The use of ePortfolio as a learning medium in clinical nursing training

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Background
The project is an empirical study of how and to what extent an ePortfolio promotes learning in clinical nursing training. In the Danish education system focus is placed on, for example, how e-learning can help strengthen and promote learning (Ohrt & Trend 2007, Wallin 2007, Fredskild 2008, Lund 2008, Keiding 2009, Nielsen et al. 2009, Nørgaard et al. 2009). The nursing education programme at Holstebro has used ePortfolio since 2007 as a study tool with a view to promoting learning and making a connection between the theoretical and clinical aspects of the course (Olesen & Nielsen 2006 & 2007, Ardal & Nielsen 2007, Nielsen 2007 & 2008). At evaluation after one year on average 33% of all informants (students, nurses and nursing teachers) considered that ePortfolio did not support the students’ learning process enough, while 33% felt it supported their learning to an average degree, and 35% to a higher than average or to a high degree. The explanation for the low level of support was partly technical problems, while many expressed opposition to written reflection.

In 2008 a new National Curriculum opened up the possibility of working with new pedagogical forms. We thus co-operated with the nursing programmes in Århus, Viborg and Holstebro to create a new ePortfolio based on these forms. This ePortfolio is constructed with a view to enabling the student to provide written reflections of his/her current knowledge level, learning needs and of the dialectic between theory and practice. The portfolio includes a “toolbox” with pedagogical instruments designed for different ways of learning – for example seeing, listening and trying out. The tools can be included in the learning process as and when needed. The supervisors give feedback on the reflections and the ePortfolio is thus also a tool for joint working between the students, the clinical supervisors and the nursing teachers. This ePortfolio was tested in a pilot project in 2009 and from the outset the students took a learning styles test. The test used was inspired by Honey and Mumford and developed by @ventures, Competence Centre for e-learning, under The National Knowledge Centre for e-learning in Denmark (Honey & Mumford 1986, www.ventures.dk). The test was to give an impression of the students preferred learning styles. The project was evaluated by questionnaire. The study showed that 93% of the informants answered that a learning styles test was a useful tool as a starting-point for joint working around the students’ learning. 84% answered that ePortfolio supported reflection on practice, and 74% said that it created a greater connection between the theoretical and clinical aspects of the course (Nielsen et al. 2009). The majority of the informants felt that ePortfolio was a helpful tool. One individual expressed that ePortfolio was not of any help, while others evaluated that it could provide a modicum of support. This raises the question as to the extent to which ePortfolio is used as intended, and whether there are aspects of the clinical teaching course that are not best served by ePortfolio. Therefore there is a basis for a closer study of the use of ePortfolio in practice.

Literature review
To clarify existing knowledge about ePortfolio in nursing courses a search was conducted using the databases: forskningsdatabasen.dk, Nordart, ERIC, SvedMed, Cinahl, PubMed, Cochrane and Wholis and based on the keywords: portfolio, portfolio & care, portfolio & nursing (in Danish and Norwegian), portfolio & nursing. In all, 98 hits were returned, of which eight articles were chosen as relevant, in that the content focused on the use of ePortfolio. Four articles were reviews based on single studies using different methods, the preferred method being questionnaires (McMullan et al. 2003, McCready 2006, Jones et al. 2007, McColgan 2008). In the remaining four studies one was based on interviews (Scholes et al. 2004), and three on questionnaires (Corcoran &
Nicholson 2004, Coffey 2005, Nairn et al. 2006). The relevant findings were that ePortfolio seems to have some significance for learning, since it offers the opportunity to reflect on nursing practice as well as one’s own strengths and weaknesses (McMullan et al. 2003, Coffey 2005, McCready 2006, Jones, Sackett, Erdley & Blyth 2007), that ePortfolio in the UK is an acceptable method to evaluate nursing students’ competency levels, that the students learn a more analytical approach and relate to the learning at a higher level through portfolio work (McColgan 2008), and that ePortfolio is suitable for adult learning (ibid.). However, studies showed that there were also limitations: there was a considerable time factor (Corcoran & Nicholson 2004, McCready 2006, Jones, Sackett, Erdley, Blyth 2007, Lund 2008, Nielsen 2008), and that the portfolio work was prioritised at the expense of learning the practical craft of nursing (Scholes et al. 2004). It is a problem if a lot of time is devoted to ePortfolio at the expense of learning the practical side of nursing. The craftsmanship must be emphasized. The purpose of the ePortfolio is to qualify nursing practice, not to suppress it. It is important to investigate this dilemma further. Since there continues to be a lack of empirical knowledge on ePortfolio in nursing training courses, both internationally (McColgan 2008) and nationally, the research interest is to study how ePortfolio is integrated in students’ learning processes in a Danish context.

Aim and research questions
The aim is thus to study the extent to which an ePortfolio that focuses on students’ individual learning styles promotes the students’ learning of nursing in clinical training. The aim will be addressed based on the following research questions:

- How is ePortfolio employed in clinical training?
- Does ePortfolio support learning of nursing in clinical training?
- Does ePortfolio support reflection in clinical training?
- How can learning styles be discussed in relation to ePortfolio in clinical training?

Frame of reference
To clarify my preconceptions and theoretical approach to the study, my interpretation of the following key concepts is outlined below: nursing, learning, learning style and reflection.

Nursing is what is being learned, and encompasses both general theoretical and ethical knowledge and practical ability. The students have to learn to make a professional judgements build on theoretical knowledge and ability, gained insight into the unique patient situation and ethical considerations about relationships with various stakeholders. They also have to learn which actions should be taken based on their judgements. The aim of nursing is a caring practice that include both helping the patients to improve their own health and prevent illness, helping chronically ill patients to learn to cope with their condition and to relieve suffering (Scheel 2005, Bache & Østerberg 2005, Pedersen & Hounsgaard 2008, Scheel, Pedersen, Rosenkrands 2008).

Learning is understood here as a lifelong and reciprocal process. It can be initiated by both internal and external motivation, and takes place both in the learner and in the learner’s relation to the world around them. The process of learning is both unconscious and conscious, and includes both habitus as reflection, learning by feedforward and feedback, toil and gain. Learning can emerge as a new knowledge, skill, emotional reaction, or behavioural or attitudinal change in the learner (Hermansen 2003, 2005). Therefore, the benefits gained by the students in working with ePortfolio in their clinical training must be observed in the context where care is practised and learned.
Learning style is here defined broadly as the habitual manner in which the learner receives, perceives, interprets, understands, values and integrates new information (Young 2009). The qualifications of the students are different, and therefore teaching and supervision must be differentiated, in order to meet individual learning needs. Differentiation implies didactic considerations, and in this context theories about different intelligences, thinking styles and learning styles can allow for new perspectives and make differentiation more operational (Hermansen 2006). Despite criticism of the phenomenon of learning styles, based on fear that it can lead to oversimplification of the learning process and branding of the learner (Hermansen 2006, Dalsgaard 2006), I dare to explore the phenomenon. The intention is to uncover new knowledge on students’ complex learning processes. In order to attain a Bachelor of Nursing qualification, students need to acquire not only competencies of reflection, reasoning and oral and written argumentation, but also competencies to carry out nursing in changing situations and contexts. To reach this goal, students need help to develop theoretical, ethical and practical skills (Kirkevold 1996). The Danish philosopher, Søren Kierkegaard, made the following statement regarding the secret of the art of helping:

"when [...] one wants to succeed in leading a person to a certain place, one must first and foremost find him there and begin from there ...” (Kierkegaard (1948) 1962, bd. 18, p. 96)
And Kierkegaard continues:
"In order truly to be able to help another, I must understand more than he does – however, first and foremost I must understand what he understands. If I don’t, then my higher understanding won’t help him at all” (ibid. p. 97)

People perceive and learn differently (Jarvis 2007, Scheel 2005, Hermansen 2003, 2006) and if it helps a student to begin by learning the practical aspect of what is to be learned in a competency, this does not rule out the fact that the ethical and theoretical knowledge can subsequently be acquired. At best, a successful experience at the start of a learning process can provide motivation to learn the rest. In the worst case, it does not help but neither does it do any harm. So, in facilitating different ways of learning, we cannot deprive the students of gaining benefit from this option.

Reflection, according to Hermansen, is an essential aspect of the learning process (Hermansen 2005). It is a process of creating meaning in relation to thinking and learning. The need for reflection with regard to actions in practice occurs when the identified problem cannot, as would be expected, be solved by familiar actions. The situation and the problem have to be investigated and redefined afresh in order to find workable actions. It is both about discerning the unknown in the situation and transforming the intuitive approach to the issue. Supervisors can promote reflection by asking the learner questions directly or indirectly in ePortfolio (Schön 2001, Agerbæk 2011, Qvortrup 2010). It is essential to study what role the indirect questions in ePortfolio play in relation to promoting students’ reflections in clinical training. Thus print-outs of the students’ written reflections should be included as data. Agerbæk argues that ePortfolio creates extra space for reflection and communication between the learner and supervisors (Agerbæk 2009). When ePortfolio is combined with thinking about reflection and learning styles, it can be assumed to contribute to a synergy effect in the students’ learning processes. However this must be studied in the field where ePortfolio is employed.

Materials and methods
The study is qualitative in that its intention is to convey meaning and significance in relation to events in people’s lives – in this case nursing students. The scientific framework is
phenomenological-hermeneutic and inspired by the French philosopher, Paul Ricoeur’s works around narratives and interpretation (Ricoeur 1979, 1993, Pedersen 1999, Pedersen & Delmar 2003, Lindseth, Norberg 2004). The study takes place within the Nursing training courses at VIA, University College in Denmark. Data are generated through narratives, field observations and written material from ePortfolio in order to highlight different perspectives of the issue.

**Informants**

Eleven randomly chosen students from study group number SH2010 with 40 students were included in the study. The group began the course in February 2010. The inclusion criteria were: students on Module 4, use of ePortfolio as a study tool and that the students had undertaken the learning styles test by @ventures. The whole group undertook the learning styles test. In that way it was possible to divide the group into four sub-groups based on how they learn best. The name of each student tested to have the reflector style was entered into a programme with a random number generator, from which three students were drawn. The names of the students that were tested to have the theorist, activist and pragmatist styles were randomised in the same way (Andersen 1999). The group of informants consisted of eleven randomly chosen students, as there were only two students in the group with high scores for the pragmatist style. The exclusion criteria were if the students did not want to participate in the project or if they were about to change course or learning institution.

**Generation of data**

Data on learning outcomes from ePortfolio were generated by field observations, interviews and print-outs from the students’ ePortfolio (Hammersley and Atkinson 1998). Table 1 illustrates that the data generation took place at the start and end of the study period. The reason for this was that it afforded the opportunity to study whether there was a development in the students’ learning levels.

<table>
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<th>Table 1. Overview of data generation</th>
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<td><strong>Generation of data in the study</strong></td>
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<td>a) Participant observations</td>
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<td>b) Narrative interviews</td>
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<tr>
<td>c) Print-outs from the students’ ePortfolio</td>
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<td>d) Narrative interviews</td>
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The participant observations focused on: context/room, the students and the relations and activities they took part in, utensils used and time allocation. The observations were noted continuously. The narrative interviews started with open questions: Can you tell me about what you have learned in connection with the care you have carried out? Can you tell me what you have learned from the written reflection in ePortfolio? The narratives were recorded and transcribed (Hammersley & Atkinson 1998). The written reflections from ePortfolio were copied and archived to supplement the
students’ reflections from the interviews. Thus all the data material from field notes, interviews and print-outs from the ePortfolio are available as text.

**Data processing**
The entire text material will be analysed based on a method inspired by Ricoeur and will be carried out on three levels: naive reading, structural analysis and critical interpretation and discussion.

Naive reading is an initial learning from the text material. It is conducted by reading and re-reading the transcribed interviews, field notes and written reflections in order to get a holistic understanding of what the texts are about, what moves one in the texts, and which questions are raised in relation to the research questions. This analysis helps to give a holistic understanding of the texts as a whole.

Structural analysis has an explanatory role. The text is here structured based on the units of meaning (what is said) and units of significance (what is talked about) in relation to the research questions. Themes are drawn out from the entire data material. Figure 1 illustrates how in the analysis process there is a constant forward and backward movement so that the process is not just seen as a progressive, linear process, but a process where analysis and interpretation always moves between the part and the whole.

**Critical interpretation and discussion** is based on the themes that have emerged through the naive reading and the structural analysis. The interpretation is conducted with regard to theory and other current research results. The critical interpretation is a process involving a movement from the individual to the general. The results are discussed in relation to the research questions and relevant literature.

**Ethical considerations**
Ethical considerations concerning the informants followed the Ethical Guidelines for Nursing Research in Scandinavia (SSN 2003) and ethical considerations in relation to field research (Hammersley and Atkinson 1998, chapter 10).

**Perspective**
It is expected that the study can contribute with new knowledge that can increase the scientific understanding of learning processes that are partly mediated by digital technologies. It is also assumed that the clinical training in nursing training courses can be strengthened through the use of ePortfolio. The study is also expected to contribute to curriculum development and didactic considerations both specific to nursing training courses and in other educational courses.
Short paper for the 9th ePIC 2011

**Literature**


www.ventures.dk Test din learning style. @ventures, Kompetencecenter for e-learning.