

ORIGINAL RESEARCH

EPortfolio and learning styles in clinical nursing education

Kirsten Nielsen ^{*1,2}, Birthe D. Pedersen¹, Niels H. Helms³

¹Faculty of Health Sciences, University of Southern Denmark, Odense, Denmark

²VIA University College, Campus Holstebro, Holstebro, Denmark

³Department for Research and Innovation, University College Sjælland, Soroe, Denmark

Received: April 29, 2015

Accepted: May 28, 2015

Online Published: June 16, 2015

DOI: 10.5430/jnep.v5n9p54

URL: <http://dx.doi.org/10.5430/jnep.v5n9p54>

ABSTRACT

This study reports the use of electronic portfolio in clinical nursing education. The study is part of a larger study investigating learning mediated by ePortfolio. The method takes a phenomenological-hermeneutic approach. The setting was a ten-week clinical course in basic nursing. The participants were 11 first-year students randomly selected. Data were generated by participant observations, interviews and portfolio documents. Findings showed that the ePortfolio was used individually and mostly at home. Using ePortfolio in the ward is more time-consuming. The ePortfolio was used to reflect on practice and one's own learning process. The principal initiators were emotional involvement in clinical nursing, consciousness of learning through writing; ponder over practice, and a confident and constructive student-preceptor relationship. Inhibitors were vulnerability, a preconception that one learns only in one way, lack of supervision about how to learn. The study showed some but not unambiguous connection between preferred learning styles and ePortfolio use.

Key Words: EPortfolio, Learning, Learning styles, Nursing education, Clinical education

1. INTRODUCTION

This study investigated use of electronic portfolio (ePortfolio) in a clinical course within nursing education. The study is a part of a larger qualitative study investigating learning mediated by ePortfolio, and this is the first article that reports findings from the investigation. In Danish nursing education ePortfolio use is increasing and the National Curriculum^[1] has allowed for the development of a new ePortfolio. This ePortfolio was designed to facilitate four learning styles and implemented in order to take into account differentiation in the student body. The ePortfolio has both mandatory and elective elements. The mandatory elements contain individual study plans. The elective elements are designed for

learning and writing with or without guidance using learning tools designed for different ways of learning.

Background

International literature shows important benefits of implementing ePortfolio: encouraging reflection, improving student's knowledge and understanding, and enhancing self-awareness and ability to learn independently.^[2-6] However, barriers also exist, such as perceived lack of time to use it, lack of supervision, and lack of access to computers and the Internet.^[2,5] Literature about learning styles describes that both nursing students and educators benefit from insight into preferred learning styles in an attempt to maximize students'

*Correspondence: Kirsten Nielsen; Email: kim@viauc.dk; Address: Research Unit of Nursing, Institute of Clinical Research, Faculty of Health Sciences, University of Southern Denmark & VIA University College, Campus Holstebro, Gl. Struervej 1, DK-7500 Holstebro, Denmark.

learning potential.^[6-8] Conversely, others warn about the lack of evidence for this and the risk that teachers reduce students to stereotypical learners.^[9-11] However, theories about different intelligences and learning styles can allow for new perspectives and make differentiation more operational.^[12] In pedagogical considerations understanding more about how individuals learn, one can better facilitate learning and intervene when students are having a difficulty.^[7, 13] As no prior research investigated ePortfolio in combination with learning styles, the aim of this study was to investigate how the ePortfolio designed to facilitate four learning styles was used in nursing clinical settings.

2. METHODS

2.1 Setting and participants

The setting was Course 4, a 10-week clinical course in Basic Nursing within the Danish nursing education. The clinical placements were three hospitals and a nursing home. These settings were chosen because it was only at these locations where the ePortfolio designed to facilitate four learning styles had been tested for a year. The only criterion for inclusion in the study was being a nursing student who was about to begin the course 4. To include students with different ways of learning 40 first-year students answered a 40-question learning-style indicator, which provided an individual learning style profile including both the preferred learning style and scores for three other learning styles.^[14] Furthermore,

the learning style profile also indicated how the learner could develop learning by the other learning styles in order to become an all round learner. The learning style indicator was inspired by the Honey and Mumford Learning Styles Questionnaire^[15] and developed for Danish conditions by a company known as @ventures for the Danish Knowledge Centre for e-learning.^[14] According to @ventures the indicator was tested on young (15-19 years) and adults in comparison with Honey and Mumford's 80-question questionnaire and showed "very accurate", "accurate", or "reasonable accurate" returns by approximately 92% of users.^[14] The learning-style indicator provided an impression of whether the students preferred learning styles were activist, reflector, theorist or pragmatist. Thus, the students were divided into four subgroups. From each group, three students were randomly assigned. However, there were two students in the group with high scores for pragmatist style. Of the randomized students two were about to change course, two wanted to change campus, two were about to drop out, and one did not want to participate. Instead, seven other students were randomized to the study, giving a total included of 10 female students and one male student.

2.2 Generation of data

Data were generated by participant observations, narrative interviews and portfolio documents. The process is illustrated in Figure 1.

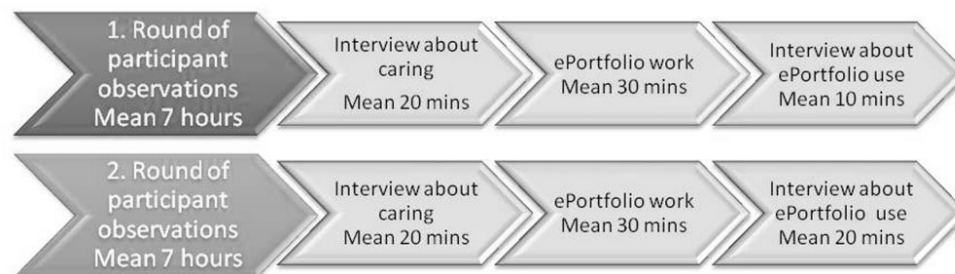


Figure 1. The data generation process

The first round of participant observations took place at the beginning and the second round at the end of the course. An observation day began with participant observations of students practicing in order to distinguish between learning by practicing and learning mediated by ePortfolio. The observations were noted concurrently as recommended by Spradley.^[16] At the first narrative interview, students related their experiences of caring for patients. Afterwards, the student worked with the ePortfolio for about half an hour, and finally, at the second narrative interview held afterwards, students told what they experienced by working with ePortfolio (see Figure 1). The second set of interviews about experi-

ences mediated by ePortfolio lasted longer as the students simply had more to tell about their experiences by portfolio work. The interviews were recorded and transcribed, and the portfolio documents were copied. Thus, all the data material from participant observations, interviews and portfolio documents were available as text.

2.3 Ethics

Before commencing the study, the Head of Nursing at the hospitals and the nursing home approved access to the clinical placements. The students received oral and written information about the study and were included after informed

written consent, in accordance with the Ethical guidelines for nursing research in the Nordic countries.^[17] During the participant observations, the patients were informed that the learning process of the students was the focus of the study. The study was submitted to the Danish Data Agency. Formal approval from the local Scientific Ethics Committee was not required, in accordance with national legislation in Denmark.

2.4 Interpretation

The entire text material was interpreted using a method inspired by Ricoeur's theory of interpretation. There are three levels: naive reading, structural analysis and critical interpretation and discussion.^[18-20] The interpretation is illustrated in Figure 2.

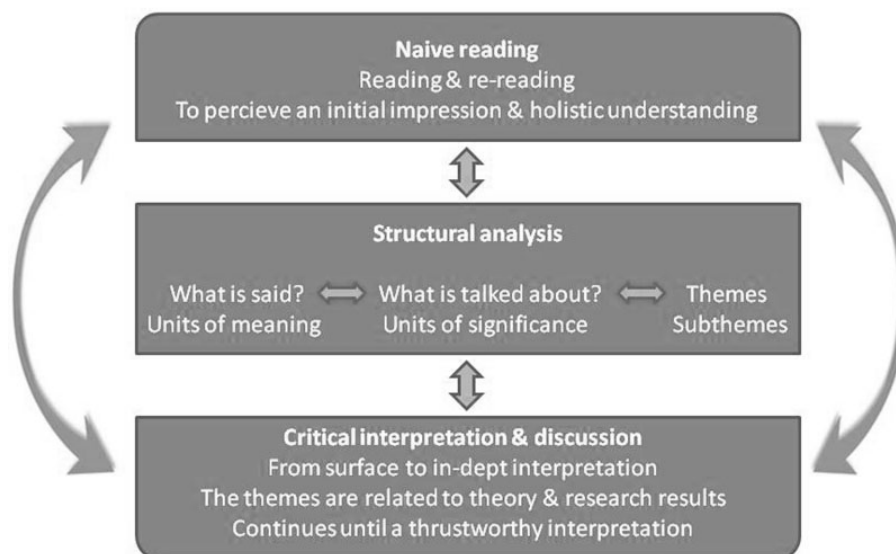


Figure 2. Illustration of the interpretation

The arrows show how the interpretation moves backwards and forwards between the levels in a hermeneutic helix in order to strengthen the arguments for a trustworthy interpretation. Naive reading constitutes the phenomenological element of the interpretation, where we push aside our pre-conceptions and focus on getting an initial impression and a holistic understanding of the texts. Structural analysis plays an explanatory role. It is the second level of interpretation, as the holistic understanding from naive reading delimits the number of possible interpretations.^[18] The texts were systematized using the computer programme NVivo 9. The sentences were analyzed in order to identify the units of meaning (what is said) and units of significance (what is being talked about). During naive reading and structural analysis themes were drawn out from the entire data material. Critical interpretation and discussion were based on the emerging themes and subthemes and related to theory and other research results. The interpretation moves from the specific to the general and continues until a trustworthy interpretation is achieved.^[18] In the following paragraphs the abbreviations in parentheses after the quotations refer to participant observations (O), narrative interviews (I), or portfolio documents (D). The numbers and letters refer to

individual students and their respective preferred learning style: activist (A), reflector (R), theorist (T), or pragmatist (P).

3. FINDINGS

The naive reading and structural analysis uncovered themes involving time and location as well as initiators and inhibitors in using ePortfolio. These themes are interpreted and illustrated in tables and quotations as follows.

3.1 Time and location

To provide an overview, data from participant observations of ePortfolio use are presented in the first four columns of Table 1. In oral accounts, students stated where they had used ePortfolio and for how long weekly. The average time for each student multiplied by 10 weeks gave the time each student spent using ePortfolios during the course. In order to uncover how the time was used, the number of pages in each ePortfolio was counted. As some of these pages were copy-pasted text into their ePortfolio, the number of copy-pasted pages was also listed together with estimated hours used per page.

Table 1. EPortfolio use in numbers

Participant	Location	Estimated hours/week	Estimated hours in 10 weeks	Pages in ePortfolio in all	Copy-pasted pages in ePortfolio	Estimated hours/page
1 A	Home	3-4	$3.5 \times 10 = 35.0$	26.50	0.00	1.3
2 A	Home	2-3	$2.5 \times 10 = 25.0$	21.00	0.00	1.2
3 A	Both locations	5	$5 \times 10 = 50.0$	31.25	0.00	1.6
4 R	Placement	2.5-5	$3.75 \times 10 = 37.5$	7.25	0.00	5.2
5 R	Home	2.5-4	$3.25 \times 10 = 32.5$	14.25	4.50	2.3
6 R	Home	2.5-5	$3.75 \times 10 = 37.5$	35.25	2.75	1.1
7 T	Placement	2.5-5	$3.75 \times 10 = 37.5$	29.00	4.75	1.3
8 T	Home	1-2	$1.5 \times 10 = 15.0$	69.00	46.50	0.2
9 T	Both locations	3	$3 \times 10 = 30.0$	11.75	0.00	2.6
10 P	Placement	2	$2 \times 10 = 20.0$	5.25	0.00	3.8
11 P	Home	1	$1 \times 10 = 10.0$	11.25	0.00	0.9

Table 1 shows that six students (O: 1A, 2A, 5R, 6R, 8T, 11P) mostly used ePortfolio at home. One student explained: “Mostly I write at home... I’m not good at writing when I’m disturbed” (O: 2A). Three students (O: 4R, 7T, 10P) mostly used it at the placement “When there was free time” (O: 10P), and two (O: 3A, 9T) used it equally at both locations. “I write here [the placement] when nothing much is happening... some weeks I write mostly at home” (O: 3A). It appeared that students judged how to make the best use of the time available, in terms of their workload on the ward and their own learning process. Each placement setting had a study room, and participant observations of time show that when the study room was located on the ward, students could easily go in there and work with ePortfolio for 15

to 30 minutes between tasks. At placement settings where the study room was on another floor or in another building, about five to 10 extra minutes were needed. Three students estimated use of ePortfolio from one to two hours a week (O: 8T, 10P, 11P), while eight estimated from two to five hours a week (O: 1A, 2A, 3A, 4R, 5R, 6R, 7T, 9T). Students using ePortfolio at home produced between 11.25 and 69 pages in their ePortfolio, while those using ePortfolio at the placement produced between 5.25 and 29 pages. Three students copy-pasted a few pages from the Internet into their ePortfolio, while one student copy-pasted 46.5 pages. An investigation of the amount of time students spent writing a page in their ePortfolios uncovered differences in average time used, from 0.2 to 5.2 hour/page (see Table 1).

Table 2. Time and location

Number of participants	Location	Hours in 10 weeks	Hours in %	Pages in all	Hour/page
6	Home	155	47.0	177.25	0.9 (1.3)
3	Placement	95	28.8	41.50	2.3
2	Both Locations	80	24.2	43.00	1.9

Table 2 ads up time spend on ePortfolio at each location and shows that 47% of time was spent at home, 28.8% at the placement, and 24.2% equally at both locations. The column on the far right shows that students using ePortfolio at home spent an average of 0.9 hours per page, while using ePortfolio in the placement the average is 2.3 hours per page. The average was 1.9 hours per document for students working equally with ePortfolio at home and at the placement. Thus, it appeared that more time-consuming was associated with the use of ePortfolio at the work placement (see Table 2). However, this could be misleading, as one student using ePortfolio at home copy-pasted 46.5 pages and this deviates from students

copy-pasting none or up to 4.75 pages (see Table 1). When this student was excluded, the average was 1.3 hours per page. However, it still seemed more time-consuming to write at the placement. But why does the production vary from 11.25 to 69 pages when students used ePortfolio at home? One student said: “When I’m home... it easily gets boring [to use ePortfolio]” (I: 11P). She used the ePortfolio about an hour a week, mostly at home. There were 11.25 pages in her ePortfolio, none copy-pasted (see Table 2). Another student said: “I overestimated what I could manage... when I am [at the placement] all day to learn as much as possible... when I come home I had to write but I was too tired” (I: 9T). In

the beginning, this student wrote at home but later writing was done at the placement - about three hours a week. There were 11.75 pages in the ePortfolio without any copy-pasting (see Table 1). These two students had difficulty in integrating ePortfolio use in the context of their everyday lives. They both lived in relationships with one or no child at home and they both had several interests (D: 9T, 11P). However, having family and hobbies does not fully explain difficulties encountered in using ePortfolio at home because one student with a family of three children, several interests and a part time job (D: 6R) used the ePortfolio mostly at home for five hours a week. In her ePortfolio, there were 35.25 pages of which 2.75 pages were copy-pasted (see Table 1). She said: "the study plan gives me a general view of what I need to achieve on this course... and the diary notes make me reflect" (I: 6R). She was aware of the effect of using ePortfolio. It can be suggested that a general overview and consciousness of reflection initiated by writing make a difference.

The study showed no unambiguous correlations between different learning styles and use of the ePortfolio. The time used and pages produced is very individual. However, students with activist style do make a more consistently high effort. Students with activist or reflector style use more time on portfolio work than students with pragmatic style, who also have fewer pages in their ePortfolio. One student with reflector style however produced relatively few pages. No student with activist or pragmatic style copy-pasted pages into their ePortfolio (see Table 1).

3.2 Initiators

From the analysis appeared some initiators that triggered off students' writing in ePortfolio. One student related about a critical situation encountered during clinical practice: "I immediately discover that he looks different, he gasps for breath and nearly shouts: Will this never end? I rush to him and..." (D: 1A). This experience unfolds over almost four pages and the conclusion is: "It is all about meeting the patient where he is" (D: 1A). Earlier the same student reflected: "I'm used to planning things in my head and doing things by me" (I: 1A). Participant observations documented that this student was rather quiet when reflecting together with other students and the preceptor (O: 1A). In the final interview, she concluded: "It [ePortfolio] worked like a diary to reflect on the days... writing... releases annoyance and happiness" (I: 1A). Involvement in the critical situation moved the student to write in ePortfolio even though she was not used to writing. Feeling sorry for the patient (D: 3A) or insecure (D: 2A, 5R, 6R) also moved the students to write. EPortfolio provides room for expressing thoughts and feelings extensively and creates a reflective distance that, for

some, will be enough to understand the situation and cope with it. Writing also made explicit students' feelings to the preceptors and allowed them to guide students in how to manage feelings in complicated situations. Another initiator was reported as: "[Writing] makes me feel that I don't just experience something, but I learn and remember" (I: 3A). "Writing about one's doubt helps because... you can investigate... what could have been done instead... it makes clear how little or how much you know about something" (I: 2A, 7T, 9T). "I reflected on what I did... much more" (I: 5R, 6R). Students, who like to write, used the ePortfolio often and wrote several pages with reflections in it. They seemed to be aware of the influence of writing on their learning process, as they expressed that writing provides a possibility to investigate doubt and find answers and new modes of action. Writing made them remember, reflect, and be aware of learning outcome and learning needs. Ponder over practice was also an initiator: "I wonder why she didn't put on aseptic gloves" (D: 7T). "What is gastric ulcer?" (I: 3A, D: 2A, 7T, 8T, 9T). If practice is performed otherwise than they learned in learning lab at the School of Nursing, students' preconceptions of infection control or other issues make them ponder over what caused the difference in performance of practice. Lack of knowledge also led students to ponder and to write or copy-paste information they had found about the issue in ePortfolio. Student-preceptor interactions were accentuated in the following quotations: "I like my preceptor reading and commenting on my writing... seeing if my assumptions are correct" (I: 3A). "Preceptor: You write about a blind lady. You didn't wash her legs but rub cream on because the skin was dry. Tell me about it. Student: I thought it was a good choice. She had a bed bath yesterday... water could dry up her skin even more... Preceptor: You made some really good decisions here" (O: 6R). "Preceptor: Let's see your week plan. Student: I didn't make one this week. Preceptor: You can do it now" (O: 6R, 10P, I: 11P). Participant observations documented how a student who was cautious in taking initiative in her practice at the beginning of the course changed her attitude, and developed self-confidence and took initiative. With frequent oral or written feedback, and a little praise, the preceptor encouraged the student to write in the ePortfolio (O: 6R). In her ePortfolio, this student had 20 documents with reflections (D: 6R). At the beginning of the course, one student said: "ePortfolio doesn't seem logical to me" (O: 11P). Another student said: "I'm not good at it [portfolio work]" (I: 10P). Though, having been encouraged to use ePortfolio a student said: "Writing about learning outcome... provokes me to... think more deeply than not using ePortfolio" (I: 11P). "Writing makes one reflect on thoughts you had in the situation... you discover possibilities in it [ePortfolio]"

(I: 10P). Finally, a preceptor asked the students to write in ePortfolio what they knew about an issue before verbal reflection with a group of students. This writing resulted in a more active discussion (O: 3A). When preceptors read and commented on written passages in ePortfolio, students can feel more secure that their understanding makes sense. When encouraged to write, students can develop self-confidence and take initiative to talk and act in interaction with preceptors. To set about using ePortfolio, some students needed the preceptor to ask them to do it, and feedback promoted the process. Even if it takes some time in the beginning, it could be worth the effort, as we saw that sceptical students later became conscious about deeper reflections mediated by ePortfolio. However, they will probably need ongoing support from the preceptor to keep writing because they did not write that much in their ePortfolios (see Table 1).

The portfolio documents show that irrespective of the learning style students reflect in ePortfolio. However, investigating connections between initiators and learning styles some tendencies were apparent. Initiators for students with activist style included feelings and consciousness of the benefit of writing on learning. This was similar for two students with reflector style. Students with pragmatic style needed the preceptor to ask them to use ePortfolio. Then they discovered how ePortfolio made them reflect deeper. Initiators for students with theoretic style included the case where their preconceptions make them ponder an issue, or if they want to gather theoretical knowledge. A wish to achieve more knowledge was also an initiator for students with activist style.

3.3 Inhibitors

Inhibitors are barriers that made students reluctant to write in ePortfolio. At the beginning of the course, one student said: "By writing [in ePortfolio] you are caught in the act – you can sit home and think: why did I say that and why did I do this... after writing about it I think I could have done a lot of things... different... but of course, the learning process continues tomorrow" (I: 1A). "I don't believe enough in me to write - suppose I made some misunderstandings in the theory" (I: 1A). These quotations show that the student reflected on practice, which led to new thinking and acting trajectories. However, she seemed to think that she might compromise herself by writing about her nursing practice and was afraid to write something wrong. Using the metaphor "caught in the act", the student appeared to feel vulnerable and exposed by writing. Another student reflected: "I've never been good at it [writing in ePortfolio]" (I: 10P). Feeling that one is not good at writing could also be rooted in a sense of vulnerability at being exposed and not

having enough experience of success in writing. Perhaps a sense of vulnerability can lead to a habit of keeping one's thoughts to oneself. However, in some way, the sense of vulnerability provoked an aim to improve, so it can also be a trigger to take action. Other students said: "I'm not a person who learn much by writing... I learn more by dialogue" (I: 9T). "I learn by doing I think that's why I gave ePortfolio a low priority" (I: 11P). When students have a preconception that one learns only in one particular way, for example only through dialogue, writing will easily seem meaningless and lead to downgrade the ePortfolio. These inhibitors seem to be about lack of knowledge about the learning process and the impact of writing. Finally, some students said: "I don't know what to write" (O), "It's the same things I do – helping X in the bathroom... is it so significant that I have to write about it?" (O).

The study shows how supervision is needed to help the students understand that they can benefit from writing in ePortfolio, even if they prefer another way of learning, and whether their writing is incorrect or concerns ordinary events. The reasoning is that, if they don't write, they could miss an opportunity to reflect on own practice and attitudes and on how to become a competent practitioner. Both of the students with pragmatist as preferred learning style were reluctant to write, but they expressed different reasons: not being good at it and learning by doing instead. No students with reflector style expressed resistance to using ePortfolio, although one wrote few pages. One student with activist style expressed vulnerability but wrote a lot. One student with theorist style preferred to learn without writing.

4. DISCUSSION

The study shows that 47% of the students used ePortfolio at home and 24.2% used it equally at home and in the placement. In a former study, 71.5% of third-year students used ePortfolio at home.^[21] The difference is probably due to the fact that there are fewer quiet periods during placement for third-year students, as they are competent to do more nursing tasks than first-year students. First-year students only used ePortfolio during quiet periods in the ward. It seemed that they made good use of their time, even though ePortfolio was more time-consuming in the placement than at home. Our study, therefore, does not support earlier findings that using ePortfolio detracts time from learning by practicing.^[5] However, it could indicate that it is easier to find time to use ePortfolio at the placement as a first-year student than a third-year student. Being able to integrate ePortfolio use in the everyday context becomes increasingly important during the course, as ePortfolio is an extra space for reflecting, meaning-making, and becoming conscious about competent nursing

practice. As regards learning styles, students with pragmatist style in particular seem to need supervision to benefit from ePortfolio use. Reflection on practice in ePortfolio was initiated by becoming emotionally involved in the clinical nursing practice. According to Ricoeur, writing creates a distance which facilitates self-understanding.^[18] Students consider their own position in relation to the notion of competent nursing and some manage to gain understanding of their experiences independent of supervision. These findings mirror former studies suggesting that ePortfolios support reflection, ways of coping with uncertain or emotionally demanding situations, and independent learning.^[4,5] Another initiator was consciousness of learning by writing. This is underpinned by former studies. According to Zubizarreta,^[22] the power of writing is the engine that drives much of the success of the learning portfolio. He states that writing can record a train of thought and relate it to past, present and future. It forces time to be taken for reflection to clarify thoughts and improve understanding. It captures ideas for subsequent considerations. It helps learners to discover lack of understanding if they cannot explain something, and encourages a deep approach to learning. Finally, he added that writing about an issue enables the learner to talk more clearly about it.^[22] As writing leads to reflection, reflection is necessary to learn and relearn,^[23] and since nursing is a reflective practice,^[24] writing in ePortfolio must be supported. Furthermore, ponder over practice and discovering learning needs initiate trying to improve knowledge and understanding of practice. This harmonizes with former studies showing that ePortfolio improves knowledge and understanding.^[5] A final initiator was a student-preceptor relationship where students felt confident, were encouraged to write in ePortfolio, and received oral or written constructive feedback on their writings. This is in line with previous research results that showed that portfolio use can increase trust and improve the relationship between students and preceptors, and that preceptors become more aware of, and able to meet, student needs.^[5] According to Hermansen,^[23] feedback is a powerful component in learning. Actions resulting in positive feedback are learned and, if repeated, it becomes an experience. Feedback also indicates when it is necessary to transform what already is learned and relearn it.^[23] Scheel^[24] stressed on the same opinion, as students develop ability to practice in interaction with preceptors and an element of the interactions involves feedback. Thus, interactions in ePortfolio can improve the student-preceptor relationship and facilitate differentiated feedback, which promote the individual learning trajectory towards achieving clinical nursing competencies. The study shows that vulnerability inhibits ePortfolio use. Former studies found that students were reluctant to be honest and write

about their feelings because it could influence the assessment.^[5] Keeping one's thoughts and feelings to oneself is considered inappropriate because the learning takes place in interaction with other people.^[23,24] Reflection is challenging, painful and demands self-scrutiny^[22] as it is part of the process of acquiring new thinking and acting trajectories. In expressing their feelings in ePortfolio, students show trust in their preceptors. It involves giving oneself away, which makes one feel vulnerable.^[24] Therefore, constructive feedback on portfolio writings is crucial for learning that involves feelings. Otherwise, lack of feedback on portfolio work can lead to a feeling that portfolio work is unimportant.^[4] Another inhibitor was the preconception that one learns only in one specific way. As Coffield *et al.*^[10] warned students can label themselves. In doing so, they risk not developing their learning potential to the full, miss out on learning from writing, and their considerations and thoughts remain hidden, making it impossible for the preceptor to give them constructive feedback. Being conscious of one's own preferred learning style can be useful. Though, as previous research indicated, students and educators need not only to be aware of preferred learning styles, but also of the benefit of developing all four learning styles into an integrated learner, as espoused by Kolb.^[8] Based on Kolb's learning cycle,^[25] theory of Honey and Mumford^[26] harmonized with this study. The learning process can begin with the preferred learning style, but no one learning style is effective on its own. So, it is important to develop the other learning styles too, in order to achieve a comprehensive approach to learning.^[26] Writing thoughts and experiences in ePortfolio provides a fixed text that is open to further reflection, contrary to the evanescent quality of live dialogue. Although the Honey and Mumford learning style theory^[26,27] does not focus on learning by writing, the abovementioned research indicates benefits from writing that are important to every nurse student, regardless of preferred learning style. Academic writing competency is, of course, a requirement to achieving a Baccalaureate degree.^[1] A final inhibitor is the challenge of integrating ePortfolio use in everyday life. A Danish professor and psychologist, Ole Dreier lays emphasis on the significance of self-understanding of one's conduct of everyday life and the reasoning behind it, because it provides meaning, confidence and security, and makes everyday toil manageable.^[27] According to Dreier we live our lives in and across different contexts in an individual life trajectory and follow different aims within these contexts. Part of this life trajectory is a learning trajectory, which differs from, and goes beyond, institutional education.^[27] In order to manage everyday toil of completing a nursing course, students need to be conscious of what effort is needed to learn and the rea-

sons for making this effort. Students with little experience or knowledge of learning by writing will generally not choose to write in ePortfolio and they may not consider that it would have meaning for them. Students who feel vulnerable will also be reluctant to write. Conversely, ePortfolio use gives meaning to students who already have positive experience of learning through writing. According to Dreier, a person has to integrate demands from different contexts into how they conduct their everyday life. The integration process is complex, as it involves the issues of time and the organisation of one's own resources, possibilities, tasks, and relations to other people.^[27] For students who know their preferred learning style and how to plan their studies so that the other learning styles can develop, ePortfolio will be worth prioritizing in order to manage their resources and possibilities in their conduct of everyday life.

5. CONCLUSION

The ePortfolio is used very individually and mostly at home. Using ePortfolio on the ward is more time-consuming. However, first-year students use it to make good use of time in quiet periods. The ePortfolio is a space, where students reflect on practice and their own learning process independently or in interaction with preceptors. The principal initiators of ePortfolio use are emotional involvement in clinical nursing, consciousness of learning through writing; ponder over practice, and a confident and constructive student-preceptor relationship. Inhibitors of ePortfolio use are vulnerability, a preconception that one learns only in one way, and lack of supervision about how to learn. These inhibitors lead to resistance to integrate ePortfolio use in everyday life, but

it seems it would be possible to minimize them if preceptors were empowered and equipped to communicate knowledge about the learning process. The study showed some connection between preferred learning styles and ePortfolio use. The tendencies are not unambiguous, as students have an individual learning style profile including all four learning styles and not merely the preferred learning style.

Implications for nursing education

The findings of this study suggest that nursing education could benefit from following implications:

- To explain to students the phenomenon of learning in the beginning of the study so they can benefit from knowing about their preferred learning style and learning potentials. By emphasizing on the significance of self-understanding of one's learning process as a part of one's conduct of everyday life, it could probably provide meaning, confidence and security of the students and lead to improvement of learning.
- To present the ePortfolio as a learning tool, that can facilitate achievement of such a self-understanding of one's learning process.
- To explain the learning potentials of writing and how they can benefit from writing in ePortfolio to students who are reluctant to write. Though, in order to achieve the learning outcome it is also necessary to provide constructive feedback from the preceptors.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest statement.

REFERENCES

- [1] Ministry of Education. Bekendtgørelse om uddannelse til professionsbachelor i sygepleje. Departmental order about Nursing Education. [Internet]. 2008. Available from: <https://www.retsinformatio.n.dk/Forms/R0710.aspx?id=114493>Danish
- [2] Garrett BM, Jackson C. A mobile clinical e-portfolio for nursing and medical students, using wireless personal digital assistants (PDAs). *NURSE EDUC PRACT* [Internet]. 2006; 6(6): 339-46. Available from: <http://www.sciencedirect.com/science/article/pii/S0260691706001201> PMID:19040900 <http://dx.doi.org/10.1016/j.nepr.2006.07.015>
- [3] Witte L. Mapper som redskap for læring i høyere utdanning. *Strukturer, kulturell praksis og deltakelsesbaner [Portfolio as a Tool for Learning in Higher Education. Structures, Cultural Practice and Participation Trajectory]*. Det utdanningsvitenskapelige fakultet, Universitetet i Oslo; 2007.
- [4] McMullan M. Using portfolios for clinical practice learning and assessment: The pre-registration nursing student's perspective. *Nurse Educ Today*. 2008; 28(7): 873-9. Available from: <http://www.sciencedirect.com/science/article/pii/S0260691705002571>
- [5] Buckley S, Coleman J, Davison I, *et al*. The educational effects of portfolios on undergraduate student learning: A best evidence medical education (BEME) systematic review. BEME guide no. 11. *Med Teach* [Internet]. 2009 Apr [cited 2014 Dec 1]; 31(4): 282-98. Available from: http://www.researchgate.net/publication/24379656_The_educational_effects_of_portfolios_on_undergraduate_student_learning_A_Best_Evidence_Medical_Education_%28BEME%29_systematic_review._BEME_Guide_No._11
- [6] Astin F, Closs SJ, Hughes N. The self-reported learning style preferences of female macmillan clinical nurse specialists. *Nurse Educ Today* [Internet]. 2006 Aug [cited 2014 Dec 1]; 26(6): 475-83. Available from: <http://www.sciencedirect.com/science/article/pii/S0260691705002571>
- [7] Li YS, Chen PS, Tsai SJ. A comparison of the learning styles among different nursing programs in taiwan: Implications for nursing

- ing education. *Nurse Educ Today* [Internet]. 2008 Jan; 28(1): 70-6. Available from: <http://www.sciencedirect.com/science/article/pii/S0260691707000305> PMID:17391813 <http://dx.doi.org/10.1016/j.nedt.2007.02.007>
- [8] D'Amore A, James S, Mitchell E. Learning styles of first-year undergraduate nursing and midwifery students: A cross-sectional survey utilising the Kolb learning style inventory. *Nurse Education Today* [Internet]. 2012; 32(5): 506-15. Available from: <http://www.sciencedirect.com/science/article/pii/S0260691711002000> PMID:21889237 <http://dx.doi.org/10.1016/j.nedt.2011.08.001>
- [9] Cassidy S. Learning styles: An overview of theories, models, and measures. *Educational Psychology* [Internet]. 2004; 24(4): 419-44. Available from: <http://www.tandfonline.com/doi/abs/10.1080/0144341042000228834> <http://dx.doi.org/10.1080/0144341042000228834>
- [10] Coffield F, Moseley D, Hall E, *et al.* Should we be using learning styles? What research has to say to practice? [Internet]. London: Learning and Skills Research Centre; 2004. Available from: <http://www.lsda.org.uk/files/pdf/1540.pdf>
- [11] Pashler H, McDaniel M, Rohrer D, *et al.* Learning styles concepts and evidence. *Psychological Science in the Public Interest* [Internet]. 2008; 9(3): 105-19. Available from: https://www.psychologicalscience.org/journals/pspi/PSPI_9_3.pdf
- [12] Hermansen M. Læring, tænkestil, personlighed og undervisning [Style of learning and thinking, personality and teaching]. In: Andersen P, editor. *Læringens og tænkningens stil: en antologi om stilteorier*. 1st ed. Værløse: Billesø & Baltzer; 2006; 218-233.
- [13] De YS. *Teaching strategies for nurse educators*. 2nd ed. Upper Saddle River, N.J.: Prentice Hall; 2009; 300.
- [14] Ventures. Find din læringsstil [know your learning style] [Internet]. 2014. Available from: <http://www.ventures.dk/laeringsstil/voksne.htm>
- [15] Honey P, Mumford A. *The Learning Styles Questionnaire: 80-item version*. Peter Honey Publications Ltd.; 2000.
- [16] Spradley JP. *Participant observation*. South Melbourne: Wadsworth, Cengage Learning; 1980; 195.
- [17] Northern Nurses' Federation. *Ethical Guidelines for Nursing Research in the Nordic Countries* [Internet]. 2003. Available from: <http://old.sykepleien.no/ikbViewer/Content/337889/SSNs%20etiske%20retningslinjer.pdf>
- [18] Ricoeur P. *Interpretation theory: Discourse and the surplus of meaning*. TCU Press; 1976.
- [19] Pedersen BD. *Sygeplejepraksis: sprog & erkendelse* [Nursing practice. Language & Cognition]. Aarhus: Det Sundhedsvidenskabelige Fakultet, Aarhus Universitet og Danmarks Sygeplejerskehøjskole ved Aarhus Universitet; 1999.
- [20] Wiklund L, Lindholm L, Lindström UÅ. *Hermeneutics and narration: A way to deal with qualitative data*. *Nurs Inq* [Internet]. 2002; 9(2): 114-25. Available from: https://www.researchgate.net/publication/11302727_Hermeneutics_and_narration_a_way_to_deal_with_qualitative_data PMID:12071912 <http://dx.doi.org/10.1046/j.1440-1800.2002.00132.x>
- [21] Bogossian FE, Kellett SE. Barriers to electronic portfolio access in the clinical setting. *Nurse Educ Today* [Internet]. 2010; 30(8): 768-72. Available from: <http://www.sciencedirect.com/science/article/pii/S0260691710000444> PMID:20434242 <http://dx.doi.org/10.1016/j.nedt.2010.02.003>
- [22] Zubizarreta J. *The Learning Portfolio: Reflective Practice for Improving Student Learning*. [Internet]. Jossey Bass Ltd; Jossey-Bass-LA English; 2009.
- [23] Hermansen M. *Omlæring* [Relearning]. 1st ed. Århus: Klim; 2003.
- [24] Scheel ME. *Interaktionel sygeplejepraksis* [Interactional Nursing]. 3rd ed. Copenhagen: Munksgaard Danmark; 2005.
- [25] Kolb DA. *Experiential Learning. Experience as the source of learning and development*. Upper Saddle River, New Jersey: Prentice Hall, Inc.; 1984.
- [26] Honey P, Mumford A. *The learning styles helper's guide*. Peter Honey Publications Maidenhead; 2000.
- [27] Dreier O. *Personality and the conduct of everyday life*. *Nordic Psychology* [Internet]. 2011; 63(2): 4-23. Available from: https://www.researchgate.net/publication/232511772_Personality_and_the_conduct_of_everyday_life <http://dx.doi.org/10.1027/1901-2276/a000030>