to observe • How to give feedback 	<ul style="list-style-type: none"> • Two teachers, one being the voice of the manikin, the other the facilitator in the room • Two new students perform for each case. • The rest of the students are observers. • Observation tasks for clinical skills, giving feedback using COPP as structure: <ol style="list-style-type: none"> 1. Planning and preparation 2. Performance and supplementary work 3. Overall assessment 	<ul style="list-style-type: none"> • The students that performed the simulation start by highlighting three things they did well, and reflect on their performance in the high-fidelity simulation • Peers reflect and give feedback based on COPP • Teachers stimulate to additional reflection and give further feedback based on COPP • Reflection on relevant knowledge of clinical skill

Table 2. Rotated Component Matrix

Items	Factors		
	1	2	3
COPP gave me a structure to assess my clinical skills according to			
1. Indications for the clinical skills	.844	.033	.129
2. Complications that may arise	.833	.233	-.085
3. Ethical challenges	.832	.085	.146
4. Observations on clinical skills	.795	.125	.061
5. Documentation	.717	.313	-.080
6. Excellent practice	.576	-.053	.316
7. Guidelines	.453	.406	.246
COPP gave me a structure for peer assessment of clinical skills according to			
8. Principles of hygiene	.061	.866	.003
9. Preparation of equipment, workplace and patient	.152	.794	.041
10. Thoroughness in what to assess as an observer	.000	.657	.330
11. Information given to the patient	.173	.643	.240
12. Completion of work and documentation	.315	.450	.098
COPP made it easier to....			
13. Give feedback to peers	.128	.184	.793
14. Understand caring behaviour	.137	.370	.687
15. Know what to focus on as an observer	.090	.286	.621
16. Understand and assess flow in clinical skills	.019	.435	.531
17. Understand concepts that typify clinical skills	.380	.313	.525
18. Understand what is expected of me in performance of clinical skills	.387	.014	.480
19. COPP was too detailed and difficult	-.108	-.180	.476

Table 3. Demographic variables

Gender	18	Age					Total
		19-22	23-29	30-39	40-49	>50	
male n (%) [#]	0	5(4.0)	8(6.5)	4(3.2)	0	0	17 (13.7)
female n(%)	1 (0.8)	58 (46.8)	32 (25.8)	9 (7.3)	5 (4.0)	2 (1.6)	107 (86.3)
Total (n(%))	1(0.8)	63 (50.8)	40 (32.3)	13 (10.5)	5 (4.0)	2 (1.6)	124 (100.0)

[#] percentage of total

Table 4. COPP as a structure for peer assessment

COPP gave me a structure for peer assessment of clinical skills according to

Item (no.)		Mean (SD.)
Principles of hygiene	(8)	1.32 (0.77)
Preparation of equipment, workplace and patient	(9)	1.42 (0.79)
Thoroughness in what to assess as an observer	(10)	1.18 (0.49)
Information given to the patient	(11)	1.38 (0.76)
Completion of work and documentation	(12)	1.53 (0.75)
Sum score (5 items) min-max (5 - 25)		6.84 (2.57)
Cronbach's Alpha	0.76	

Tabell 5. COPP as a structure for self- assessment

COPP gave me a structure to assess my clinical skills according to

Item (no.)		Mean (SD.)
Indications for the clinical skills	(1)	1.70 (0.87)
Complication that may arise	(2)	2.10 (1.04)
Ethical challenges	(3)	1.91 (1.07)
Observations to clinical skills	(4)	1.58 (0.85)
Documentations	(5)	1.95 (1.01)
Excellent practice	(6)	1.41 (0.66)
Sum score (6 items) min – max (6 - 30)		10.65 (4.30)
Cronbach's Alpha	0.87	

Table 6. Comprehensive understanding and assessment

COPP made it easier to....

Item (no.)		Mean (SD.)
Give feedback to peer	(13)	1.18 (0.40)
Understand caring behaviour	(14)	1.33 (0.59)
Know what to focus on as an observer	(15)	1.10 (0.33)
Understand and assess flow in clinical skills	(16)	1.28 (0.51)
Understand concepts that typify clinical skills	(17)	1.27 (0.61)
Understand what is expected of me in Performance of clinical skills	(18)	1.28 (0.48)
COPP was too detailed and difficult	(19)	1.61 (1.06)
Sum score 7 items min-max (7 - 35)		9.05 (2.37)

Cronbach's Alpha 0.63

CONFLICT OF INTEREST

None declared.

ACCEPTED MANUSCRIPT