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## **The effects of a competency-oriented learning environment and tutor feedback on students' reflection skills**

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This study investigates the effects of a competency-oriented course and the effects of feedback training on students' reflection skills. Thirty-one nursing students enrolled in a conventional course with lectures and assignments following a traditional test. Subsequently, they enrolled in a competency-oriented course, which included more performance-oriented tasks based on competencies and a performance-based assessment. In both courses, half of the students received feedback on their assignments from tutors who were trained in feedback skills (experimental group), while the other half of the students received feedback from non-trained tutors (control group). After each course, all students wrote a reflection report. Results show that students' reflection reports after the competency-oriented course were of a higher quality than the reports after the conventional course. Contrary to our expectations, the quality of the reflection reports of the control group (students supervised by non-trained tutors) was significantly higher than the quality of reflection reports of the experimental group (students supervised by trained tutors). This study shows that a competency-oriented design of courses enhances students' reflection skills, but that the training in feedback skills needs to be reconsidered.

**Keywords:** competency-oriented learning; feedback; reflection skills

It is widely recognised that the main goal of professional higher education is to help students to become 'reflective practitioners' who are able to reflect critically upon their own professional roles (Schön 1987). Educators share the responsibility to guide students in their development to become competent in performing professional roles, and who reflect on their own practices to constantly improve, develop and change. To increase students reflective skills, two issues are addressed in this study. Firstly, we observe that many efforts have been put into the design of more competency-based curricula. The backbone of these curricula are authentic complex learning tasks that resemble professional practice as much as possible and confront students with situations that require them to demonstrate the same competences that professionals would use in this situation in their daily practice (Gulikers, Bastiaens, and Kirschner 2004). Secondly, much emphasis is put on the effectiveness of tutor feedback. Especially in competency-based learning, adequate feedback on complex learning is vital for students to redirect their learning process.

However, until now there is less evidence on the effectiveness of competency-oriented curricula on, especially, students' reflective skills (van der Klink and Boon 2003). Studies that evaluate the effects of tutor feedback on students' reflection are also scarce

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(Korthagen 1999). Therefore, the main aim of this study is to examine effects of a competency-oriented course and tutor feedback on students' reflection skills.

In this study, reflection is defined as thinking critically about actions during performances aiming to (re)structure experiences, a problem or existing knowledge or insights (Korthagen and Wubbels 2000) and similar to the concept '*reflection-on-action*' of Schön (1987). Various authors have published work on theoretical approaches of reflection, attempting to concretise the development of reflective skills (e.g. Mesriow 1981; Goodman 1984; Gibbs 1988; Korthagen 1999). Reflection is already a familiar concept in higher education, mainly in teacher training (Richert 1990; Korthagen and Wubbels 1995; Newman 1996; Kremer-Hayon and Tillema 1999). Although the literature on reflection is exhaustive, a general accepted truth is that it is important to actively and carefully examine one's thoughts in order to improve performance (Reilly-Freese 1999). Reflection is mostly linked to the actual performance (e.g. Anderson and Freiberg 1995). Schön (1987) in this context distinguishes 'reflection on action', which refers to thinking about a lesson before and after, and 'reflection in action', which refers to the thinking that occurs during the performance. Loughran (1996), for example, developed a three-part conceptual framework on reflection of teaching – reflection during the act of planning a lesson, during the actual teaching, and after the teaching. Another interpretation is the spiral ALACT-model developed by Korthagen (1985, 1999; Korthagen et al. 2001) in which five phases are distinguished: Action, Looking at or looking back, Awareness of essential aspects, Creation of alternative solutions or methods of action, and Trial. The fifth phase forms the first phase of a new cycle. The ALACT-model is adapted from a framework for experiential learning and evaluated in studies (Korthagen 1999), and it guides students through a series of questions in order to provide structure in their thinking process when reflecting on their experience (Bulman and Schutz 2004).

Since reflection on the performance of complex authentic tasks is difficult, students need support in their development of their reflection skills. As stated before, continuous feedback on students' reflections is necessary and crucial for further learning (Korthagen 1999). The tutor plays an important role in providing this feedback, but it is not evident that tutors are sufficiently equipped to provide this guidance. Driscoll and The (2001) argue that many practitioners who believe that they are skilled in the process of reflection may do no more than think about what they have been doing in their practice. Moreover, tutors often lack confidence in students' reflection skills (Maddison 2004). Consequently, it is relevant to support tutors in giving feedback on students' reflections (Atkins and Murphy 1993; Bulman and Schutz 2004). Korthagen's model (1985) could help tutors to support students in their reflection skills. It underlines the exchange of acting and learning and it specifies the tutor feedback appropriately. For each of the five phases, specific reflection questions should be answered in relation to a concrete activity with the goal to encourage students' reflection. Therefore, tutor feedback is conceptualised as supportive reflective questions to reflective content in the written reflection reports of the students.

A specific form of a reflective activity that is generally a recurring activity of students is the writing of reflection reports. Tutors have to not only structure the way students may write their reports on practical experiences but also create an atmosphere of safety in which students are willing to 'open up' and write about their strengths and weaknesses. Korthagen (1999) states that students need to understand the principles of writing reflection papers on a meta-cognitive level, which help them to monitor their own progress in reflecting through writing. Shields (1995) and Kember et al. (1997) report promising results on learning effects of reflective journals. Students however are not explicitly

guided in the process of writing such papers and the implication of reflecting on one's own learning process (Wong et al. 1995).

In summary, the following research questions are central in this study:

- (1) Do students write better reflection reports after a competency-oriented course than after a conventional course?
- (2) Do students who receive feedback from trained tutors write better reflection reports than students who receive feedback from non-trained tutors?

## **Method**

### ***Participants***

Participants were 31 first-year nursing students (14 male, 17 female; mean age 21.40 years). The involved tutors (two male, seven female; mean age 37 years; teaching experience in a range from 0.5 to 30 years) were qualified nursing professionals.

### ***Materials***

#### *Courses*

Two successive courses on nurse-care taking were selected – one conventional course and one competency-oriented course. Each course lasted five weeks. The conventional course focused on theory of nursing techniques, communication skills on the elderly and psycho-geriatric patient and was based on lectures, professional skill tests and assignments. The assessment in this course included a knowledge test. The competency-oriented course focused on complex performance-oriented tasks varying from hospital emergency, surgical and homecare patients. In line with the content, this course included a performance assessment in which students had to demonstrate several nursing skills like conducting a patient consultation and defining a treatment plan using a patient-nursing plan.

#### *Reflection reports*

After each course, students were obliged to submit a reflection report. For this, a structured format was provided.

#### *Feedback training*

Four tutors participated in a three-hour tutor training on writing appropriate feedback questions. Based on Korthagen's reflection model, the training was focused on: (1) thinking and restructuring written learning experiences according to the reflection phases, (2) the accompanying feedback questions to be asked in each phase, (3) practising the feedback questions in assignments, and (4) discussing the most appropriate solution for giving feedback questions. First, the phases were explained and tutors were trained in analysing the phases in examples of reflection reports by using a flowchart. Second, tutors were trained to use a feedback checklist with examples of reflection reports. This checklist consisted of examples of written questions per phase which tutors could ask students. The checklist, designed according Korthagen's model, consisted of the most appropriate feedback questions per phase. The format of the checklist and examples of questions in each phase are presented in Table 1.

Table 1. Format feedback checklist.

Reflection phases	Task of feedback giver	Guiding questions
1. Acting and experiencing	Analysis of action or experience	What happened? What did you want to pay particular attention to? What did you want to try out?
2. Looking back on this action or experience	Specifying action or experience by asking for context, thinking, feeling, doing and wanting processes of the student  Questions regarding the What, How and When of the experience? (You should never ask a why question because it may affect students' confidence in this phase.)	What did you want?  What did you feel? What did you do? What did go well? How did you solve that? When did it happen?
3. Awareness of essential aspects in the situation	Concretisation learning goal(s) of the students by making them explicit	What is the connection between the answers to the previous questions? What is the influence of the context as a whole? What does that mean for you?
4. Creating alternative methods of action	Support with development of alternatives and choices	What alternatives do you see? What are the advantages and disadvantages of these alternatives? What do you resolve the next time?
5. Trial based on new alternatives	Selection of appropriate context for the try-out of the newly chosen learning goal together with the student	In which context do you want to try out your newly chosen learning goal (alternative)?

### *Reflection rating form*

A rating form to measure the quality of students' reflection skill was developed, based on the five phases of the reflection spiral (Korthagen 1999) and the reflection categories of Prins et al. (2006). In the form, eight variables were included consisting of 37 items that could be scored with 'not present' (0), 'somewhat present' (1) and 'present' (2). Four variables were related to reflection (How do students reflect on their learning experiences?) and four variables were related to feedback (How is the tutor feedback incorporated?). The reflection variables were: writing quality (nine items, maximum score = 18), description of learning experiences (seven items, maximum score = 14), analysis of learning experience (five items, maximum score = 10) and description of the essential aspects of the experience (four items, maximum score = 8). The feedback variables were content of feedback (four items, maximum score = 8), way of giving feedback (two items, maximum score = 4), feedback directed at clarification of learning goals (three items, maximum score = 6) and feedback directed at realisation of learning goals (three items, maximum score = 6).

### *Design and procedure*

The study was designed according to a non-equivalent post-test-only design and focused on two courses at the end of the first year nursing curriculum. Before the start of the courses, four tutors took the feedback training. It was decided by the principal which tutors followed the feedback training. Then, students first took the conventional course and

subsequently the competency-oriented course. In both courses, all tutors gave oral and written feedback to the students on their professional learning. Oral feedback consisted of advices to students during one group meeting as part of career training during both courses. Written feedback was posted in the electronic learning environment on students' drafts of products and drafts of their reflection reports. In both courses, the students were randomly assigned to an experimental group ( $n = 16$ ), which received feedback on their assignments from trained tutors ( $n = 4$ ), and a control group ( $n = 15$ ), which received feedback from non-trained tutors ( $n = 5$ ). Each tutor was assigned to four (experimental group) or three (control group) students. The trained tutors used the feedback checklist as a guide during providing the feedback.

At the end of each course, students handed in their final reflection report.

### Data analyses

Two research assistants analysed independently the 62 reflection reports with the rating form. Reliability analysis showed an interrater agreement of .86, calculated as a single measure intraclass correlation (see McGraw and Wong 1996).

Paired  $t$ -tests were applied to identify differences between the quality of the reports of the conventional and competency-oriented courses. A within-subjects analysis of variance with repeated measures on the factor time of testing (conventional course versus competency-oriented course) was used to identify differences between the reports of the control and experimental groups.

### Results

Results on the paired  $t$ -test show significant differences on seven variables between the reflection reports of the competency-oriented course and the reflection reports of the conventional course (see Table 2 for an overview of the variables with the means and standard deviations).

The ANOVA with repeated measures showed that the students in the control group (non-trained tutors) scored significantly higher than students of the experimental group (trained tutors) on the variables 'analysis of the learning experience' ( $F(1,27) = 7.71$ , MSE

Table 2. Means and standard deviations of students on variables of the rating form after each course.

Variable	Conventional course		Competency-oriented course	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Writing quality	15.69	1.83	16.13	2.13
Description of learning experience**	8.60	3.13	10.66	2.18
Analysis of learning experience*	4.29	2.21	5.28	1.77
Essential aspects of learning experience**	2.55	2.66	5.13	1.75
Content of feedback**	1.94	1.77	5.97	1.68
Way of giving feedback**	0.65	0.95	2.55	1.21
Feedback directed at clarification of learning goals**	0.90	1.35	3.58	1.59
Feedback directed at realisation of learning goals**	1.16	1.01	1.87	1.26

\* $p < .05$ ; \*\* $p < .01$

Table 3. Means and standard deviations of the experimental and control groups on the variables of the rating form after each course.

Variable	Conventional course				Competency-oriented course			
	Experimental		Control		Experimental		Control	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Writing quality	15.33	1.61	15.94	1.98	15.93	2.06	16.29	2.23
Description of learning experience	8.43	3.28	8.75	3.09	10.00	2.83	11.19	1.33
Analysis of learning experience*	3.57	2.50	4.88	1.79	4.50	2.18	6.00	0.85
Essential aspects of learning experience	2.64	2.47	2.47	2.88	5.14	1.92	5.12	1.65
Content of feedback*	1.50	1.95	2.29	1.57	5.43	1.83	6.41	1.46
Way of giving feedback*	0.43	0.85	0.82	1.02	2.07	1.27	2.94	1.03
Feedback directed at clarification of learning goals	0.71	1.21	1.06	1.48	3.36	1.82	3.76	1.39
Feedback directed at realisation of learning goals	1.00	1.04	1.29	0.99	2.00	1.36	1.76	1.20

\* $p < .05$

= 25.66,  $p < .05$ ), 'content of feedback' ( $F(1,29) = 5.74$ ,  $MSE = 12.13$ ,  $p < .05$ ) and 'way of giving feedback' ( $F(1,29) = 6.29$ ,  $MSE = 6.14$ ,  $p < .05$ ) (see Table 3).

For Course (conventional versus competency-oriented) and Groups (no-trained versus trained tutors), no significant interaction effect was found.

## Discussion and conclusion

This study confirms that students write better reflection reports after a competency-oriented course than after a conventional course. This finding seems to provide evidence that competency-oriented education is facilitative for acquiring competencies like developing reflection (van der Klink and Boon 2003). Linking reflection explicitly to relevant, lifelike performance tasks in professional situations seemed to challenge students to think more critically which resulted in better reflection reports. This result has confirmed that practising reflection is worth the effort. In this way nursing students acquire a competency that is not only useful in today's health systems, but also is essential to enable nurses to rise to challenges in their work and to be oriented to the future (Schank 1990; Glen 1995).

Concerning effects of feedback training, the findings were reverse to our expectations. Feedback from non-trained tutors results in a higher quality of reflection on two aspects: analysis of learning goals and way of giving feedback. That means that students of non-trained tutors reported more analyses of learning goals and more judgements about the way of giving feedback than students of trained tutors. There may be two plausible explanations for this unexpected effect of the feedback training. A first explanation is that tutors of the experimental group had only a few years of teaching experience (average of one year) compared to the control group tutors (average of 25 years). Secondly, a three-hour training in feedback may not be enough to train tutors in giving reflection-stimulating feedback. Training of feedback skills probably needs more time and investment of tutors and trainers. Giving feedback is a complex skill and complex skills must be trained during a longer period of time (van Merriënboer 1997). Experienced tutors in this study already may have

mastered this complex skill compared to less-experienced tutors. Recent research has shown that both educators and educational scientists underestimate the complexity of the process of giving and receiving adequate feedback (Sluijsmans, Brand-Gruwel, and van Merriënboer 2002).

Three limitations of this study are in place. Firstly, the research design with two successive courses makes the interpretation of the results less transparent. Now it is possible that the first course could affect students' performance on the second course. Although a  $2 \times 2$  factorial design or a Latin square design would have been more appropriate, this was not feasible due to practical and organisational issues in our ecological research context. Secondly, there were no pre-course data available on students' capacity to write reflection reports. This means that difference in reflection skills between students after both the courses could also be attributed to different prior reflection capacity of students at the start. Thirdly, the writing of reflection report in the conventional course could have caused an improvement of the quality of the reflection reports in the competency-oriented course.

To conclude, this study shows promising effects from competency-oriented education on the development of reflection, but that the feedback training needs reconsideration. Future research should aim at understanding the role of tutors in students' development of reflection skills (Korthagen and Wubbels 2000). Investing in supporting students in these skills with qualitative feedback from professional tutors is a *sine qua non*.

### Notes on contributors

Marieke Smits worked as a PhD researcher at the Open University. Her main areas of research interest include feedback in competence-based education. She is currently engaged in the implementation of competence-based education in vocational education as an educational psychologist at Gilde Opleidingen in the Netherlands.

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Wim Jochems was general director of the Educational Technology Expertise Centre at the Open University of the Netherlands until 2006. Now, he is the Dean of the Eindhoven School of Education and full professor in educational innovation at Eindhoven University of Technology. His research mainly focuses on innovation in science and technology education.

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