

ORIGINAL RESEARCH

When are nursing students on clinical placements ready to expand their learning repertoire?

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ABSTRACT

Learning styles indicate an individual's preferred way of learning. Research suggests that it is important for students on clinical placements to begin the learning process with the preferred learning style and subsequently develop their ability to use other styles and become more balanced learners. What is unknown is when baccalaureate nursing students are ready to develop the other learning styles, and what facilitates such an expansion in their learning style repertoire? This is important, because students need to develop the abilities to learn both by acting and by deepen their knowledge of theory to meet the requirements of the nursing profession. An American study found that operating room students felt confident to adopt new learning styles by the third week of clinical placements. No studies to date have retrieved a similar pattern of readiness to expand learning style repertoire among nursing students. Therefore, the aim of this study was to investigate when students are ready to expand their learning style repertoire in a Baccalaureate Nursing Programme and to investigate the factors that influence such an expansion. Data were generated through participant observations and interviews. The findings indicated that students were ready in different weeks, and that interaction with nurses, the context, and the type of ward in the clinical placement were crucial factors for students to be able to expand their repertoire. The conclusion was that both students and preceptors need to be ready before students can adopt and develop other learning styles.

Key Words: Learning, Learning styles, Nursing education, Baccalaureate nursing programme, Clinical education, Qualitative research

1. INTRODUCTION

This article presents the findings of a study investigating expansion in first-year nursing students' learning styles during their first clinical course. According to Honey and Mumford,^[1] the concept of preferred learning style indicates the most rewarding way of learning for an individual, and means the habitual manner in which the learner perceives and processes what has to be learned and takes ownership of it.

Learning styles are not fixed traits and no person represents a pure type. Each learner has an individual learning profile and can develop other learning styles.^[1,2]

Honey and Mumford described four learning styles: activist, reflector, theorist and pragmatist. The learning styles are characterized in Table 1. To succeed in the learning process, Honey and Mumford considered it appropriate to begin

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learning by using the preferred learning style. After a time, however, the student can benefit from developing the other three learning styles, because more powerful and adaptive

forms of learning emerge, when the strategies are used in combination.^[1]

Table 1. Characteristics of learning styles by Honey and Mumford

Learning style	Characteristic traits
Activist style	Prefers to learn from new, concrete experience and active experimentation. Gets involved without preconceived opinions, acts intuitively, and reflects afterwards. Wants to cooperate and is comfortable in the limelight.
Reflector style	Observes, listens, and familiarizes themselves in a situation. Collects information and reflects on a case from different perspectives. Cautious and reluctant to act.
Theorist style	Analyses step-by-step and theorizes independently and persistently. Considers logically and thinks out explanations and syntheses. Prefers structure, clear objectives and safety.
Pragmatist style	Eager to try out whether or not theory and procedures are meaningful in practice. Wants to solve practical problems. Plans and makes decisions in cooperation with a supervisor.

In the Danish Baccalaureate Nursing Programme, theoretical courses alternate with clinical courses,^[3] so the programme facilitates different ways of learning and provides a variety of learning contexts. The concept of nursing is inspired by the interactional nursing practice-theory of the Danish RN, MSc (Nursing) and PhD (Philosophy) Merry E. Scheel. According to Scheel, the aim of a nursing education is to become a reflective practitioner. Scheel emphasizes that the nurse should build her clinical judgments based on knowledge about the current patient and the context, as well as from the natural, human, and social sciences.^[4,5]

Earlier studies investigated changes in learning styles during nursing programmes, with varying results. Some studies found little^[6] or no significant changes in learning style scores,^[7] while other studies found either significant changes,^[8,9] or changes in the majority of learners.^[10] Chase^[11] studied the effects of both match and mismatch between newly assigned nurses and operating room educators. The learners reported that the matching of learning styles and teaching strategies was beneficial during the first couple of weeks, because it reduced their anxiety and increased their confidence. However, by the third week, the learners felt confident to adapt to new learning styles and teaching strategies.^[11] Two other studies concluded that an important challenge in nursing education is to facilitate a process in which nursing students challenge themselves to move beyond their learning style comfort zone in order to maximize their learning potential.^[8,10] Thus, there is no consensus as regards nursing students' changes and developments in learning style. It is important to maximize learning potential, because it develops more balanced learners, which is

beneficial to lifelong learning. Another question is: Which factors influence expansion in learning repertoire? The aim of this study was to investigate when students are ready to expand their learning style repertoire in the Danish Baccalaureate Nursing Programme and to investigate the factors that influence such an expansion.

Learning theory

Besides the learning style theory of Honey and Mumford, the understanding of learning is also informed by the Danish professor and psychologist, Mads Hermansen (see Figure 1).^[12]

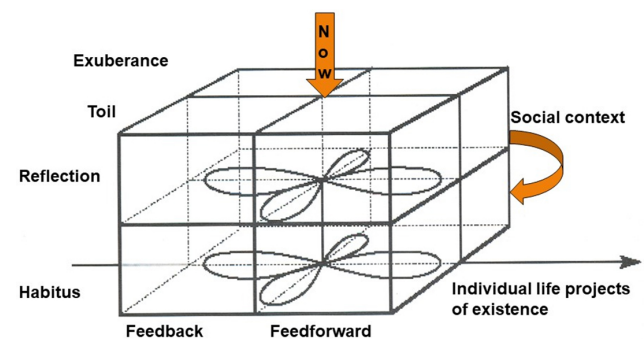


Figure 1. Illustration of Hermansen's model of learning

According to Hermansen's model,^[12] learning can be initiated by both internal and external motivation and happens as a cultivating process in the learner as well as in relation to other people and to the entire social context. The process of learning moves continuously between the habitual level in known situations, in which one can act intuitively, and the reflective level, when something new – that involves

considerations – appears in a situation. Thus, learning is both unconscious and conscious. On both levels, the process includes feedforward and feedback, “toil” and “exuberance”. “Toil” indicates that hard work often is a condition of learning. “Exuberance” means the learning that comes as a surplus from the whole experience. It is a dialectical process during the “individual life projects of existence”. This understanding of learning builds on a string of theories by Skinner, Thorndike, Pavlov, Bateson, Colaizzi, Rogers, Merle-Ponty, Bruner, Gergen and Ricoeur.^[12]

2. METHODS

2.1 Research design

Similar to previous studies,^[2,13–15] the design for this study takes a phenomenological-hermeneutic approach, in which the participating students are observed and interviewed. The participant observation was inspired by the ethnographer James P. Spradley’s theory of participant observation^[16] to generate data from the researcher’s perspective. The interview method was inspired by the philosopher Paul Ricoeur’s theory of narratives^[17] to generate data about the students’ experiences of the learning process. Having data from both the researcher’s and the student’s perspectives is expected to establish a solid understanding of changes in the students’ learning styles and factors that influence such changes.

2.2 Settings and participants

The setting was the first 10-week clinical course in basic nursing in two Danish schools of nursing. The focus of the course was about relating to, communicating and cooperating with patients. There were eight first-year students on clinical placements within two hospitals. The inclusion criteria were students about to begin the course, who represented the four learning styles.^[11] To enrol students with different learning styles in the study, the students responded to a 40-question learning style indicator. As described in a former study,^[15] the learning style indicator was inspired by the 80-item version of the Honey and Mumford Learning Styles Questionnaire.^[18] The indicator was developed for Danish conditions and tested for reliability by the company @ventures within the Danish Knowledge Centre for e-learning. The indicator showed “very accurate”, “accurate”, or “reasonably accurate” for approximately 92% of users.^[19] It gave an indication of which learning style the students preferred as well as an individual learning style profile. Thus, with the class divided into four groups, two students were chosen from each group using a random number generator.^[20] Seven female and one male student aged 19-34 volunteered to participate in the study – four from each school of nursing. At each school, one student represented each of the four learning styles.

2.3 Generation of data

A researcher participated while the student was introduced to the specific ward by the preceptor during the first week of the course, in order to make sure that both student and preceptor were aware of the student’s preferred learning style. Besides this first meeting, the plan was to follow and interview each student three times during the course, to observe signs of learning in different ways and encourage the students to express their own experiences of learning. The interviews took place immediately after the observations. At the end, there was a total of 22 records of participant observations and 23 interviews, as one student was taken ill on the third day of participant observations, and in another participant observation, the student was not given any tasks to do. As recommended by Spradley,^[16] the observations were noted concurrently. The interviews opened with the question: “Please, tell me what you experienced by participating in providing care today?” The interviews were recorded and transcribed by the researchers, so the entire data material from participant observations and interviews were available as text.

2.4 Ethical considerations

Before commencing the study, the Head of Nursing at the two hospitals approved access to the clinical placements. The planning for participant observations and interviews was made in cooperation with the preceptor at the clinical placements. The researchers provided posters with written information to the staff and the patients on the wards. Prior to the course, the students had received oral and written information about the study. The information included a statement to the fact that participation in the research was voluntary, that they would be anonymized, and that a withdrawal would have no consequences for their education. Although the researchers involved in the study were faculty at the two schools of nursing, none of the researchers was involved in assessing the students on their course. Therefore, there was no ‘conflict of interest’. The students were included after informed consent. The study complied with the “Ethical Guidelines for nursing Research in Scandinavia”^[21] and the “Danish Code of Conduct for Research Integrity”.^[22] As no sensitive information about the students was stored, there was no obligation to notify the study to the Danish Data Protection Agency.

2.5 Interpretation

The whole text material was interpreted – inspired by Ricoeur’s theory of interpretation on three levels: naive reading, structural analysis and critical interpretation and discussion.^[23] The interpretation process is illustrated in Figure 2.

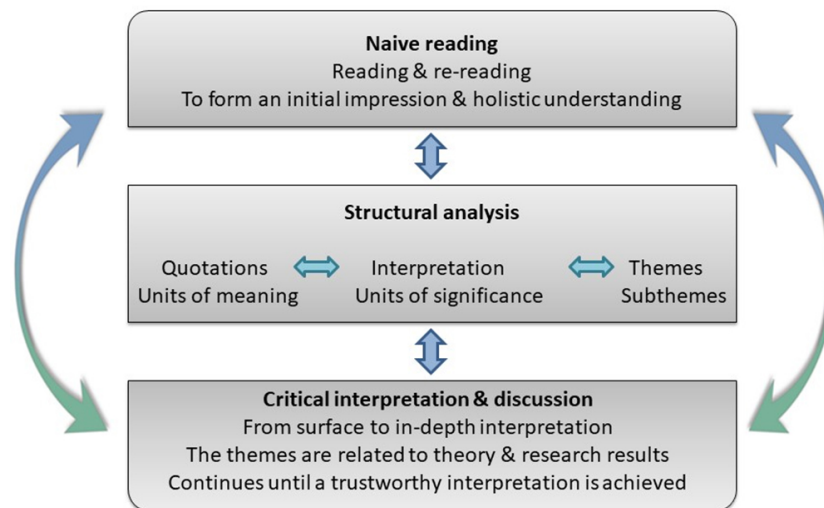


Figure 2. Illustration of the interpretation process

The naive reading constitutes the first level and the phenomenological part of the interpretation. The researchers' preconceptions were put aside, and the texts were read, discussed and re-read to get an initial and shared impression and understanding of the students' learning processes. The second level is the structural analysis, which is the explanatory part of the interpretation. The texts were systematized using the computer programme NVivo 11. The sentences were analysed in order to identify the units of meaning (what is said/quotations) and units of significance (what is being talked about/interpretation). At this level, it was investigated if there were quotations that underpinned the first impression of the texts, or whether the first impression had to be revised. The texts were analysed in turn by the individual researchers and then together, to allow each researcher to get a deeper insight into the texts and then to reach a joint interpretation. Furthermore, a class of third-year students was involved in this part of the interpretation, to make sure that no quotations or themes that were important to the students were overlooked. However, no new themes emerged. As a part of the structural analysis, we derived statistical data from the most coded themes in NVivo 11. These were used to underpin the impression of each student's current learning style and their expansion of learning. As an example: Student G preferred reflector style, and the most coded theme from the first interview in week three is "learning through listening". In the final interview, in week five, the most coded theme was "independent action". This can indicate a change in the learning style of the student. During the first and second levels of the interpretation, three themes were drawn out from the entire data material. The third level is the critical interpretation and discussion, which is based on the emerging themes and subthemes. The themes were related

to theory and other research results in the discussion. The interpretation moved backwards and forwards between the levels and from the specific to the general in a hermeneutic helix and continued until a trustworthy interpretation was achieved.

3. FINDINGS

In the following four paragraphs, it is illustrated how the preferred learning style of the informants appeared and when they were ready to expand their learning style repertoire. The abbreviations in parentheses after the quotations refer to participant observations (O) and narrative interviews (I). The letters A, B, C, D, E, F, G, and H refer to the individual students. Lastly, the numbers refer to the week of the participant observations or the interview. For instance, OA2 refers to participant observations of a specific student A in the second week of the course. In order to anonymize the male student, every student is referred to as "she".

In Figure 3, the students are grouped according to the learning styles they preferred at the beginning of the course. Figure 3 gives an overview of the week of the course in which each student expanded her learning style repertoire.

3.1 Students with reflector style

Student A's placement was in a medical unit and she learned in a permissive atmosphere with supportive supervisors. She was followed during the second and third weeks of the course. She was taken ill on the third day of participant observation. It was not possible to plan a new, third participant observation but, in the seventh week, she had recovered and was interviewed. In the second week, A worked alone, and the impression was that she learned by doing, and she subsequently reflected on what to do next time. However, she

also followed an occupational therapist and observed how the therapist guided the patient to carry out activities of daily living (OA2). In the interview, A expressed that she managed to reflect on what she would have to remember, and what she had to do differently next time. Still, she would have liked to have more supervision and emphasized that she had gained a lot from observing the occupational therapist (IA2). She preferred to learn from observing and making herself familiar with different situations, which are the character-

istics of the reflector style. In the third week, A worked more independently and expressed that she had changed her mind about how to learn: I said I benefited the most from following and observing someone and subsequently carrying it out myself . . . but now, I prefer to do the things myself (IA3). The reflections no longer made her reluctant to act. She acted more intuitively, in line with the activist style, and the feeling that she had access to supervision comforted her.

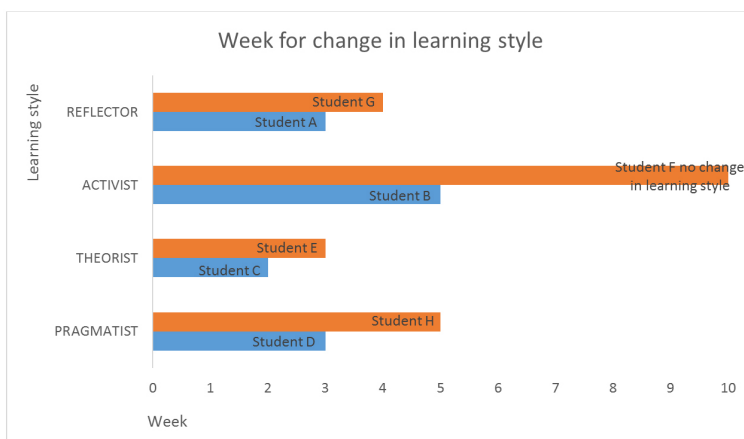


Figure 3. Illustration of week of expansion in learning style repertoire

In summary, it seemed that A began to learn by doing already in the second week. However, she still emphasized learning from observation according to the reflector style. She does not spontaneously talk about learning from acting before the third week. Therefore, it was interpreted that A was ready to expand her learning repertoire in the third week. In the seventh week, the expansion had consolidated, as A responded: Earlier [on the course], I thought, is this right or wrong before I went to the patient. Now I reflect more afterwards (IA7). In accordance with Hermansen,^[12] the learning process of A moved from the conscious level by feedforward and feedback – where she “toilsomely” reflected on the situation from different angles – to the habitus level, where she had gained enough experience and courage to act more intuitively.

Student G was placed in an emergency unit. She was followed in the third, fourth, and fifth weeks of the course. In the third week, G carried out very few tasks, such as getting a thermometer and identifying a patient, although she was also guided through the scanning of a patient’s bladder (OG3). In line with the characteristics of the reflector style, G needed to observe for a longer time to feel secure in taking action. She stated that she wanted to stand on the side-lines and observe how to insert a urinary catheter, even though she had practised it in a simulation laboratory (IG3). In the

fourth week, G told the preceptor how she was going to help a patient to clean up: I’ll start with the face, the arms and then the upper part of the body. . . She carried through her plan in interaction with the patient and stated the reasons for some actions, while the preceptor observed her (OG4). G related a challenge, in which she did not hesitate to help a patient with Parkinson’s disease to eat. She managed the situation independently and to the satisfaction of the patient (IG4). To take on a challenge and act rapidly in the situation is a characteristic trait of the activist style.

In summary, it was interpreted that, in the fourth week of the course, G was ready to include in her learning repertoire the activist style, in that she took on a challenge and acted without time to reflect beforehand. In the fifth week, the change in learning style had consolidated, in that G responded that she felt confident with the responsibility and proud to feel a sense of trust from the nurses (IG5). This underpinned the fact that her learning process had moved from observing and reflecting to taking action more intuitively and independently. In accordance with Hermansen,^[12] this is a change of approach to learn nursing. Despite the fact that she was in an emergency unit, the nurses trusted her and gave her responsibility to work independently with the patients.

3.2 Students with activist style

Student B was on placement in a medical unit and was followed in the second, third, and fifth weeks of the course. In the second week, B carried out nursing intuitively. She was looking for new learning opportunities in every situation (OB2). In the interview, B expressed: I don't mind throwing myself into the tasks . . . I think I would get fed up with being followed all the time (IB2). These traits are characteristic of the activist style. In the third week, B continued to carry out nursing independently and showed great initiative in adapting her care to the individual patients. She began to read about her patients in the medical records and asked for supervision (OB3). In the fifth week, B read up the medical report of the patients before she carried out nursing. She asked for guidance and observed the nurses' work (OB5). B stated that she had become much better at planning her actions (IB5). To listen and observe before acting are traits of the reflector style. However, being a good planner is a characteristic trait of the pragmatist style. Relating Hermansen's^[12] understanding of learning to the pragmatist learning style, in the present situation, the learning process moves through a reflection on what feedback she got on her former performance of nursing to feedforward reflections on her impression of the situation and her preconception. These reflections provided a basis for her qualified care plan for the patient. As illustrated in Figure 1, the learning process moved through "toil", including reading theory, rehearsal, asking for supervision, and moving through the bow of feedforward and feedback several times before she reached a state of "exuberance" – or, as she said: a good grasp of the situation (IB5).

In summary, in the third week of the course, B began to read about the patients assigned to her before acting. This might indicate that B reflected before acting, in line with the reflector style. This pattern continued in the fifth week, and B felt much better at planning her actions and forming a general overview of the situation. Reading the medical records before acting could also be a sign of planning, a characteristic of the pragmatist style. Therefore, it was interpreted that B actually began to expand her learning style to the pragmatist style in the third week. However, she had not reached the level of exuberance and was not able to make it explicit before the fifth week.

Student F was in a children's ward. She was followed in the second and fourth weeks of the course. In the second week, F observed what the preceptor said to the parents and what she did. The preceptor did not provide space for F to perform nursing or communicate with the patients. The preceptor asked F reflective questions both before and after relating to the patients and their parents (OF2). F expressed that she tried to find out how the preceptor wanted to supervise her. F

wanted to take action herself, as she felt that she would learn more that way (IF2). When the preceptor facilitated learning by reflection and observation, she provided space for learning by using the reflector style, rather than the activist style, which was F's preferred learning style. In the fourth week, F began the day by reading about the patients assigned to her and continued to observe and make notes, as the preceptor continued to take the lead in the interactions with patients and parents. However, some guidance took place both before and after the preceptor's interactions with the families (OF4). F responded that she learned a lot by getting the preceptor's help to spot important areas of nursing. Despite this, F expressed that it was frustrating only to observe and that she learned best by doing (IF4). F tried to adapt to the preceptor's way of supervising by reflecting and observing in line with the reflector style, but she still preferred to learn by the activist style. In accordance with Hermansen,^[12] this is an example of how the learning process initiated by external motivation of the preceptor did not develop to become genuine learning. If F had been allowed to begin the learning process using her preferred activist learning style, her frustration might have been avoided, her learning process enriched by her inner motivation, and this could perhaps have led to a higher level of success in her learning. In summary, from the beginning of the course, F had to adapt to the way the preceptor supervised her, so F's learning process was mostly facilitated through reflection and observation, as in the reflector style. This mismatch caused F some frustration, as she felt that it inhibited her learning process. In the end, she still preferred to learn by doing, which is characteristic of the activist style. Therefore, it was interpreted that she did not expand her learning style repertoire.

3.3 Students with theorist style

Student C was in an intensive care unit and was followed in the second, fourth, and sixth weeks of the course. In the second week, C had prepared herself to take care of the patient, by reading the medical record, and she showed knowledge about restrictions regarding a urinary catheter. C was in a supportive atmosphere (OC2) and responded that she was comfortable acting alone and with the nurse, by turns (IC2). To prepare oneself, ask insightful questions, and make knowledgeable comments are traits of the theorist style. On the other hand, C was also comfortable participating in delivering care, both on her own and with a nurse (IC2), which is characteristic of the activist and pragmatist styles, respectively. In the fourth and sixth weeks, C was allowed to carry out nursing for unconscious patients in collaboration with nurses and physicians (OC4, OC6). C explained that it was very instructive to be guided by a nurse, and told that she loved having the opportunity to carry out new tasks (IC4,

IC6). These are characteristic traits of the activist style. Quotations, such as: I read . . . about being unconscious and how important it is to say what you are doing, otherwise, they can get scared (IC6) also show that C “toilsomely” continued to deepen her knowledge of theory and learned by using the theorist style.

In summary, the intensive care unit as context led to C cooperating closely with nurses and physicians. C demonstrated a broad foundation of theory with which she reflected on her experiences during the course. That might have led to nurses and physicians involving C in more tasks. To work with a supervisor is characteristic of the pragmatist style, so C also benefited from learning in that way. However, she took opportunities to take action when possible and showed that she was prepared to learn by doing. Therefore, it was interpreted that C was ready to expand her learning style repertoire in the second week of the course, and during the course, the pragmatist and the activist styles were consolidated.

Student E’s placement was in a neurorehabilitation unit and she was followed in the second, third, and fifth weeks of the course. In the second week, E read the medical records of the patients and offered knowledgeable suggestions. E expressed that she would like to do as many tasks as possible. However, a nurse new to the job did not allow her to do much (OE2). E related that she benefited from the nurse’s questions and from sharing her considerations with her (IE2). To read and ask knowledgeable questions are traits of the theorist style. She also wanted to actively carry out nursing but did not get much chance. In the third week, during pre-instructions, E asked insightful questions and, afterwards, she performed care for a patient independently (OE3). E expressed that acting by herself and being given responsibility made her think as a nurse, and that she jumped into giving an injection after reading the instructions (IE3). To prepare oneself and take responsibility to act alone constitute a combination of traits associated with the theorist and activist styles, respectively. In the fifth week, E performed nursing independently and reported to the preceptor about a patient’s problems. Together, they assessed what to do (OE5). E responded that the preceptor asked reflective questions, which made her aware of more learning needs. However, E related that she had become more open to feeling her way and not always needing to be prepared. By mobilizing the courage to feel her way, E took another step towards the activist style. In accordance with Hermansen, (12) her learning process seemed to be initiated by her internal motivation. She reflected and theorized “toilsomely” and persistently until she understood explanations and achieved coherence to such a degree, that she became more open to feeling her way and taking action at the habitus level, without spending time preparing herself

beforehand.

In summary, E expressed that she was ready to learn by doing in the second week of the course. In the third and fifth weeks, she showed theoretical insight in response to nurses’ questions and acted independently. Step by step, she assimilated learning by using the activist style. Therefore, it was interpreted that she was ready to supplement her preferred learning style with the activist style from the second week of the course, although she did not get the chance to do so before the third week.

3.4 Students with pragmatist style

Student D was on placement in an orthopaedic unit and was followed in the second, third, and fifth weeks of the course. In the second week, D planned tasks together with a nurse. Partly, she performed tasks by herself and partly, the nurse gave advice and demonstrated how to do (OD2). D responded that, in a situation where she was thrown into a new task by helping a patient onto her feet, she attempted to stick to logical thinking and guidelines in her actions (ID2). Cooperation with a supervisor, the desire to solve a practical problem for a patient and to try out guidelines in practice are all characteristic traits of the pragmatist style. In the third week, D worked independently and cooperated with both patients and relatives. Only occasionally did she work with the nurse (OD3). D felt comfortable working alone, as there was always someone to ask. She felt that she benefited from situations in which she was in doubt, and wrote considerations on how to do tasks properly in her study plan (ID3). In the fifth week, D continued to work independently, so a characteristic trait of the activist style had consolidated. She made use of waiting time to write diary notes and evaluate the week in her study plan (OD5). D expressed that, when one gets to be hands-on in practice, it is easier to understand the theory (ID5). In accordance with Hermansen,^[12] D had changed her approach to learning, as her learning process moved from planning and acting in cooperation with the nurses in the second week to working independently in third and fifth weeks. Planning a task involves reflecting, using feedforward, on what seems to be the right thing to do in light of previous feedback and reflecting on practice so many times, that experience and knowledge become meaningful and integrated into the person. Then it becomes possible to act more intuitively and alone at the level of habitus.

In summary, D felt comfortable by working alone in the third week. In fifth week, this trait of activist style as well as traits of pragmatist style, such as evaluating and planning, were consolidated. Thus, it was interpreted that D was ready to develop her learning repertoire with activist style in the third week of the course.

Student H was in a Neurorehabilitation Unit in a team, where there often were as many students as patients. She was followed in the second, the fourth, and the fifth weeks of the course. In the second week, H began her shift by reading about the assigned patient. She showed insight into the patient situation talking and planning with the preceptor. H co-operated with a trainee about helping a patient to the bathroom, getting breakfast, and documenting the care. She asked questions to trainees, other students, and nurses (OH2). H responded that she learned a lot from co-operating with other students and professionals on nursing. She was aware of the need to plan before acting, so everyone knew what to do (IH2). Reading about the patient seemed to be meaningful to H. She valued to get advice from supervisors like pragmatist style as well as to cooperate with other learners and gain from them like activist style. In the fourth week, H continued to plan the care in co-operation with her preceptor and to prefer to ask instead of finding answers by herself (OH4). H read a handed over article about communication. However, as she had not seen the nurses talking to patients about their lives as recommended in the article, she was reluctant to do so (IH4). To need a role model and external motivation to read an article, are characteristic traits of pragmatist style. In the fifth week, H planned and carried out nursing in co-operation with another first-year student and reported to a nurse (OH5). H responded, that she began to have a better grasp of the situation, though, she was aware, that she needed rehearsal to report and to deepen her knowledge of theoretical issues. H continued to act with traits of pragmatist and activist style. It seemed as if she began to see the meaning of the theory and took small steps towards learning by reflector or theorist style. In accordance with Hermansen,^[12] this student began the learning process in co-operation with nurses and others, who had more knowledge and skills than herself that enabled her to reflect on feedforward and feedback related to the situations. However, in the fifth week, H realized that she had to take more responsibility to “toilsomely” deepen her knowledge of the theory herself, in order to learn more and reach the level of “exuberance”.

In summary, H continued to need role models and other learners to cooperate with until the fifth week, when her internal motivation appeared and she began to take responsibility to delve more into the theory herself. Therefore, it was interpreted that H was ready to expand her learning style repertoire in the fifth week of the course.

4. DISCUSSION

During the analysis and interpretation, three themes emerged: Expansion of learning style repertoire, together with factors that facilitated and factors that hampered the expansion.

These themes are discussed in the following paragraphs.

4.1 Expansion of learning style repertoire

The study indicated that students began their learning process with the preferred learning styles, and after some time, they expanded their learning repertoire with another learning style, if they were allowed to do so. Students with theorist style, who had deepened their knowledge of theory in theoretical courses, seemed to benefit from the knowledge they had gained in the clinical placements, as they seemed ready to expand their learning style repertoire from as early as the second week. However, no unambiguous pattern in nursing students' readiness to expand their learning repertoire was found. The seven students seemed to be ready in different weeks—from the second to the fifth week of the course, and one student did not really experience a new way of learning. The findings of this study differ from those of Chase,^[11] who found that newly assigned nurses were ready to change learning style in the third week, when they were to learn to work in an operating room. Of course, there is a difference in educational level of the graduates and undergraduates, but the difference might also be caused by different arrangements. Chase arranged a match between the learning style and teaching strategies, respectively, of learners and staff in the first two weeks, which reduced the students' anxiety and increased their confidence. In the following four weeks, Chase had arranged a mismatch between the learners and staff. Thus, in the beginning, all the learners were allowed to learn in their preferred way. In the third week, they were challenged to learn in another way than the preferred one – and they felt ready to do so.^[11]

In this study, it was observed what happened naturally in the learning process. Either a match or mismatch of learning styles between students and supervisors were arranged. By participating while the student was introduced to the specific ward, it was just made sure that the preferred learning style of the student was known to both the student and the preceptor, so both parties could benefit from the knowledge. Findings suggested that, when there are no agreements about how to begin the learning process or when to be challenged on learning style, the students' readiness to change or expand varied from the second to the fifth week of the course.

Having a focus on students' learning styles was recommended in two Australian studies, in which the importance of students developing all four learning styles in order to learn as much as possible was foregrounded. Educators need to encourage students to develop as a balanced learner, as espoused in Kolb's experiential learning theory.^[10,24,25] Two Nordic studies highlighted the importance of students being aware of their strengths and shortcomings in learning and

develop their meta-learning to better cope with their studies.^[26,27] Besides, both teachers and supervising nurses can benefit from understanding students' different learning styles when facilitating the learning process.^[26,27] This corresponds with Li, Yu, Liu, Shieh and Yang,^[28] who concluded that educators could benefit from knowledge about students' learning styles when devising how to facilitate the learning process in both classroom and clinical courses, so individual needs could be met and thereby the chances of students reaching a high level of academic performances could be enhanced. These studies indicate that it is a good intervention to make agreements on facilitating the learning process by letting the student learn by using the preferred learning style in the first weeks and afterwards challenging them to develop another style in order to maximise their learning potential. According to Nielsen, Helms and Pedersen,^[2] clinical courses should be planned in cooperation with the student, to initiate an internal motivation in the student to develop her or his learning repertoire. The student needs to understand the meaning of and how to benefit from different styles to reach the compulsory learning outcome of the course. It is also necessary to involve the student in the evaluation of his or her own learning process in order to become aware of current learning outcome, learning needs, and how to manage the learning process during the clinical course. This corresponds with Honey and Mumford,^[1] who wrote that to be aware of how one learns might be the most important competence of life, because it influences every other part of life.

It was discovered that one student (D) changed to the style for which she had the next highest score in the learning style profile, so we investigated if this was a pattern for all the students – but it was not the case. The more likely pattern was that the students changed from the reflector, theorist or pragmatist style to activist style, given the chance. One student with an activist style changed to the pragmatist style, while another with an activist style was forced to learn by using the reflector style. It makes good sense to change to activist or pragmatist style when studying in clinical placements, as the placements provide the opportunity to learn by communicating and interacting with patients and other health professionals in authentic practice situations. In general, the students in this study were positive about learning by doing. They responded that they learned a lot by carrying out the tasks in practice. This indicated that context was a major factor.

4.2 Facilitating factors

The study indicated that factors such as the student-supervisor relationship and the context influenced the students' expansion of learning style repertoire.

In particular, the relationship between students and their preceptors or other nurse supervisors was crucial to whether and when the students got the chance to develop another learning style. Thus, the students who experienced a supportive and facilitating relationship with their preceptor and other supervisors developed new ways of learning and did not mention any frustration in the learning process. This is in contrast to the student who had to expend energy adapting to how the supervisor wanted to guide her. This student did not experience a development in her learning potential.

The significance of the relationship with the preceptor is underpinned by Jonsén, Melender and Hilli,^[29] who found that quality preceptorship was provided by visible preceptors, who made students feel safe in the clinical placement, and who stimulated them to have the courage to both see and try different kinds of tasks.^[29] Another study about preceptorship found that a caring student-preceptor relationship is the basis for learning. Otherwise, the learning process could be adversely affected.^[30] Haitana and Bland^[31] added that it is important to establish a professional working relationship, because it enables the preceptor to better assess and promote the student's level of knowledge and understanding and thereby determine when it is safe to allow the student to act in practice.

As part of the context, the type of ward was a significant factor, both when a student preferred to begin the learning process with the activist style and when changing to this style. In the emergency and intensive care units, there might be a higher risk attached to letting students learn by doing. In fact, the students in these units were followed by and worked in cooperation with a supervisor, so they were allowed to carry out nursing tasks and learn by doing. On the contrary, on the children's ward, the student was not allowed to learn by communicating or interacting with the patients or their parents, whether in cooperation with a supervisor or alone. It appeared that supervisors' attitudes towards letting students learn by doing seemed to have just as much impact as context. According to Honey and Mumford,^[1] supervisors habitually supervise student in the way the supervisor him/herself prefers to be supervised. In a study by Wells and Higgs,^[7] it was presumed that learning styles played a particularly important role in the clinical setting. Wells and Higgs recommended assessing learning styles, if a faculty member identified a problematic cooperation between a student and a supervisor, or if the supervisor had difficulty facilitating a student through the learning process, in the hope that this might reveal a difference in the student's and supervisor's preferred learning styles. Being aware of the differences could allow for a more fruitful cooperation about the learning process.

4.3 Hampering factors

Hampering factors arose when supervisors were very quick to take over the communication and interaction with patients, and when the student was not allowed to begin the learning process with the preferred learning style.

It seemed to be difficult for some supervisors to hold back and let the student carry out the nursing – even when they had agreed beforehand that the student should have the opportunity to take the lead. It could be that, if the student acted slowly, it was natural for the supervisor to take over, or that the patient addressed him/herself to the supervisor. On several occasions, however, it happened so fast that it seemed to be more of a case of habit, and that the supervisor was not used to stepping aside and letting the student take the lead. Another explanation could be that according to Hilli, Melender, Salmu and Jonsén,^[30] the preceptor has the ultimate responsibility for nursing the patients. Haitana and Bland^[31] added that the preceptor assesses the student's level of knowledge and understanding and decides when it is safe to allow the student to take action in practice. It is not possible, however, to learn nursing skills without practising, and learning possibilities are limited if students are only allowed to observe how to interact with patients.

The student who did not have the opportunity to begin the learning process with her preferred activist learning style got frustrated and felt that she could have learned more if she had been allowed to take action. She did not seem to expand her learning potential. Like this study, other studies also found students whose learning style did not change. Mitchell, James and D'Amore^[10] verified with version 7 of the VARK questionnaire and the Kolb LSI version 3.1 that 45% and 43% of the studied students, respectively, remained with the same learning style. However, their study does not contribute to an explanation as to why the students did not change or develop their learning repertoire. This study indicated that they might not have had the chance, either because they were not allowed to, or because, with many students on the placement, there could be competition among them to carry out tasks. According to Chase, some educators believe that growth cannot occur without the learner experiencing some discomfort, because discomfort serves as a catalyst to broaden the learner's strategies and promote flexibility in learning. It can be disadvantageous if students learn by using only one or two ways, because they can feel unprepared in unfamiliar learning situations.^[11] This study suggested that there is a risk that, if students are compelled from the beginning of the learning process to learn by applying a non-preferred style, they might become frustrated and not focus on what was actually gained by using the style. The learners in Chase's study^[11] underpinned this; they reported

that the matching of learning styles and teaching strategies was beneficial during the first weeks, because it reduced their anxiety and increased their confidence. According to Honey and Mumford,^[1] it is appropriate both to begin the learning process with the preferred learning style and, after some time, to challenge students to develop the other three learning styles in order to become able to adapt learning to different contexts.

5. CONCLUSION

The study indicated no unambiguous pattern for nursing students' readiness to expand their learning style repertoire, as the seven students seemed to be ready in different weeks – from the second to fifth week of the course, and one student did not really adapt to a new way of learning. However, students with theorist style seemed to benefit from deepening their knowledge of theory in theoretical courses, as they were ready to expand their learning repertoire in the second week of the clinical course. A pattern was found in that the students made use of the context and developed the ability to learn by applying the activist or pragmatist style in interaction with patients and other health professionals.

The main factor found to facilitate a change in learning style was a positive relationship between student and preceptor or supervisor that allowed the student to begin the learning process with the preferred learning style and then challenged the student to explore deeper into their learning needs and expand their learning repertoire. The context and the type of ward were significant factors, both when a student preferred to begin the learning process with the activist style and when changing to the activist style. However, it was possible for the students to learn by doing, even in an emergency or intensive care unit, if the preceptor followed them and let them carry out nursing. If there were many students on the clinical placement, or if the preceptor considered it too early to let the student act or very quickly took over the interaction with the patients, learning seemed to be hampered. Another hampering factor arose when the student was not allowed to begin the learning process with the preferred learning style, as it led to frustration caused by the feeling of learning too little.

5.1 Implications for nursing education

Since there is sparse research into nursing students' expansion of learning style repertoire, the study can increase the scientific understanding of the learning process in clinical training and contribute to strengthening knowledge of learning in clinical placements. The study has led to following recommendations:

- To plan the learning process of the clinical course in

cooperation with the student.

- To make agreements on facilitating the learning process by addressing the student's preferred learning style in the first weeks, and on when to challenge the student to develop other learning styles in order to maximise learning potential beyond the preferred learning style.
- Working in cooperation, the faculty and staff at the clinical placements should introduce the students to benefits from applying different learning styles to achieve the compulsory learning outcome of the course.
- To involve the students in the evaluation of their own learning process, in order to become aware of current learning outcome, learning needs, and how to manage the learning process in the clinical course and in lifelong learning.

5.2 Limitations and directions for future research

It is a limitation of this study that no student on a clinical placement in the municipality was included. Denmark has an increasing number of outpatients, as patients are now discharged earlier than previously, so an increasing number

of students are placed in the municipality. There could be other factors that impact on change of learning style in the municipal setting. The study focused on the preferred learning styles only of the students. However, in the course of the interpretation, it was discovered that it would have been relevant also to focus on the learning styles of the preceptors, because it appeared that the student-preceptor relationship and the way the preceptors facilitated expansion of learning style repertoire might be influenced by the preceptor's learning style.^[26,32] The study was carried out in two hospitals, and the students were enrolled in two campuses. Future research on a larger scale and including clinical placements in both hospitals and municipalities will be relevant.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare that they have no conflict of interests.

REFERENCES

- [1] Honey P, Mumford A. *Lärstilar. Handledarguide [The learning helper's guide]*. Maidenhead: Peter Honey Publications; 2000b.
- [2] Nielsen K, Helms NH, Pedersen BD. Becoming conscious of learning and nursing in clinical settings. *The International Journal for Recording Achievement. Planning and Portfolios*. 2015; 1(1): 11-19.
- [3] Agerhus, Niels. *Bekendtgørelse om uddannelsen til professionsbachelor i sygepleje [Departmental order of Nurse Education]*. Retsinformation.dk. June 17, 2016. Available from: <https://www.retsinformation.dk/forms/r0710.aspx?id=181963#id430264c8-4032-40b2-8b2f-7b7d858450e0>
- [4] Scheel ME. *Interaktionel Sygeplejepraksis [Interactional Nursing Practice]*. Copenhagen: Munksgaard, 2015.
- [5] Scheel ME, Pedersen BD, Rosenkrands V. Interactional nursing—a practical-theory in the dynamic fields between the natural, human, and social sciences. *Scandinavian Journal of Caring Science*. 2008; 629-636 p. PMID:19068053 <https://doi.org/10.1111/j.1471-6712.2007.00564.x>
- [6] Rakoczy M, Money S. Learning Styles of Nursing Students: A 3-Year Cohort Longitudinal Study. *Journal of Professional Nursing*. 1995; 11(3): 170-177. [https://doi.org/10.1016/S8755-7223\(95\)80116-2](https://doi.org/10.1016/S8755-7223(95)80116-2)
- [7] Wells D, Higgs ZR. Learning styles and learning preferences of first and fourth semester baccalaureate degree nursing students. *Journal of Nursing Education*. 1990; 29(9): 385-390. PMID:2176679
- [8] Flemming S, McKee G, Huntley-Moore S. Undergraduate nursing students' learning styles: A longitudinal study. *Nurse Education Today*. 2011. PMID:20863600 <https://doi.org/10.1016/j.nedt.2010.08.005>
- [9] Stutsky BJ, Laschinger HKS. Changes in student learning styles and adaptive learning competencies following a senior preceptorship experience. *Journal of Advanced Nursing*. 1995; 21(1): 143-153. PMID:7897066 <https://doi.org/10.1046/j.1365-2648.1995.21010143.x>
- [10] Mitchell E, James S, D'Amore A. How learning styles and preferences of first-year nursing and midwifery students change. *Australian Journal of Education*. 2015; 59(2): 158-168. <https://doi.org/10.1177/0004944115587917>
- [11] Chase, Carolyn C. Learning style theories: Matching Preceptors, learners, and teaching strategies in the perioperative setting. *Seminars in Perioperative Nursing*. 2001; 10(4): 184-187. PMID:15129616
- [12] Hermansen M. *Omlæring [Relearning]*. [trans.] Joan A. Coke. Århus: Klim, 2003.
- [13] Nielsen K, Helms NH, Pedersen BD. Narrative Approach in the Investigation of Learning Mediated by ePortfolio. *International Journal of Nursing Science*. 2016; 77-86 p.
- [14] Nielsen K, Pedersen BD, Helms NH. EPortfolio and learning styles in clinical nursing education. *Journal of Nursing Education and Practice*. 2015; 5(9): 54-62. <http://dx.doi.org/10.5430/jnep.v5n9p54>
- [15] Nielsen K, Pedersen BD, Helms NH. Reflection and learning in clinical education mediated by ePortfolio. *Journal of Nursing Education and Practice*. 2015; 5(12): 63-70. <http://dx.doi.org/10.5430/jnep.v5n12p63>
- [16] Spradley JP. *Participant observations*. s.l.: Wadsworth, 1980.

- [17] Ricoeur P. Time and narrative. Chicago: University of Chicago Press; 1984.
- [18] Honey P, Mumford A. The Learning Styles Questionnaire: 80-item version. s.l.: Peter Honey Publications Ltd., 2000a.
- [19] Ventures. December 14, 2014. Find din læringsstil [Know your learning style].
- [20] Classtools.net. Random name/Word picker.
- [21] Northern Nurses' Federation. Ethical Guidelines for Nursing Research in Scandinavia. Northern Nurses' Federation. [Online] 2000.
- [22] Uddannelsesog Forskningsministeriet. The Danish Code of Conduct for Research Integrity. Uddannelses- og Forskningsministeriet. [Online] 2014. <http://ufm.dk/publikationer/2014/the-danish-code-of-conduct-for-research-integrity>
- [23] Ricoeur P. Fortolkningsteori [Interpretation theory]. Kbh. : Vinten, 1979.
- [24] D'Amore A, James S, Mitchell EKL. Learning styles of first-year undergraduate nursing and midwifery students: A cross-sectional survey utilising the Kolb Learning Style Inventory. Nurse Education Today. 2012; 32: 506-515. PMID:21889237 <https://doi.org/10.1016/j.nedt.2011.08.001>
- [25] Kolb, D.A. Experimental Learning. Experience as the source of learning and development. New Jersey: Prentice Hall; 1984.
- [26] Boström L, Hallin K. Learning Style Differences between Nursing and Teacher Students in Sweden: A Comparative Study. International Journal of Higher Education. 2013; 2(1): 22-34.
- [27] Hallin K. Nursing students at university - A study about learning style preferences. Nurse Education Today. 2014; 34: 1443-1449. PMID:24801747 <https://doi.org/10.1016/j.nedt.2014.04.001>
- [28] Li YS, et al. An exploratory study of the relationship between learning styles and academic performance among students in different nursing programs. Contemporary Nurse. 2014; 48(2): 229-239. PMID:25549717 <https://doi.org/10.1080/10376178.2014.11081945>
- [29] Jonsén E, Melender HL, Hilli Y. Finnish and Swedish nursing students' experiences of their first clinical practice placement - A qualitative study. Nurse Education Today. 2013; 297-302 p. PMID:22795745 <https://doi.org/10.1016/j.nedt.2012.06.012>
- [30] Hilli Y, et al. Being a preceptor - A Nordic qualitative study. Nurse Education Today. 2014; 34: 1420-1424. PMID:24801746 <https://doi.org/10.1016/j.nedt.2014.04.013>
- [31] Haitana J, Bland M. Building relationships: The key to preceptoring nursing students. Nursing Praxis in New Zealand. 2011; 27(1): 4-12. PMID:21710910
- [32] Duteau J. Making a Difference: The Value of Preceptorship Programs in Nursing Education. The Journal of Continuing Education in Nursing. 2012; 43(1): 37-43. PMID:21688761 <https://doi.org/10.3928/00220124-20110615-01>