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# **MEDICAL AND NURSE STUDENTS' PERSPECTIVE ON LEARNING IN ACUTE CARE**

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# MEDICAL AND NURSE STUDENTS' PERSPECTIVE ON LEARNING IN ACUTE CARE

## THESIS FOR DOCTORAL DEGREE (Ph.D.)

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This thesis is dedicated to my father



## ABSTRACT

**Background:** Medical and nurse students' professional training takes place in a complex and rapidly changing health care setting. Workplace learning in this context have a considerable potential to contribute to the development of professional competence. However, the complexity of the acute care context can also hinder such an advancement.

**Aim:** To explore medical and nurse students' perspective on how and what they learn during acute care placements, and how aspects of such a milieu could influence learning.

**Method:** A qualitative design was chosen. In study I free text answers and interview data from medical and nurse students were collected and a content analysis was conducted. In study II & III ethnographic observations and informal conversations were collected in an acute medical ward. Medical and nurse students, staff and supervisors were observed and an inductive analysis was performed. In study IV interview data was collected from graduated nurses on their learning experiences as students in acute care. An inductive comparative analysis was performed on these interview data together with data from ethnographic observations of nurse students' interactions and learning in the acute health care ward.

**Results:** In study I we identified three themes that influenced students' progress towards professional competence: *Management, planning and organisation for learning*; *Workplace culture* and *Learning a profession*. In study II we identified four characteristics that formed how students adapted and interacted in the community of practice: *Complex and stressful situations*; *Variable composition and roles of community members*; *Transitions through community boundaries* and *Levels of importance and priority*. In study III we identified two themes that influenced medical students' opportunities to participate and learn in an acute internal medicine ward: *Nervousness and curiosity* and *Invited and involved*. Finally, in study IV three themes described long-term outcomes of workplace learning for nurse students: *To handle shifting situations*; *To build relationships* and *To act independently*.

**Conclusion:** The workplace culture in an acute care ward formed the conditions in which students learn and interact. Students have at arrival to enter a community of practice, adapt to its culture and to be accepted. If students were given opportunities to participate actively in the real patient care, they successively developed a professional identity.

Medical and nurse students achieved differing competences and interacted in dissimilar ways during workplace learning. Medical students' interactions and learning were dominated by queries and responses. However, the potential to develop competence to judge and approach

complex patient cases was underutilised. Learning at the ward provided nurse students with understanding of their future profession as nurses, and they learnt how to handle stress and variable situations.

We found that the stressful, ever-changing, demanding, but also considerably structured and organised acute care ward offered abundant learning opportunities that could be used.

Therefore, it is maybe not necessary to create and structure new learning situations. But rather to use real care situations and patient cases, and to form conditions and attitudes that make learning in this real world situation inspiring and valuable. However, the full potential of this is as yet not fully utilized.

## LIST OF SCIENTIFIC PAPERS

- I. Hägg-Martinell A, Hult H, Henriksson P, Kiessling A. Students perceive healthcare as a valuable learning environment when accepted as a part of the workplace community. *Educ Health* 2014;27:15-23.
- II. Hägg-Martinell A, Hult H, Henriksson P, Kiessling A. Community of practice and student interaction at an acute medical ward: An ethnographic study. *Med Teach*. 2015 Nov 17:1-8.
- III. Hägg-Martinell A, Hult H, Henriksson P, Kiessling A. Activities at an internal medicine ward - medical students' opportunities to participate and learn. Submitted.
- IV. Hägg-Martinell A, Hult H, Henriksson P, Kiessling A. Nurses' perspective on their undergraduate professional learning in acute care. In manuscript.



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# 1 PREFACE

I have worked as a registered nurse at the Department of Cardiology of Danderyd University Hospital in Sweden since 2004. Already during undergraduate training, I became interested of education and learning.

Three years after graduation, I got the opportunity to work for almost eight years as clinical lecturer. In that role I educated and examined nurse students, and supported supervisors in their role as tutors. During my vocation as clinical lecturer I observed a health care context where the introduction of new students sometimes failed and where supervisors did not always have time enough to supervise students. Furthermore, frequent reorganizations took place. There was in addition a high turnover of patients and a never ending turnover of staff. Such conditions were authenticated both by students and supervisors at my department, and by students, supervisors, and clinical lectures at other departments and hospitals. Based on this experience I wanted to achieve a deeper understanding of how such a context could affect student learning.

During my PhD studies an improved theoretical knowledge about education and learning has given me a deeper understanding of what might occur behind scenes, and how students learn during their workplace learning. I have enjoyed this journey, which has provided me with a manifold of new experiences. Furthermore, I have increased my understanding of science, which I value a lot.



## 2 INTRODUCTION

### 2.1 KNOWLEDGE AND LEARNING

There is no golden standard definition of knowledge and it could be described in various ways.

According to Wojtczak<sup>1</sup> knowledge could be described as the skill of awareness of for example facts, information, ideas or principles that a person have accessed through individual studies, research, or observations.

Aristoteles asserted already 350 years Before Christ (BC) that knowledge could be divided into three dimensions: *episteme*, *techne* and *fronesis*.<sup>2 3 4</sup> Applied in the context of higher education, students obtain *episteme* or theoretical scientific knowledge at a university. Practical training adds an opportunity to apply knowledge in practice, and thereby obtain *techne* or practical professional skills. In addition, students obtain *fronesis* or ethical sensitivity during professional practice.<sup>5</sup>

There has been a transition in education from a behaviourist approach to a constructivist approach.<sup>6</sup> In behaviourism the idea is that students are unreflective responders.<sup>7</sup> In behaviourism teachers transfer knowledge to students.<sup>6</sup> In constructivism the idea is that students construct their own knowledge.<sup>8</sup> By constructing knowledge students are active participants in the learning process by seeking meaning of their experiences.<sup>9</sup>

Based on a constructivist approach Kolb<sup>10</sup> states that a person enters every learning situation with more or less knowledge about the present topic. Learning is the process when progress of knowledge is made. Knowledge is created through the transformation of learning through experience. Knowledge results from understanding the experience and transforming it into knowledge. The process of experimental learning can be described in a four step cycle - Kolb's learning cycle: to have a concrete experience; to observe and to reflect upon that experience; to form abstract concepts (analysis) and to generalize (conclude) based on this experience; and finally to apply what was learnt and to test hypotheses in future situations resulting in further new experiences. The core concept of the learning process is in the transition between these four steps and the way in which they interact with each other.<sup>10</sup> Over time this theory of learning has been expanded further to focus more on experiential learning. Kolb's & Kolb's<sup>11</sup> expanded theory aims to develop a holistic model of the experiential learning process and a multilinear model of adult development. The theory is built on six propositions. 1) Learning could be conceptualized as a process. To improve learning in higher

education the main focus should be on engaging students in the process which best improves their learning 2) All learning is re-learning 3) Learning needs the declaration of conflicts between dialectically opposite modes of adaptation to the world 4) Learning is a holistic process of adaptation to the world 5) Learning results from synergetic transactions between the individual and the environment 6) Learning is the process of creating knowledge.<sup>11</sup>

According to Ambrose<sup>12</sup> learning is the result of what the student does and thinks. A supervisor or teacher can support learning by influencing what the student does to learn. Students initially tend to build thin, superficial knowledge structures. Over time they can develop rich and meaningful knowledge structures, which support their further learning and performance. Various factors can facilitate or hinder learning. Beneficial factors could be for example when learning activities are activating, sufficient, appropriate and accurate. Bengtsson & Ohlsson<sup>13</sup> have pointed out students' self-motivation as one of the most important conditions for learning the nurse and the medical professions. In addition, Biggs & Tang<sup>14</sup> have described four categories of motivation: extrinsic motivation which occurs when students perform a task because of the value or importance that they attach to what the outcome brings; social motivation that occurs when students learn to please people whose opinions are important to them; achievement motivation which is about achieving in order to enhance their ego when for example competing against other students; and intrinsic motivation which is the academic ideal is rarer, it is about when for example students learn because they have an interest in the task or activity by itself.

## **2.2 LEARNING IN A SOCIAL CONTEXT**

Vygotsky's theory of learning takes the sociological aspects of learning in the social context into account. The interactions and interpersonal communications allow an individual to integrate the experience of others into his or her own learning. The cognitive development is dependent on a fusion of concrete experience of context and of systematic, abstract and theoretical knowledge.<sup>15</sup>

Because workplace learning takes place in a social learning context Wengers' <sup>16</sup> theory "community of practice" has been used as the theoretical framework of this thesis.

A social context, such as in a hospital ward, can be described as a community of practice.

Wenger<sup>16</sup> described such a community of practice in three dimensions: *mutual engagement*; *a joint enterprise*; and *a shared repertoire*:

- ***Mutual engagement*** occurs when individuals are involved in activities and create meaning through exchange with the other involved individuals, for example by doing things together or by creating relationships. Being included in essential issues and questions is an integral part of being involved in the community of practice. A membership in a community of practice is not just a matter of social category, to belong to an organisation or to have personal relations with others. Each participant in a community of practice finds a unique place and gains or has a unique identity for example as senior consultant or as resident. They are both members of a community of practice and have acquired different status, authorities and relations to others. Mutual engagement involves not only your own competence, but also the competence of others. The engagement and learning is dependent on what the individual do and what the individual know as well as the individual's capacity to connect meaningfully to what he or she does or not does, and what he or she knows and not knows.
- ***A joint enterprise*** is when all members contribute to the community. It is the result of a collective cooperative process that reflects the full complexity of mutual engagement. Communities of practice develop in a larger context as for example in a historical, social, cultural and institutional context, the institutional context with its specific resources and conditions.
- ***A shared repertoire*** consists of common resources like shared standards for collaboration and problem solving, language, tools and routines. Over time, the joint enterprise searches for a venture that creates resources for transferring meaning. The repertoire combines both concreteness and participation and it includes a discussion by which members create meaningful statements about the world.

Learning is a central and important aspect of a community of practice. It can be distinguished as shared histories of learning and a mutual engagement in pursuing an initiative to share significant aspect of learning. The team members learn how to engage and what facilitates and what hinders their learning. All members of a community are expected to contribute to learning and to improvement of the community. Even a novice, such as a student, can contribute and be accepted as a member of the community if the members allow him or her to do so. Students' participation in a community can be legitimate, but is often peripheral.<sup>16</sup>



Over time the participants in a community of practice develop a unique perspective on their mission as well as a core of common basic values, knowledge, practices and approaches. In addition, the participants become informally bound by the values that they put on learning together. Communities of practice do not reduce knowledge to an object since they make it into an integral part of their activities and interactions. New members, such as students, can influence the pattern of interaction that the community has developed. They ask different questions, have different needs and have not established relationships and trust within the community.<sup>17</sup>

The description of a community of practice has expanded over time. In 1991 Lave and Wenger<sup>18</sup> defined a community of practice as a group of people who share a common interest and a desire to deepen their knowledge by interaction within the community. The central theme was the interaction between novices and experts, and they suggested that most of the learning occurs in social relationships at the workplace - a situated learning situation/experience. In 1996 Wenger<sup>19</sup> emphasised that understanding what that constitutes a learning organization was relevant to a health care organization. Health care is about learning since it is continuously understanding how to take care of patients. In addition, it is in addition learning of how to create an infrastructure to make that care possible. Individuals learn continuously, whether they realise it or not and whether or not they learn what was expected of them or what that was beneficial to them. What is crucial is not to create learning, but to create conditions that make learning inspiring and useful. In 2002 Wenger et al.<sup>17</sup> revised the three characteristics of a community of practice and named them *domain*, *community* and *practice*. It shifted focus from individuals' learning and identity development to how organisations can create conditions to facilitate learning in communities of practice. The *domain* creates a common ground and a sense of common identity. The *community* creates the social structure of learning. The *practice* is a set of for example frameworks, ideas, tools, and information that the community members share.

## 2.3 PROFESSIONAL COMPETENCE DEVELOPMENT

Several researchers have described the development of professional competence in different ways.

Dreyfus and Dreyfus<sup>20</sup> developed a five-stage model of professional development. Novice, competence, proficiency, expertise and mastery. According to them professional skills are not context free. In this model, the character of skills needed becomes more distinct at each level. The more advanced skill levels could only be achieved by experiential learning in practical work situations.

Benner<sup>21</sup> has modified the five-stage model developed by Dreyfus & Dreyfus<sup>20</sup> to competence progression within the nurse profession. According to Benner<sup>21</sup> the *novice* is a nurse who has no experience of the context in which he or she is expected to perform tasks. The *advanced beginner* is a nurse who can demonstrate marginally acceptable performance. The *competent* is a nurse who has worked for a few years, and who begins to see the actions in terms of long-term goals or strategies. The *proficient* nurse emerges when the competent nurse obtains continuous opportunities to practice. A nurse progresses into *expert* when he or she no longer relies on analytical principles to link own understanding of the situation to an appropriate action.<sup>21</sup>

Further, the five-stage model has been modernised and modified by Dreyfus<sup>22</sup> and the stages can now be described as; a novice – the instruction progress begins with the instructor decomposing the task environment into context free features that the beginner can recognize without the desired skill. The second step, the advanced beginner, - is when the novice gains experience through actually coping with real situations and starts to develop an understanding of relevant context. At step three, competence – is when the competent receive more experience. The number of potentiality relevant elements and procedures that the learner is able to recognize and follow becomes overwhelming. At this point a sense of what is important in any particular situation is missing, the performance becomes nerve-wracking and exhausting, and the student might well wonder how anybody ever masters the skill. Further, step four, proficiency – is when the competent performer becomes more and more emotionally involved in an assignment. Finally, step five, expertise - is when the proficient performer is immersed in the world of his or her expert activity and sees what needs to be performed and can decide how to accomplish this.<sup>22</sup>

Beyond the idea of a linear professional competence progression in stages, the progression could be described differently. Dall’Alba & Sandberg<sup>23</sup> recognised a limitation in the previously presented stage models. Based on empiric research they identified that some individuals had obstacles to achieve expert status and others had not. This in spite of whether they were dedicated individuals with extensive experiences or not. Thus they described professional development in an alternate two-dimensional model. One horizontal dimension - increasing experiential skill progression, and one vertical dimension – increasing embodied understanding of practice. They argued that professional development of an individual did not occur in a fixed sequence of stages. Understanding of, and in practice forms the core of professional skills and its development. Dall’Alba and Sandbergs view of understanding combined knowing, acting and being. Understanding of practice is performed in and through practice. Such embodied understanding of professional practice creates a developing “professional way-of-being”. The professional development of skills depends on the particular profession, the individuals and their needs and knowledge, as well as on the learning situations.

## **2.4 LEARNING IN THE WORKPLACE**

There is no golden standard definition of workplace learning and it could be described in various ways, for example placement or clerkship. Workplace learning is an integrated part of almost all higher education towards a vocational qualification.

The workplace learning aims to integrate knowledge and skills learnt at the university into real-life professional experience. Further, students aim to apply theories and skills in all aspects of professional practice, to work collaboratively in multidisciplinary workplace settings, and to apply professional attitudes and behaviours.<sup>14</sup>

Workplace learning in health care is planned, fulfilled and developed in partnership between health care and the educational institution. This implies that the quality of workplace learning is not only the responsibility of health care.<sup>24</sup> In addition, health care organizations constantly changes and sometimes in an unpredictable way, which makes it hard to plan for optimal education of students.<sup>25</sup>

According to Ambrose<sup>12</sup> students' prior knowledge can facilitate or hinder learning. Knowledge of students' previous learning could give health care staff opportunities to design an individual introduction and to become more supportive for students.

Workplace learning can be accomplished at various activity grades, from passive observation to active performance.<sup>26</sup> To be an active participant in interactive learning activities as a professional has the potential to improve professional practice in contrast to participation in passive learning activities such as observing or listening.<sup>27</sup> It is therefore conceivable that this should also be applied in workplace learning.

#### **2.4.1 Student learning in a workplace context**

Between thirty and fifty percent of the medical and nurse programmes is performed as workplace learning in a health care context.

Learning at the workplace has the potential to contribute to a socialisation process of students into their future profession.<sup>28</sup> Nurse students valued mutual relationships and a sense of belongingness as important aspects of their workplace learning.<sup>29</sup> Further medical students felt that they grew accustomed to switching supervisors and placements often, and that they learnt how to adjust to new situations though they frequently experienced new environments.<sup>28</sup> Medical students also expressed that they often felt that they were in the way, and that their individuality was not valued.<sup>30</sup> In addition, they became motivated by patient contact<sup>30</sup> and valued to build relationships with patients.<sup>31</sup> Medical students were more patient centred in the middle of their education than at the end of their educational programme. Further, they became more focused on their medical profession at the end of the programme.<sup>32</sup> According to Schuldt Håård et al.<sup>33</sup> nurse students felt prepared for their coming profession at graduation.

Workplace learning can contribute to an integration of theory and practice. Clinical competence among students is based on a combination of specific theoretical knowledge and problem solving capability. The acquisition of knowledge contributes to the development of problem-solving skills but does not influence performance directly.<sup>34</sup> Medical students were satisfied when the educational programme integrated theoretical and workplace learning when for example basic science courses provided relevant preparation for workplace learning, or when basic science courses developed or sharpened problem-solving skills.<sup>35</sup>

According to Silén et al.<sup>36</sup> supervisors in workplace learning could support student learning by being experts and role models that support translation of theoretical knowledge to clinical practice skill and performance, and relate this to their future profession as physicians.

During workplace learning students have an opportunity to experience a progression towards a future professional way of being. According to Mann<sup>37</sup> the years as a student are central to the evolution of an individual's professional identity. It is during this period that the progression into a profession takes place. How to behave, think, or perform as a medical doctor or nurse cannot be trained or learnt successfully without clear learning objectives.<sup>38</sup> Further, transformation of experience into knowledge, an active role as student, supervision, and time and space for supervision are indispensable issues during workplace learning.<sup>39</sup> Nurse students preferred a workplace environment with high levels of individualization and task orientation.<sup>40</sup> By contrast, lack of attention, negative attitudes among staff to students and education, to many students at the same time and poor organisation hindered learning.<sup>41</sup> To support the progression of professional competence it would be desirable to start workplace learning early. Early clerkships have several benefits to students, such as early opportunities to observe the future profession, contextualise learning content and conditions to improve clinical skills.<sup>42</sup> Medical students rated to learn their profession and to develop professionally as vital during their early clinical practice.<sup>31</sup> Supervisors and staff can invite students to observe and reproduce actions and interactions in order to advance and improve own performance.<sup>43 44</sup> A supervisor should track progress, identify strengths, be available, focus on supervising, and ask questions.<sup>45</sup>

#### **2.4.2 The supervisor role in workplace learning**

Numerous studies have emphasised the importance of the quality of supervision for workplace learning. Supervisors' task during workplace learning is to: coach students, act as role models, focus on teaching, create safe learning situations, provide experiential learning opportunities and give feedback.

Supervisors could support students' participation in health care situations by being both supportive and challenging, by for example sharing their clinical expertise and by creating tasks that the students should perform.<sup>26</sup> To support and stimulate students and to help them achieve the intended learning objectives, the supervisor could for example design appropriate learning activities and provide a suitable level of guidance.<sup>14 46</sup> Supervisors could guide students in the translation of theoretical knowledge into clinical practice and through acting

as professional role models. In addition, supervisors could offer medical students responsibilities and permissions to act as physicians under supervision.<sup>36</sup> However, supervisors have experienced difficulties in receiving assistance from the university in for example keeping up-to date with changes in the nurse education programme, and from health care managers in setting aside time for supervision.<sup>47</sup>

Feedback is an important and highly appreciated support in progressive competence development.<sup>39</sup> Feedback clarifies the meaning of good performance, facilitates development of self-assessment in learning, and provides the students with information about their learning.<sup>48</sup> Feedback should offer realistic advices on how to improve performance.<sup>49</sup> According to Hepplestone et al.<sup>50</sup> students often had problems to understand the feedback that they receive from supervisors and connect them to their future assignments. Medical students in semester five have stressed that education focus on memorising facts and details and that understanding and reflection was often missing.<sup>51</sup>



### **3 AIM**

The overall aim of this thesis was to explore medical and nurse students' perspective on how and what they learn during acute care placements, and how aspects of such a milieu could influence learning.

- The aim of study I was to identify students' views of generic aspects of a healthcare context that facilitated or hindered learning related to professional competence development.
- The aim of study II was to explore the workplace culture of an acute medical ward, and to identify requirements on this community of practice that creates a learning space for student interaction.
- The aim of study III was to explore medical students opportunities to participate and learn in an acute medical ward.
- The aim of study IV was to explore experienced registered nurses' perceptions of the long-term outcome of their undergraduate workplace learning.



## 4 RATIONALE

Even if the field of research in medical education of workplace learning has been approached from several perspectives, there is still a need for additional and deeper understanding of students' learning in real world workplaces.

This could be approached by studying medical and nurse students' experiences of what in the healthcare context that facilitate or hinder learning in relation to the training that improves professional competence. Further, it is necessary to get a deeper understanding of workplace culture in an acute medical ward, and to identify conditions and characteristics of this context that create a space for students to interact and to learn.

There is also essential to investigate medical students' opportunities to participate and learn in an acute medical ward, and to acquire more in-depth experienced registered nurses' opinions of the long-term outcome of their undergraduate workplace learning in such an acute medical ward.

This new understanding could be helpful when creating learning opportunities in acute care for students, both as regards planning, content and systematic quality assurance of workplace learning.

## 5 ETHICAL CONSIDERATIONS

Research involving human beings should be conducted in accordance with the international ethical guideline Declaration of Helsinki.<sup>52</sup> This guideline highlights informed consent and confidentiality, which were taken into account during the whole process of this doctoral research project.

Permission to carry out the four studies was given by the regional ethical review board in Stockholm, Sweden no 2011 1268-31/5. Informed consent was obtained from all students and supervisors in accordance with the Declaration of Helsinki after receiving information about the purpose, method and planned publication of the study, as well as the fact that their participation was voluntary.

The written information in study I explained: the purpose and procedure of the study, voluntary participation and the right to withdraw from the study at any time without giving a reason. Contact information for the research group was also given in written information. All participants gave an oral informed consent for participation in the study.

The oral information about study II-IV: All patients and relatives at the present teaching hospital received general information stating that education and research were performed at the hospital. More specific information about the study was given by the senior consultant in charge or by the first author. The students received information about the study from their supervisors; nurses and auxiliary nurses from the head nurse, and senior consultants and residents from the first author. All medical and nurse students that performed workplace learning in the ward during the study period agreed to participate. Permission to perform the study in the ward was given by the head of department. All participants gave an oral informed consent for participation in the study.

The written information in study IV explained: the purpose and procedure of the study, voluntary participation and the right to withdraw from the study at any time without giving a reason. Contact information for the research group was also given in the written information. The participants in the deep interviews signed an informed consent and received a copy of the document.

During all observations the ethical guidelines for nurses<sup>53</sup> according to confidentiality and professional secrecy were followed.

None of the observed individuals (study II-IV) reacted in a negative way during the observations. Initially some of the staff was a bit cautious, but they also expressed that the research question was important to investigate and that they wanted to contribute to the forming of new knowledge.

The observer had a long experience of work in the health care context and was familiar with the working routines in different departments. Principal ethical issues that the observer experienced during the data collection was discussed in the research group.

The collected data can only be derived to a learning situation and cannot be linked to either individual staff, supervisors, students, patients or family members. Further all data was kept in a secure location in order to ensure confidentiality.

## 6 METHOD

**Table 1** – Overview of applied methods in this thesis.

	<b>Study I</b>	<b>Study II</b>	<b>Study III</b>	<b>Study IV</b>
<b>Design</b>	Qualitative study on free text answers and interview data	Qualitative study on data from ethnographic observations and informal conversations	Qualitative study on data from ethnographic observations and informal conversations	Qualitative study on interview data and data from ethnographic observations
<b>Data analysis</b>	Content analysis	Inductive analysis	Inductive analysis	Inductive comparative analysis
<b>Participants</b>	Questionnaire: 75 medical students 23 nurse students	Observations: 21 medical students 4 nurse students 30 supervisors  The participants could be observed at several occasions.	Observations: 21 medical students 26 supervisors  The participants could be observed at several occasions.	Observations: 4 nurse students 4 supervisors  The participants could be observed at several occasions.
	Focus group interview: 3 medical students  Individual interviews: 2 nurse students			Individual interviews: 4 nurses
<b>Data collection period</b>	Questionnaires during 2007–2010.  Interviews during 2008–2010.	Early autumn 2011 to early spring 2013.	Early autumn 2011 to early spring 2013.	Observations during early autumn 2011 to early spring 2013.  Interviews during 2014.

## **6.1 SETTING**

Karolinska Institutet, Stockholm, Sweden, provides education at university level for medical students, nurses and allied professionals. In addition, three university colleges in Stockholm provide nurse education. The medical students in this thesis were educated at Karolinska Institutet and the nurse students at Sophiahemmet University College. All four studies were performed in the Stockholm area of Sweden.

The Swedish undergraduate medical education programme consists of 11 semesters and the nurse programme of six semesters. The first semesters were dominated by theoretical studies, alternating with short periods of workplace learning. The latter part of both programmes was characterised by patient-focused education, with recurrent periods of workplace learning in different parts of the healthcare organisation, mostly hospital-based workplaces. Nurse students had a few days of workplace learning during semester one with an increase up to 15 weeks during semester six. Medical students had four days of workplace learning during the first semesters increasing up to between three and 10 weeks per semester as from semester four of the programme.

In study II-IV we performed ethnographic observations at an acute medical ward as described below.

### **6.1.1 The hospital where the observations were conducted**

The mission of the observed hospital was to conduct acute health care, research, improvements and education in the north of Stockholm County Council. During 2011, the observed hospital had more than 43,000 inpatients and more than 407,000 outpatient visits and had roughly 3,400 employees.

### **6.1.2 The hospital department where the observations were conducted**

The observed ward belonged to the department of internal medicine, which was one of the largest departments of the hospital. This department observed, diagnosed and treated patients with diverse varieties of diseases, such as endocrinological, gastroenterological, neurologic and other internal medicine diseases.

During the study period the health care provided at the department consisted of inpatient as well as outpatient care. The department dealt with around 8,500 inpatients and 50,000 outpatients per year. The care of patients was integrated with clinical research and education of students from several health care professions.

### **6.1.3 The observed ward**

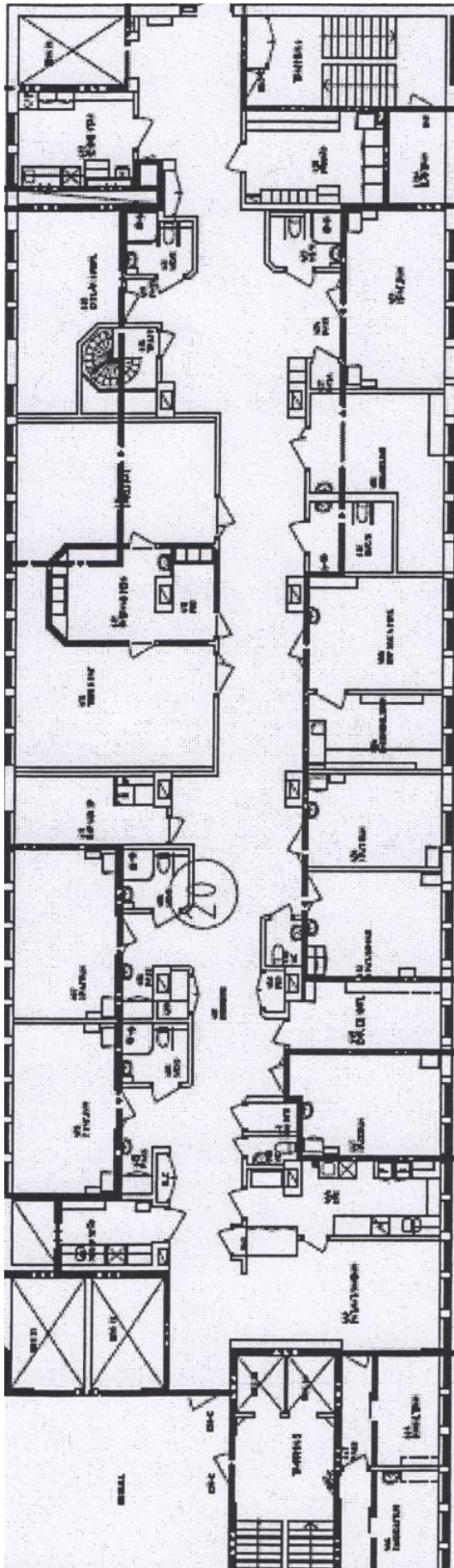
Patients in the ward were observed, diagnosed and treated due to various internal medicine diseases, predominantly severe infections, obstructive pulmonary diseases, deep venous thromboses including pulmonary embolism, intoxications, convulsive disorders and severe allergic reactions.

The staff at the ward consisted of auxiliary nurses, nurses, residents and senior consultants, a coordinator, a medical secretary, a head nurse and two assistant head nurses. The ward had an opportunity to consult other health care staff including physicians specialised in additional disciplines, as well as physiotherapists, occupational therapists, and counsellors.

During late autumn 2011 the ward was reorganised and staff schedules were modified. The ward was split into two wards to optimize care and workflow. A new head nurse was recruited. The new ward had fifteen hospital beds combined with possibility potential to treat two additional patients.

The ward consisted of twenty-one different rooms. There were patient rooms, offices, an observation area, a staff area, a drug storage room, a treatment room, a kitchen with a dining room for patients, toilets and shower rooms. There were three different team offices where teams regularly worked side by side. Every team office had own computers, printers, forms and telephones.

At the observational area, the staff could treat and observe five up to six patients. Patients with unstable disease states, mainly intoxications and convulsive disorders, were observed, diagnosed and treated here. Two nurses, two auxiliary nurses, one senior consultant and one resident physician took care of the patients at the observation area. The area had an own office in the middle with windows overlooking all the patients. The office was equipped with computers, printers, forms, telephones, observation equipment and a sink. There was a high turnover of patients. In most cases patients were treated at this observational area for only twenty-four hours before either discharged, or relocated to another room of the ward or to another ward in the hospital.



**Figure 1** – Plan of the ward where the observations in study II-IV were performed.

**Table 2** – An overview of a working day in the ward (study II-IV).

<b>Time</b>	<b>Senior consultants and resident physicians</b>	<b>Nurses</b>
<b>7 AM</b>		Morning report
		Examination of patients
<b>8 AM</b>	Morning meeting	
	Interprofessional sit round	
	Examination of patients	
	Consultations at other wards/departments	Paper work and patient related duties
	Paper work and patient related duties	
<b>10 AM</b>	Coffee break	
	Paper work and patient related duties	
<b>11 AM</b>	Paper work and patient related duties	Lunch
<b>Noon</b>	Lunch	Paper work and patient related duties
	Paper work and patient related duties	
<b>2 PM</b>	Interprofessional sit round	
	Paper work and patient related duties	
<b>2.30 PM</b>	Paper work and patient related duties	Evening report
	Consultations at other wards/departments	Paper work and patient related duties
<b>4.30 PM</b>	Evening report	



## **6.2 STUDY I**

### **6.2.1 Study design**

A qualitative approach was used by triangulating data in free text answers and in interviews.

The participants completed an extensive questionnaire regarding their perceptions of the workplace learning context. The free text answers in this extensive questionnaire was preliminary analysed. In order to obtain richer data and a deeper understanding of students' notions, we asked a purposive sample of students to participate in an interview. We thus performed complementary interviews with medical students during their last and eleventh semester, and with nurse students during semester four and six (out of six). During the interviews the students could reflect on various experiences during their workplace learning.

### **6.2.2 Participants**

Medical students during semester six at Karolinska Institutet and nurse students during semesters two to six at Sophiahemmet University College answered the questionnaire.

The nurse students who responded to the questionnaire were invited to participate directly after finishing a period of workplace learning. Medical students were invited to participate at the beginning of semester six out of 11.

Medical students during their last and eleventh semester and nurse students during semester four and six (out of six) participated in the interviews.

### **6.2.3 Data collection**

Questionnaire data were collected during the period 2007 to 2010. The participants were contacted by email or directly in person. The questionnaires were sent by regular mail. The respondents received oral or written information and were offered the opportunity to answer the questions at a scheduled time. The participants gave informed consent in accordance with the Declaration of Helsinki after receiving information of the purpose and method of the study, as well as that participation was voluntary.

With the above aim in mind, we gathered free text responses to the open-ended question: "Feel free to leave comments or feedback in general on the clinical education you just have participated in and on the questions in this survey". All statements relating to experiences and

perceptions of the quality of learning in a clinical context were gathered, resulting in a written material from 98 students.

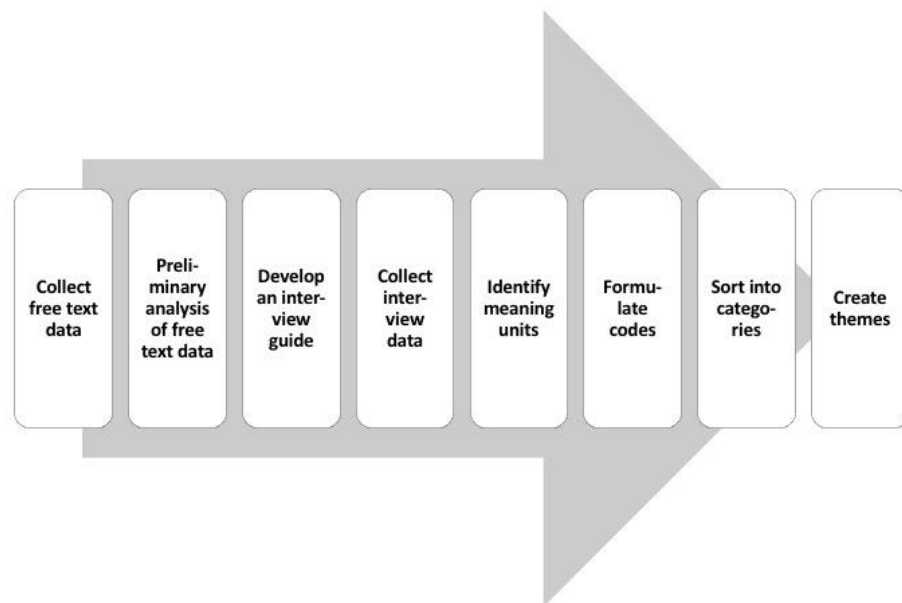
During 2008–2010, interviews were conducted consisting of one group interview with three medical students and two individual interviews with nurse students. Students were chosen to obtain a purposive sample. The medical students who were asked to participate in the interviews received oral information on the study during their participation in an optional clinical course at the hospital during semester 11. Three medical students participated. The nurse students who were asked to participate in the interviews were contacted by e-mail during workplace learning in semester four and six. Two nurse students participated. Upon agreeing to participate, a time for the interview was scheduled.

One moderator and one co-moderator performed the interviews. The moderator's role was to guide the discussion, but not to take part, to share views, to engage in the discussion or to influence the outcome of the interview. The co-moderator's role was to observe, to take notes and to add and ask complementary questions.<sup>54</sup> An interview guide was formed and used, with semi-structured questions built on a preliminary categorization of the free text data. The questions aimed to illuminate learning in the clinical context, educational results, student participation and perceived quality of supervision. The interviews were tape-recorded and the material was listened through several times and transcribed verbatim by the first author. The interviews were held in a conference room at the observed hospital.

#### **6.2.4 Data analysis**

As a first step, preliminary categorization was performed on free text answers from the questionnaires in order to focus the interviews on the most relevant content. Then a semi-structured interview guide was formed based on the preliminary categorization. It consisted of open-ended and probing questions. The questions in the guide aimed to uncover the participants' views on: what a student need to perform to achieve an excellent learning outcome; what comprises such an outcome; how does a competent supervisor perform; how could the supervisor role be described; what constitutes a stimulating learning setting in health care; if and how theory and practice were linked and how integration was supported during workplace learning; how influenced own expectations their motivation; how affected the physical learning context the educational outcome (such as for example computers and offices) and their thoughts about the quality of care that they had observed.

Then the free text and interview data were analysed together by a qualitative content analysis as described by Graneheim and Lundman.<sup>55</sup> The method focused on variations in the content of the text by identifying divergences and similarities. The text was read several times to get a sense of the whole. Units of analysis were identified according to the purpose of the study. We identified meaning units focused on students' views of learning in a hospital-based healthcare context. Each meaning unit was given a code. Meaning units and attached codes were grouped into preliminary categories according to content. Text, meaning units and codes in each main category were read and re-read in order to detect divergences and similarities that could form subcategories. Then, categories were labelled definitively and grouped into themes. Manifest content, that is, what was actually stated in the text and interview data was presented in categories, while themes were seen as expressions of latent content, or interpretation of data.<sup>56</sup>



**Figure 2** – An illustration of the process of data collection and analysis in study I.

## **6.3 STUDY II & STUDY III**

### **6.3.1 Study design**

An ethnographic study design was chosen to explore the community of practice of an acute medical ward in depth, and to gain a better understanding of how participants in such a community act and interact.

Inspired by Hammersley and Atkinson<sup>57</sup> repeated observations were performed through participation in the daily life of this acute medical ward for an extended period of time. The observations were performed to watch what happened, to listen to what was said and to ask questions to throw light on students' interaction with staff.

The ethnographic method could be described as a combination of empirical investigation and an understanding of social organization and culture.<sup>57</sup> Historically, the development of ethnographic fieldwork in sociology was linked to this discipline in Chicago, where a number of investigations were performed. These investigations created a base for research on urban sociology dependent on detailed investigations of local social settings and cultures.<sup>58</sup> The fieldwork usually required living with a group for an extended period of time, often more than a year, in order to document and understand the members' distinctive way of life. To facilitate a deep analysis, the focus was usually put on a few cases, perhaps just a single setting or group of people. When studying an unfamiliar setting, the researcher is a novice. It is only through watching, listening, and asking questions that the researcher can acquire a good sense of the social structure and processes in the observed setting and start to understand the culture.<sup>57</sup>

### **6.3.2 Participants**

Study II - In total, 21 medical students, four nurse students and 30 supervisors (senior consultants, resident physicians and nurses) were observed. In addition, auxiliary nurses, patients and relatives could be observed when interacting with students. Individual students could be observed at several occasions.

Medical students were in semesters five and six (out of 11) and stayed at the ward for one to five days. Nurse students were in semester six (out of six) and stayed at the ward for four to eight weeks.

Study III – In total, 21 individual medical students and 26 supervisors (senior consultants and resident physicians, four nurses and one auxiliary nurse) were observed. In addition, patients and relatives could be observed when interacting with students. Individual medical students could be observed at several occasions.

The medical students at the ward were in the beginning of their clerkship training, i.e. in their semesters five or six, and were scheduled to work at the ward for one to five days.

### **6.3.3 Data collection**

A wide ethnographic data collection was performed during 2011 to 2013. The data was collected by observing the workplace culture at a particular acute internal medicine care ward, including medical and nurse students' interaction and learning in this context. Study II in this thesis focused on workplace culture and medical and nurse students' interactions in this context. Study III focused on medical students' opportunities to participate and learn in an acute medical ward.

In total, 27 observations and 15 spontaneous informal conversations were completed during early autumn 2011 until early spring 2013. Observations and conversations were planned and performed when students were present, i.e. during morning, afternoon and evening shifts, Monday through Friday. Each observation session lasted on average three to four hours. The total observation time was approximately 100 hours and included 50 hours of interprofessional sit rounds, 25 hours of collaborative paperwork at offices, 20 hours of patient care and consultations, and five hours of informal patient-related interactions as for example in the corridor, in the staff lounge or in the treatment room.

The informal conversations with participants were aimed to clarify thoughts, to ask for explanations and to get a deeper understanding of the observations. The students were observed in interactions with supervisors, with other staff members, with patients, with relatives or in individual sessions.

The observations and informal conversations were performed using a template that was developed over time. The template included: when and where the observation or informal conversation was performed, who participated, what happened, and how the atmosphere was at the ward and in the particular situation observed.

Field notes were taken during observations and informal conversations. The notes were transcribed later the same day.<sup>57</sup> The content focused on medical and nurse students' interactions and learning in an acute medical ward, and how this context could hinder or facilitate their learning. The observer (first author) was dressed in hospital clothes during the observations and informal conversations.

#### **6.3.4 Data analysis**

The data analysis started during the fieldwork period. An inductive analysis approach was applied with the purpose to create a base for the focus of later observations. When the analysis revealed findings that demanded observation in more detail, the data collection was modified or expanded. The broad transcriptions enabled assembly of topic-focused data sets. The analytic process involved all field notes. According to Thomas<sup>59</sup> an inductive analysis refers to approaches that primarily use detailed readings of raw data to develop themes through clarifications made from raw data by a researcher.

##### *6.3.4.1 Study II*

The analysis in study II was based on observations when medical and or nurse students were present at the ward. The analysis involved three steps: familiarization with the data by reading transcripts; developing a thematic pattern by producing codes which represented key concepts and ideas related to the aim and indexed by applying the thematic pattern to the scripts. The author was aware of, and strove in the analysis to allow for, the risk of having a potential influence on the participants. Wenger's theory of "community of practice" inspired the analysis process.<sup>16</sup> The rich combination of ethnographic observations, field notes, and informal questioning data provided access not only to the culture and the interactions. It also enabled access to the participants' reflections on culture and interactions, with an opportunity to move back and forth between different data sets in the emerging analysis. The results of the final analysis conceptualized a number of cultural characteristics that formed how students could interact in the ward. The first author performed the preliminary thematic coding of data and all four authors discussed the findings during the analysis process until agreement was reached.<sup>60</sup>

### 6.3.4.2 *Study III*

The analysis in study III was based on observations when medical students were present at the ward. With the aim in mind we used Wenger's<sup>16</sup> three elements: a joint enterprise; mutual engagement; and a shared repertoire as a basis to find patterns when analysing the data.

The analysis of data involved the same three steps as previously described in section 6.3.4.1. The first author was aware of, and strove to allow for, the risk of having a potential influence on the participants. The rich combination of observations and conversation data provided access to the culture, interactions and to the participants' reflections on this culture and interactions, with an opportunity to move back and forth between different data sets in the emerging analysis. The final results conceptualized the characteristics that shaped the medical students' opportunities to participate and learn in an internal medicine ward. The first author performed the preliminary thematic coding of data, and all four authors discussed the findings during the analysis process until agreement was reached.<sup>60</sup>

## 6.4 STUDY IV

### 6.4.1 Study design

To explore the research question, a qualitative study design was an obvious choice. As described above, we had conducted ethnographic observations of medical and nurse students' interactions in the workplace and learning culture of an acute medical care ward. This rich data collection partly built the base for this study. To capture registered nurses' retrospective understanding of the outcome of their undergraduate professional learning in such a context, deep interviews were performed. The analysis was based on a combination of this interview data and the ethnographic observations at the acute ward where the interviewed nurses had participated in undergraduate workplace learning.

### 6.4.2 Participants

Nurse students, supervisors, senior consultants, resident physicians, auxiliary nurses, and a number of patients and their relatives were observed in the ward. Four nurse students were repeatedly observed during their four to eight weeks' of workplace learning in the ward. This placement period was scheduled in the last semester of the nurse program. The nurse students

received oral information about the study by the first author or by their main supervisors at the ward.

According to the aim participants in the deep interviews were chosen based on purposive sampling. Nineteen nurse students were identified, who had all performed workplace learning in the observed ward during the study period. Two years after graduation as registered nurses, they were all contacted by e-mail or by mail to enquire if they were interested to participate in individual deep interviews. They received written information on the purpose of the study and three reminders were sent out. However, twelve of these nurses were not accessible, and three declined to participate in the study. The remaining four nurses agreed to participate and time for individual interviews was scheduled.

#### **6.4.3 Data collection**

Study IV consisted of both observational data from the wide ethnographic data collection, as mentioned previously in section 6.3.3, and of deep interviews with nurses who had performed workplace learning in the observed ward.

In total, four deep interviews were performed during September 2014 and December 2014. The first author conducted all interviews, and each interview lasted approximately 45-60 minutes. The interviews were tape-recorded; the material was listened through several times and transcribed verbatim by the first author. The deep interviews were conducted in a conference room at the same hospital as the ward mentioned above.

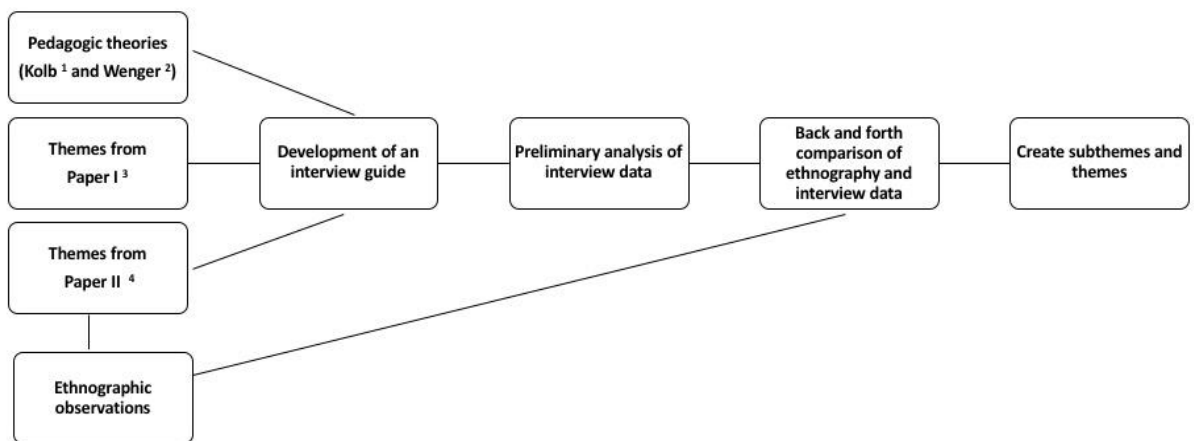
The semi-structured interview guide consisted of open-ended and probing questions. The questions were partly based on the results of two of our previous published papers (study I and study II) conceptualising themes and cultural characteristics of the acute healthcare environment associated with development of professional competence. Furthermore, the interview guide was influenced by Kolb's theory of experienced-based learning<sup>10</sup> and Wenger's theory "Community of practice".<sup>16</sup> The questions in the guide aimed to detect the participants': experiences of learning in the acute ward context; perceptions of the outcome of their learning activities; perceived opportunities to participate; perceived quality of supervision; and experiences of their own professional development.



#### 6.4.4 Data analysis

The interview data and observation data analysed in this study consisted of 450 pages of single-spaced text. During the analytic process we used an inductive comparative analysis and the analysis involved all interview and observational notes. Broad transcripts enabled assembly of topic-focused data sets. According to Rihoux <sup>61</sup> a qualitative comparative analysis is an approach to visualise the conflict between theory and data, the “dialogue between ideas and evidence”.

The first author performed the preliminary analysis of data and investigator triangulation was applied as all four authors discussed the findings during the analysis process until agreement was reached.<sup>60</sup>



**Figure 3** – Illustration of the analysis process in study IV.

<sup>1</sup> Kolb <sup>10</sup>

<sup>2</sup> Wenger <sup>16</sup>

<sup>3</sup> Themes from the related paper I (study I) - Management, planning and organisation for learning; Workplace culture; Learning a profession

<sup>4</sup> Themes from the related paper II (study II) - Complex and stressful situations; Variable composition and roles of community members; Transitions through community boundaries; Levels of importance and priority; Students' adaptation and interaction in the community.

## 7 RESULTS

### 7.1 STUDY I

Seventy-five medical students, aged 21 to 44 years, and twenty-three nurse students, aged 22 to 47 years, provided free text answers. Two-thirds of the participants were females. In addition, three medical students participated in a focus group interview and two nurse students participated in individual interviews.

The students described a wide range of important learning aspects which could be understood to form three themes.

The theme *management planning and organisation for learning* illustrated how students understood support and planning at leadership level that aimed to secure the quality of workplace learning, both at a healthcare department level and at an educational programme level. The students perceived that the responsibility of deans and directors of courses in the educational programme, was to manage and plan content and learning activities so that they related to syllabus and to the conditions at the workplace. Further, students used expressions illustrating the view that it was the responsibility of the healthcare department and its staff to provide space and resources for supervision and learning. Students described the two management structures as being separate.

The theme *workplace culture* described the students' experiences of the culture and interactions between staff at the workplace. Students' perceptions of hierarchies and of communication at the workplace were explored in this theme. Students were aware of several hierarchies at healthcare workplaces. Hierarchies within and between different professions seemed to affect learning quality. Furthermore, the students acknowledged the importance of being able to ask questions and to be paid attention to.

The theme *learning a profession* illustrated how students experienced the supervisors' attitudes and approach to students and their learning to become professionals. It related to how supervisors showed enthusiasm and built relationships with students. The theme included students' understanding of feedback on performance and how supervisors supported the students' professional development. A competent supervisor acted in a professional manner and explained how the student could think and perform. Students stated the importance of personal feedback from the supervisor. The students also wanted to meet different kinds of patient situations and to reflect on their own performance.

**Table 3** - A summary of themes, categories and subcategories in study I

<b>Themes</b>	<b>Categories</b>	<b>Subcategories</b>
<b>Management planning and organisation for learning</b>	<b>Relating course content and learning activities to the syllabus and to the workplace</b>	<b>Distribution of content</b>
		<b>Visualise professional roles</b>
		<b>Learning objectives</b>
	<b>Providing practical space and resources for supervising and learning</b>	<b>Opportunities to demonstrate</b>
		<b>Competence of the supervisor</b>
		<b>Infrastructure at the ward</b>
		<b>Haphazard practical learning opportunities</b>
		<b>Time for supervising</b>
		<b>Opportunities to practice</b>
	<b>Workplace culture</b>	<b>Hierarchies</b>
<b>Hierarchies between students</b>		
<b>Communication</b>		<b>Atmosphere</b>
		<b>To be paid attention to</b>
		<b>The leader as a role model</b>
<b>Learning a profession</b>	<b>Attitudes and approach</b>	<b>Confidence</b>
		<b>Encouragement</b>
	<b>Enthusiasm and relationships</b>	<b>Commitment</b>
		<b>Interest and knowledge</b>
		<b>Relationships</b>
	<b>Feedback</b>	<b>Continuity</b>
		<b>Reflection</b>
	<b>Professional development</b>	<b>Patient meetings</b>
		<b>Independence</b>
		<b>Own development</b>

## 7.2 STUDY II

In total, 21 medical students, four nurse students and 30 supervisors (senior consultants, resident physicians and nurses) participated.

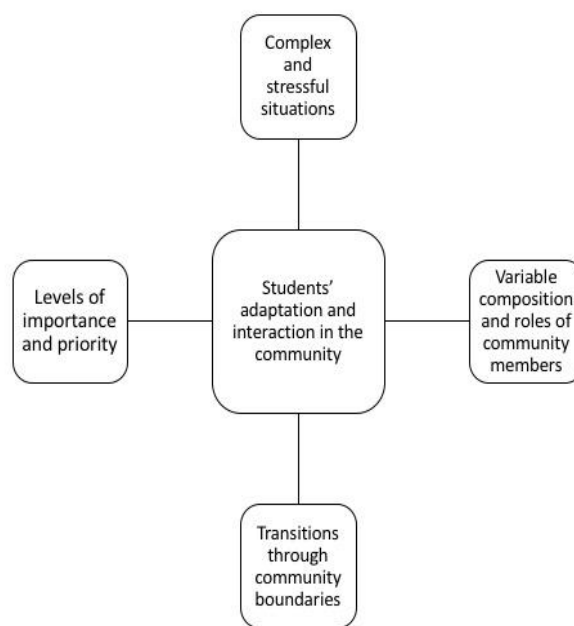
Four themes were identified and they illustrated how students adapted and interacted in the community of practice in the observed ward.

The theme *complex and stressful situations* illustrated how such situations could be stabilized by ward routines and by the carriers of culture in this community of practice. The staff had a heavy workload at the ward, with a high turnover of patients. In addition, the frequency of stressful situations that demanded immediate handling was high. Depending on type of activity, available staff members, and time of day, the composition of work groups varied. There were a handful of staff members with long experience in the ward. Those had key roles as carriers of culture and experience.

The theme *variable composition and roles of community members* described that variations were an inherent part of daily practice, but this did not seem to be obvious to students. The turnover of staff members was excessive, especially among nurses, and only a few of the nurses had worked at the ward for more than a year. Five different senior consultants rotated to be in charge at the ward, and residents were often altered on a weekly basis. Supervision of a student was supposed to be performed without disturbance or interruption of the supervisor's daily patient and collegial duties.

The theme *transitions through community boundaries* illustrated that frequent transitions were confusing, especially for new students. There were marked differences between professions regarding transitions both within and through the community boundaries. Nurses and auxiliary nurses were stationed at the ward during all working hours. Due to simultaneous assignments in other departments, senior consultants and residents moved in and out of the ward during the same work shift, for example to cover for an absent colleague, to examine a particular patient in another ward, or for consulting. The movements of students followed that of their supervisors, for example a medical student could follow the resident when a patient was examined at another ward.

The theme *levels of importance and priority* illustrated that hierarchies and orders of priority were present as regulators of roles, routines and interactions, and of how staff approached different patient groups. Both auxiliary nurses and nurses expressed the feeling that they were just seen as one of many and thus easily replaceable. On the other hand, consultants were approached as individuals with expertise. Patients afflicted by dissimilar diseases were approached differently. How different patient groups were prioritised was occasionally explicitly expressed among staff and relatively openly discussed with students.



**Figure 4** – An illustration of students’ adaption and interaction in the community of practice at the observed ward in study II.

### 7.3 STUDY III

21 medical students and 30 supervisors - senior consultants and resident physicians, four nurses and one auxiliary nurse - participated in this study. In addition, patients and relatives were observed when they interacted with the students. The medical students had short placements at this ward, some for just one day, but several students could be observed at several occasions.

Two themes evolved characterizing medical students' opportunities to participate and learn in an acute internal medicine ward.

The theme *nervousness and curiosity* illustrated how these aspects affected medical students learning. When students first arrived in the ward, they knew that they would attend to it for only a short period of time. They expressed a feeling of pressure to demonstrate knowledge and skills. Furthermore, they wanted to show that they were curious and that they had an interest to learn more. Students acted nervously and in a stressed manner, in particular when they could not respond to questions. For those with extended placements, curiosity might evolve over time. Unexplored opportunities to support students to develop a competence to judge and approach more complex patient-related problems were identified.

The theme *invited and involved* described how medical students were able to participate in patient work at the ward. Medical students' training at the ward was characterised by huge variations in conditions and opportunities to build relationships. Students were particularly involved in patient related duties and had opportunities to perform patient related paper work during sit rounds. They received some occasions to perform hands-on activities with patients. However, when staff interacted and discussed directly with patients' students often became just observers. There were situations when staff talked about the students above their heads and this was frequently observed when the physician supervisor interacted with nurses or auxiliary nurses. Short placements seemed to disrupt the learning process. If and how students became involved did also depend on supervisors' activities and students' initiatives.

## 7.4 STUDY IV

Four nurse students and their nurse supervisors participated in the observations. In addition, four nurses participated in deep interviews. Two of the interviewed nurses had been observed during the ethnographic observations when they achieved workplace learning at the ward.

Three themes described long term outcomes of workplace learning.

The theme *to handle shifting situations* illustrated how nurse students learnt to adapt to shifting situations, to manage stress, to create time for learning and to put up with hierarchies. All interviewed nurses emphasised the high workload and the stressed situations that none of them had experienced during previous placements. During the observations it was often a high workload and stressful situations were commonplace. The interviews indicated that the planning for the nurses' workplace learning failed in some situations. However, they still felt welcomed by their supervisors. The observations made it clear that there were situations when the management not had prepared for the student's arrival. Furthermore, the interviewed nurses described a hierarchic organisation. The senior consultants gave orders and the nurses and auxiliary nurses effectuated the work. In addition, the interviews indicated that the nurses in retrospect could remember hierarchies between patient groups. They especially remembered that mentally ill patients and elderly patients were put at the bottom. The interviews also indicated that there were hierarchies between different student categories.

The theme *to build relationships* illustrated how nurse students learnt to create relations and interact professionally and with patients. The interviews indicated that it was not always easy for nurse students to get into contact with professionals. There was a high turnover of students, which made it difficult for the interviewed nurses to build relationships with staff. The observations showed that if a student, as a newcomer, participated in the practical responsibilities of the care at the ward they were more frequently accepted as a member of the team. All interviewed nurses expressed the importance of having interaction with the auxiliary nurses and they described this interaction as valuable for the development of their future professional role. The interviews stated that it was perceived as more valuable to learn from, build relations with and interact with patients than to study theory, although the theoretical knowledge the nurses gained from literature and lectures was described as important.

The theme *to act independently* illustrated if and how nurse students were able to train to work independently, to train to take own responsibilities, and to train to prioritise in a complex context. The interviews indicated that lack of staff could create situations where a nurse student had to take responsibility for a group of patients, in some cases without sufficient supervision. The observations indicated that nurse students over time developed an increased competence and were therefore able to, with support of their supervisor, to take an increased responsibility as an acting nurse. Further, the interviewed nurses clearly stated that they as nurse students had to take up space. The students had to show that they wanted to act and to learn, and that they were to be trusted to perform nurse responsibilities.

**Table 4** – Identified themes and subthemes in study IV.

<b>Themes</b>	<b>Sub themes</b>
<b>To handle shifting situations</b>	<b>Manage stress</b>
	<b>Create time for learning</b>
	<b>Put up with hierarchies</b>
<b>To build relationships</b>	<b>Interact professionally</b>
	<b>Interact with patients</b>
<b>To act independently</b>	<b>Take own responsibility</b>
	<b>Prioritise in a complex context</b>



## 8 DISCUSSION

This thesis deals with learning in acute health care from the perspective of medical and nurse students. The context of acute health care is stressful, variable and demanding, but it is also considerably structured and organised. The studied ward community of practice did not always welcome the students and supported their learning. The students' motivation and curiosity to learn were sometimes superseded by nervousness, insufficient supervision and exclusion from participation. However, students really appreciated to be there, to observe and to participate. In this learning setting they increased their medical knowledge and understanding. They acquired professionally relevant skills and capabilities. Furthermore, they encountered the demand to judge and to approach patients as a professional.

### 8.1 THE CONTEXT OF AN ACUTE CARE WARD

A community of practice has, according to Wenger<sup>16</sup>, to be understood in a larger perspective such as the historical, social, cultural and institutional circumstances. The institutional context has specific resources and conditions. In study I we identified that the context of an acute health care workplace, could be characterised as stressful, ever-changing and complex. This is in line with findings of several others. According to Mennin<sup>62</sup> students' professional training takes place in complex and rapidly changing environments primarily organised to take care of patients. Further, in study II we noticed that a high turnover of staff resulted in a limited number of staff that could offer continuity and stability.

The ethnographic observations disclosed that professional assignments and roles were strictly distributed between community members both within and between professions, and also between the different student groups. Further the severity of diseases and levels of medical and psychosocial complexities varied considerably between patients. The theme, *levels of importance and priority* explored in study II, could be understood in relation to Wenger as the frame in which goals, values and routines of the community of practice conceivably could be developed.<sup>63</sup>

Students' learning in an acute care ward community is dependent on management, planning and organisation of both the educational programme and of the hospital. Universities and hospitals are managed and regulated by different objectives, laws and regulations. In study I we identified that students perceived these regulating bodies as separate entities. Furthermore, to create supportive and creative learning in the acute care context its health care management had to provide certain conditions for learning. The conditions should enable

opportunities to arrange suitable situations for learning, and to offer time and space for learning. This is in line with Vinales<sup>64</sup> who emphasised that the learning environment should be supportive with planned opportunities for learning.

## **8.2 LEARNING IN AN ACUTE CARE COMMUNITY OF PRACTICE**

The content of the learning environment of an acute care community of practice was dependent on the contextual conditions described above. In study II we present several examples of how a community of practice have to approach both complex and stressful situations in acute care. Specific working routines and a strict distribution of professional assignments and roles seemed to, in addition to a few but fundamental carriers of culture – with explicit professional expertise – have contributed to a calm working atmosphere. The culture carriers' embodied understanding of practice appeared to substantially contribute to students' learning. This is in line with Dall'Alba and Sandberg who stated that the way in which practice is understood – for example working routines, forms and roles – systematizes specific knowledge and skills into a particular form of professional skill. They called it an embodied understanding of practice. This competence is needed, in addition to professional skills, to develop professional competence.<sup>23</sup>

The variable team compositions and varying roles of community members sometimes seemed confusing to the students. Furthermore, the intense workload did appear to affect the quality of student supervision. Courtney-Pratt et al.<sup>65</sup> have stated that a high workload at a ward reduced supervisors' ability to supervise students. We also found that an intense workload hindered staff to interact and collaborate with each other, which seemed to hinder them to internalise the tacit knowledge of the community. Statements in study I indicated that if staff communicated with each other they also communicated with students, resulting in a supportive learning milieu. According to Polanyi<sup>66</sup> tacit knowledge could be described as: “we know more than we can tell” and it includes a range of theoretical and sensory information and images that could contribute to understanding and to make sense of something, but it is difficult to explain in words. The observations analysed in study IV did not detect signs that stressed and shifting situations were supportive for the participants' learning. However, we found that the participants interviewed in retrospect understood that such stressed and shifting situations that they had experienced as students had contributed to their competence to manage stress and to prioritise when time was limited.

Grobecker<sup>67</sup> stated that a sense of belonging influenced and impacted students' learning. In study IV we found that the complexity of care, due to both numerous patients with serious illnesses and a high turnover of patients, decreased nurse students' opportunities to participate actively in the care. Furthermore, lack of supervisors sometimes could be a hindrance to students' learning. Lack of time for supervision forced students to find strategies on how to show interest and to express that they wished to participate actively in patient care situations.

In study I and II we found that some hierarchies were an ingrained and inherent part of workplace culture and organisation. Hierarchies were observed both within a profession, between different staff and professional categories, and between staff and students. Some hierarchies are an integrated part of health care due to legislation and management organisation where health care organisation has to follow certain regulations or laws.

Hierarchies was mentioned by Nilsson et al.<sup>68</sup> who stated that hierarchies were visualised in the health care organisation. A physician should be knowledgeable and be able to make decisions, and is at the same time expected to be sensitive to specific needs and perspectives of patients. Nilsson suggested that these aspects of a physician's occupation were crucial in order to perform a good patient care. Thus it is important that supervisors allow these aspects of the future vocation to be a natural part of the workplace learning and that they support medical students in this process. In study II and study IV we noticed hierarchies between the various student categories as a part of the ward culture. This could result in that some students could be bypassed, and hindered to achieve learning opportunities. Some of the hierarchies hampered the working climate and created barriers for learning. Langendyk et al.<sup>69</sup> have elucidated that medical and nurse educators aim to convey strong occupational identities to their students. This may perpetuate some pointless hierarchical disciplinary boundaries. Langendyk suggest that health profession educators could move beyond current disciplinary silos and create interprofessional education opportunities for medical students and nurse students to facilitate shared learning experiences. Furthermore, in study II and IV we noticed that students were aware of hierarchies between different patient groups. We do not know but assume that this might influence their future view of patients with complex conditions.

We did not notice any signs in study III that staff expressed curiosity regarding medical students as individuals, or of their earlier experiences as students, or if they had any suggestions for improvement of the work in the ward. This lack of staff curiosity regarding students as individuals could be explained, according to Wenger<sup>16</sup> as an indication that students were seen as legitimate but peripheral members of the community.

In study II we noticed that the students' task when arriving to the ward was to enter a so to say semipermeable membrane that the boundary of the community of practice could be seen to represent, and to understand and to adapt to its culture, and to try to become accepted. In study III we noticed that medical students' pre-competences and experiences tended to differ, but that their interaction in a new community usually implied to be exposed to new situations, routines and a need to achieve additional competence. Due to the variety of conditions and the short placements medical students had to cross community boundaries more frequently than nurse students. Boundaries can create divisions and be a source of separation and fragmentation, but they can also be areas of exceptional learning experiences, becoming a place where new perspectives meet and new possibilities for learning arise. The learning opportunities when crossing boundaries have been described by Wenger.<sup>63</sup> Usually there are differences in competences and experiences between communities, and to cross a boundary between two communities implies to be exposed to new and different competences. Learning at boundaries is likely to be maximized for individuals and for communities when experience and competence are closely connected but not identical. In study II we explored that the transitions through community boundaries could be confusing to newcomers, students had e.g. to grasp when to follow and when not to. Nurse students realized that to remain in the inpatient room to observe, interact with and take care of the patients were required to acquire both practical nursing skills and to acquire new knowledge. By contrast, medical students in study III experienced areas of extraordinary learning when e.g. a student and a supervisor made a visit to another ward. This could result in an intersection of different perspectives and a potential of a new learning opportunity.

Although medical and nurse students conducted workplace learning in the same ward and at the same time they achieved diverging competences and moved and interacted in different ways. Study II showed that there were divergent approaches from staff and in the potential to be involved between medical and nurse students. It was a considerable number of medical students passing through the ward with only short time positions, some of them for just one day. This sometimes made it difficult for the students to establish relations and to interact with staff. This could be contrasted to Wenger<sup>16</sup> who stated that mutual engagement strengthens when members are engaged in actions that they share with one another, i.e. pursuing an initiative together to share some significant learning. Learning is a central and important aspect of a community of practice. Team members discover how to engage and discover what helps the learning process, for example to be able and allowed to talk and interact while at work. We observed that it was easier for nurse students to be involved in the community than for medical students. We assumed that this was due to their sustained

placements, between four and eight weeks. In addition, nurse students had designated supervisors during their placements. Our results are in line with Bos et al. <sup>70</sup> who stated that relations with supervisors affected student satisfaction and motivation for learning. We found that there were differences between medical and nurse students in their interaction and relation with supervisors at the observed ward. Medical students' interaction was dominated by questions and answers. By contrast, nurse students' interactions were characterised by performance of nurse responsibilities together with their supervisors.

Study I-IV all support that to optimise learning in an acute care context students need to be invited and involved in the community, to be able to build relations and to be provided with opportunities to collaborate in teams. Brennan and Enns <sup>71</sup> have stated that social relationships and communication could beneficially contribute to a rewarding collaboration. In study I we noticed that the way communication and interaction took place in the community of practice affected how staff treated students. When students did not become an active part of the workplace culture they expressed a lack of space and of time for learning and of opportunities to acquire professionally relevant knowledge and skills. This could be linked to Wenger <sup>16</sup> and Engeström et al. <sup>72</sup> who pointed out the difference between students being just guests with an aim to learn or if they were expected to contribute to the development of the community of practice.

In study III we saw that supervisor's actions and approaches influenced whether a student became invited and involved in the community or not. The opportunities to learn and to become invited varied dependent on where in the ward and in which situation students and supervisors were situated. Learning was facilitated when students were able to participate as members of the community and not only regarded as observers. This could be compared to Burgess et al. <sup>73</sup> that the sense of belongingness increased among students when supervisors treated them as team members. Furthermore, we found that students who stayed at the ward for an extended period of time, more than just one day, obtained curiosity and took more own initiatives in tasks and problem-solving. When students showed interest to learn and asked questions they had increased opportunities to become involved and thereby to increase their learning. In addition, they proceeded from nervousness to curiosity and acquired a deeper understanding of the situations.

According to Byszewski et al.<sup>74</sup> medical students acknowledged a need of role models during workplace learning. In study I it was expressed as that the supervisor was a significant person for the students in various ways, especially as role models. Further, students appreciated when supervisors built relationships with them and when they endorsed students' relationships with their patients. This is in line with Smith et al.<sup>75</sup> and Steven et al.<sup>76</sup> who found that by participating in workplace learning students formed relationships, a sense of professional identity and modified their attitudes. Further, it was elucidated that students wanted their supervisors to give them an opportunity to take responsibility for patients and to perform tasks with patients on their own. Furthermore, students who had an opportunity to obtain feedback had a greater satisfaction with their placement. According to Lefroy et al.<sup>77</sup> culture, values, expectations, personal histories, relationships, and power influenced feedback and feedback is a part of a social interaction. Feedback is not just one person delivering information to another person to help them in their progress. In study IV, the importance of building relationships with supervisors was exposed. Due to nurse students' extended stay at the ward, between four and eight weeks, these students had opportunities to build a deep relationship with their supervisor. Liljedahl et al.<sup>28</sup> have stated that length of stay had an influence on the chance to be involved in the team at the ward. The longer time nurse students spent at the ward the easier they had to optimise their learning. We saw that by creating deeper relationships, students got opportunities to recurrently perform tasks, to receive feedback and to show their improvement over time. In addition, they had opportunities to initiate a dialogue with their supervisor and then resume this concerning the same issue later. Further, our results show that students had to take own responsibilities for their learning and to take up space to become involved in the team. This is in line with Liljedahl et al.<sup>28</sup> who emphasised that nurse students saw themselves as responsible for their own learning.

How the ward was managed, planned and organised did not seem to be apparent to the students. However, what the management resulted in was more obvious. Study III showed that supervisors did not have scheduled time for supervision and that this might generate a belief that supervising students is an extra burden. According to Biggs & Tang<sup>14</sup> this should be seen in conjunction with the situation that if the health care organization does not provide enough time for supervision, the supervisor will not be able to provide a deep commitment. Further, in some instances supervisors formed space and conditions for introduction and involvement of students, and in other instances not. This could be compared with Köhl-Hackert et al.<sup>78</sup> who stated that medical students valued to be an integrated member of the team at the ward and to have supportive supervisors.

Further, study II showed that students did not become invited to share their opinions on routines or how the work was performed in the present ward in comparison to how it was performed in other wards. According to Wenger<sup>63</sup>, a broker can introduce elements of one practice to another. Certain individuals seem to grow by being brokers, as they prefer to create connections and to engage and would like to move from one community to another rather than to remain in just one community. Most health care education programmes intend that students, during workplace learning, move from one community to another and then further on to the next. Thus students should have a possibility to act as brokers between different communities. However, this thesis indicated that this potential to improvement of and learning in acute care communities of practice was hitherto unexploited.

### **8.3 TO DEVELOP A PROFESSIONAL IDENTITY**

The key dimensions of knowledge from Aristoteles: *episteme*, *techne* and *fronesis*<sup>234</sup> is highly relevant even today when trying to understand development of professional competence within health care. To become a professional implies to gain and in practice to apply professionally relevant knowledge and understanding, to apply skills and abilities, and to judge and approach work situations with professionalism. Workplace learning in a health care setting is a fundamental learning activity to gain this competence. Several studies show that students do appreciate to be there, to observe and to participate. We have found that students develop an expanding professional identity in an acute care ward community of practice. This in spite of that the community of practice does not always welcome students or support their learning, and that their motivation and curiosity is sometimes superseded by nervousness, insufficient supervision and exclusion from participation. According to Scanlon<sup>79</sup> the professional identity is multidimensional and it includes both individual and collective identities situated in professional practice. In study I we found that medical and nurse students experienced that workplace learning in a healthcare environment was an important part of their advancement as professionals and that they achieved more professional skills by participating in patient work. This could be linked to Foster<sup>80</sup> who described that becoming a professional have two main parts: gaining a degree by acquiring the necessary specialist knowledge and technical skills to perform the work as a professional; and to develop a professional identity by professional socialisation and learning how to behave as a professional.

The professional identity includes to be able to interact and collaborate interprofessionally. In study I, II and IV the interprofessional supervision was expressed as important for the participants. In study I the opportunities to learn during interprofessional activities were appreciated. In study II the students interacted regularly with external experts for example specialised physicians, physiotherapists, occupational therapists and counsellors. In study IV the interaction with auxiliary nurses was valuable for the nurse students' professional development. According to Greenstock et al.<sup>81</sup> students' first interaction with other health professionals often occurs during clinical placements. In study II we found that students were able to interact with a variety of staff over professional borders. We observed e.g. a discussion between a nurse student and a senior consultant where the nurse student independently performed a medical sit-round with the senior consultant. In addition, we detected that there were several situations with unexploited opportunities for interprofessional learning, especially situations when both medical and nurse students participated. The value of such interprofessional collaboration activities as learning opportunities might have been unexplored, since the ward did not have routinely planned activities for interprofessional learning. A lot of learning over professional borders occurs in the regular health care context but these interprofessional learning activities is to our knowledge not systematically studied. However, organised interprofessional education that takes place in contexts especially designed for interprofessional learning is systematically explored. For example, Hallin & Kiessling<sup>82</sup> have stated that a well organised interprofessional training ward provided a supportive and permissive learning environment. Students had options to interact with one another. They perceived that they were in a safe place with space, that enabled them to move from insecurity to faith in their own capabilities. They went from chaos to clarity. We assumed that it would be possible to achieve at least parts of such situations even in a regular health care context.

To be able to apply relevant medical knowledge, clinical skills and to make professional judgements are fundamental competences in the building of a professional identity as a physician. Questions and answers are thus a fundamental approach in medical education. The ethnographic observations showed that medical students' interactions with staff were characterised by such inquiries and responses. In study II & III we repeatedly saw medical students being asked medical questions that they were supposed to be able to respond to. According to Nilsson et al.<sup>83</sup> queries and replies was a common pedagogic strategy among senior consultants and residents when supervising. The queries varied from simple questions that could be answered by yes or no, to complicated queries at a higher taxonomic level. Questions and responses could be understood and graded by using for example Blooms



taxonomic levels from 1956 that was updated in 1994 by Anderson and published by Sosniak.<sup>84</sup> Questions can be formulated to capture knowledge at six different levels; *Remembering* - are the student able to recall or remember the information? *Understanding* - are the student able to explain ideas or concepts? *Applying* - are the student able to use the information in a new way? *Analysing* – are the student able to distinguish between different parts? *Evaluating* – are the student able to justify a stand or a decision? *Creating* – are the student able to create a new product or point of view? We conclude that the queries and responses observed in study II and III was put mostly on the remembering, understanding and applying levels. We comprehended that simple questions did not seem to increase curiosity among the students. Furthermore, we concluded that most of the questions spanned medical knowledge and skills related to a diseased organ rather than to a whole human being. However, there were numerous situations with patients suffering several comorbidities, complex social situations or addiction problems that were not used as opportunities for learning. A pedagogical strategy trying to rephrase questions about observed patients to reach also the analytic, evaluating and creating levels could have a potential to substantially increase the taxonomic learning level.

Study III showed that medical students sometimes felt and acted anxiously and in a stressed manner when they could not respond to the questions correctly, and we perceived that these situations hindered their learning process. This could be compared with Van der Zwet et al.<sup>85</sup> who stated that by asking students questions or by allowing students to ask questions the supervisors cared for the students. By asking questions students demonstrated their interest, initiative, motivation and enthusiasm to supervisors.

To understand the long-term outcome of graduated nurses' undergraduate workplace learning explored in study IV, we applied Kolb's four step cycle of experimental learning<sup>10</sup>: to have a concrete experience; to observe of and to reflect upon that experience; to form abstract concepts (analysis) and to generalize (conclude) based on that experience; and finally, to use the conclusions to test hypotheses in future situations, thus resulting in new experience. During the observations in study IV we did not see any signs that students were able to experience all of the four steps mentioned. We did not observe any signs of abstract conceptualisations or generalisations. However, over time, in this case two years after graduation the participants could express a conceptualised and generalizable understanding of what they learnt during workplace learning at the observed ward. They could in retrospect describe that they appreciated the opportunity that they had to be active in stressed and shifting situations and to independently handle unfamiliar complex patient situations. These

experiences had improved their faith in their own aptitude to develop a professional identity and to be prepared to meet comparable situations as registered nurses. This could be interpreted as that students needed to contrast their experiences from different workplaces and to wove them together to obtain a sense of the whole to use in their future profession, and that this process takes time.

Strand et al.<sup>86</sup> have stated that a stimulating ward in a hospital could be defined as an environment where student learning is based on partnership with supervisors, continuity and learning objectives. In study IV the interviewed nurses emphasised that it was not always clear how learning objectives related to learning activities in the workplace. Further, they underscored their relationship with patients as important and expressed that they wanted extended time for that. Supervisors could support students to spend prolonged time with patients during the placement. According to Westin et al.<sup>87</sup> it was during workplace learning that nurse students improved their professionalism in taking care of patients. During learning progression, students became more courageous, showed and reflected on their limitations.

In study IV we found that students participated in situations where staff had to perform medical treatments that they had not performed before. This shaped an unsecure feeling among the students. We cannot know why, but maybe it was more challenging for the supervisor to support the student when he or she did not feel confident in the situation. We found that the activities in the community of practice offered students numerous opportunities to act independently. In addition, they met patients with different diseases, which increased their knowledge and their embodied understanding. This is in line with Dall Alba & Sandberg<sup>23</sup> who stated that development of professional competence has two dimensions; medical expertise and embodied understanding of practice. The option to develop embodied understanding depends on the learner, his or her needs and knowledge, as well as on the arrangement of learning situations.

The students in study IV were all at the end of their educational programme and thus experienced in their student role. We argue that there is a limitation in Benner's<sup>21</sup> levels of competence development; *novice*, *advanced beginner*, *competent*, *proficient* and *expert*. According to Benner a *novice* is a beginner, a newly graduated nurse, without experience of the circumstances in which he or she is expected to perform tasks. However, we found that even during undergraduate workplace learning a nurse student gains valuable knowledge and experience of the situations in which he or she is expected to perform. Therefore, nurse students, due to their workplace learning, at graduation cannot be seen as total novices without any earlier contextual experience.

## 9 METHODOLOGICAL CONSIDERATIONS

Qualitative studies are performed in a specific context and create an opportunity for a deeper analysis of the studied context.

Investigator triangulation was applied in all four studies and all researchers were engaged in the analysis, which contributed various professional perspectives and experiences<sup>88 60</sup> to ensure credibility. According to Merriam<sup>89</sup> credibility deals with the question “How congruent are the findings with reality?”.

In study I and study IV we used more than one method to collect data. In study I free text data and interview data was sampled. In study IV ethnographic data and interview data was collected. Patton<sup>60</sup> stated that triangulation of methods in qualitative research could be used by combining different data sets. Differing data sets clarify complementary aspects of the same phenomenon.

Study I - Free text answers and interview data enabled a potential to gain a deeper understanding of students’ experiences of their learning. We included data from students at novice as well as at more experienced levels to increase trustworthiness and transferability. Trustworthiness includes the question of transferability, which refers to ‘the extent to which the findings can be transferred to other settings or groups’.<sup>90</sup> A limitation was that we did not perform any direct observations of student learning in the healthcare context. This contributed to that we designed the ethnographic study and directly observed students’ learning in an acute care context.

Study II and study III - An ethnographic design permitted a potential to gain a deeper understanding of participants’ opinions and actions, and the long observation period of a large number of staff and student interaction should increase the findings’ trustworthiness and credibility. A limitation of ethnographic studies is a risk of bias of the researcher, as the researcher is used as a tool during the observations. By using “marginal participant” technique, in which the researcher plays only a minimal role in the interaction, as performed in the present studies, this risk is decreased.<sup>57</sup> A strength of these studies is that individual students could be observed at several occasions during their placement at the ward. By gathering both long time observation as well as informal conversations with staff and students we ensured credibility. Further, credibility was reached by providing a rich and realistic description of the observed phenomenon.<sup>91</sup>

Study IV – By applying a combination of deep interviews and ethnographic observations we were able to achieve a deeper understanding of the participants’ perspective on the outcome of their undergraduate professional learning in acute care, and the observations and the interviews increased these findings credibility and trustworthiness. To improve judgment of transferability, the data collection and analysis process were carefully described. The decision whether the results are transferable to other contexts rests with the reader.<sup>55</sup> A limitation of the present study was that only four nurse students were observed. Further, we were only able to conduct deep interviews with four nurses. However, we wished to perform the study in a specific ward but we did not succeed to include more than these four nurses. Nonetheless, all interviewed nurses had performed workplace learning at the same acute medical ward. In addition, they were observed during several occasions during their placement. The interview data achieved was rich and coherent. Using both observations and deep interviews for an extended period of time ensured credibility. Credibility was also attained by providing a rich and realistic description of the observed phenomenon.<sup>91</sup>

We have studied undergraduate medical and nurse students during both early and late workplace learning, and the results might therefore be transferable to other workplace learning in similar contexts.

## 10 CONCLUSIONS

The workplace culture of an acute care ward formed the conditions in which students could learn, interact and be involved. Students' task at arrival to the ward was to enter its community of practice and to try to understand, to adapt to its culture, and to be accepted. Students successively developed a professional identity when the community accepted them, and if competent and enthusiastic supervisors gave them opportunities to interact with patients and to take own responsibilities.

Although medical and nurse students performed their workplace learning in the same ward and at the same time they achieved differing competences and proceeded and interacted in different ways. The learning situations for medical students were focused on queries and responses. However, the potential of the inherent ward processes to challenge and improve students understanding, skills and their capabilities to judge and approach complex patient problems was underutilised. Learning at the ward provided nurse students with understanding of their future profession as nurses. They learnt how to handle stress and variable situations, to interact, to take responsibilities, and to prioritise in the complex ward context.

This thesis showed that the stressful, ever-changing, demanding, but also considerably structured and organised acute care ward offered abundant learning opportunities that could be used in the striving and heading for embodied understanding of practice. Therefore, it is maybe not necessary to create and structure new learning situations in acute care. But rather to use the normal variation of care situations and of patient cases, and to form conditions and attitudes that make learning by using them inspiring and valuable. However, this potential for improvement has as yet not been fully utilized.

## **11 CLINICAL IMPLICATIONS**

The results are assumed to offer new knowledge that should be valuable in the advancement of workplace learning.

The university and the health care organisation ought to collaborate to establish facilitating and stimulating learning settings for undergraduate students in the workplace context.

To improve this learning context for students, it is critical that health care staff take on an assignment to invite and involve students in the activities that are performed by the members of the workplace community.

In acute medical care numerous complex patient cases are handled. The potential of these cases to challenge and improve students understanding, skills and capability to judge and approach such complex patient problems is underutilised.

The stressful and swiftly shifting situations and settings at an acute care ward offer abundant learning opportunities in the striving and heading for an embodied understanding of practice and for development of a professional identity.

## 12 FUTURE RESEARCH

This thesis gave a deeper understanding of students' perspectives of the learning environment in acute care. However, further studies are desirable to understand this learning context from other perspectives.

One interesting research perspective would be to study aspects of supervising in acute care. What do supervisors require to be able to stimulate student learning during such workplace learning? Increased understanding of these aspects could have a potential to improve conditions so that students might encounter a more supportive workplace learning atmosphere in acute care. Interviews and ethnographic studies could help to form hypothesis on such important aspects, that could be later followed up by quantitative studies.

Another interesting aspect could be to study factors of importance for high quality management that support learning of both students and staff in the acute care context. What do health care managers require to facilitate student learning? What do health care managers need to support their staff in their supervising of students? By studying such important factors students may in the future meet a milieu that supports learning. Individual or focus group interviews could help to generate hypothesis on important aspects, and those could later be followed up by quantitative studies.

# 13 SVENSK SAMMANFATTNING

## 13.1 BAKGRUND

Redan 350 år f.Kr. menade Aristoteles att kunskap kan beskrivas i tre dimensioner: *episteme*, *techne* och *fronesis*.<sup>2 3 4</sup> När dessa begrepp tillämpas inom högre utbildning innebär de att studenter tillägnar sig *episteme* (teoretisk kunskap) på universitetet. Praktisk träning innebär möjlighet att tillämpa sina teoretiska kunskaper i praktik. Härigenom erhåller studenterna *techne* (professionell färdighet), samt startar sitt förvärv av *fronesis* (praktisk klokhet) i professionell praktik.

Enligt Kolb<sup>10</sup> går varje person in i sin lärandesituation med en mindre eller större befintlig kunskap inom ämnet. Lärandet är den process där utveckling av kunskap sker. Kunskapen skapas genom att lärandet omvandlar erfarenheter till kunskap.

Högskolor och universitet arrangerar ett stort antal utbildningar som leder till yrkesexamen. I många av dessa ingår verksamhetsförlagd utbildning inom det aktuella yrkesområdet.<sup>92</sup> Inom hälso- och sjukvårdsutbildningarna är ambitionen att denna ska komplettera och berika de teoretiska kunskaperna inom ämnesområdet. Studenterna behöver också få lära sig att samarbeta med andra yrkeskategorier och få erfarenhet från olika typer av hälso- och sjukvård.<sup>93</sup>

Lärande sker alltid i ett sammanhang och detta kan exempelvis ske genom att man skapar förutsättningar för studenterna att bearbeta erfarenheter eller genom att studenterna får utföra praktiska moment.<sup>39</sup>

Lärandet inom verksamhetsförlagd utbildning stöds genom en bra och fungerande handledning/återkoppling samt genom att det skapas tid och rum för undervisning och genom väl fungerande utbildning av handledare.<sup>39</sup>

En *community of practice* kan översättas till praxisgemenskap och innebär en professionell gemenskap där man delar mål, värderingar och metoder och där lärandet är centralt. En praxisgemenskap kan beskrivas med hjälp av domänerna kultur, aktivitet och struktur. Att studenten får möjlighet att delta i gemenskapen är en förutsättning för engagemang och lärande i den verksamhet där praxisgemenskapen finns. Tre aspekter är tydliga när man redogör för en praxisgemenskap. Dels ett ömsesidigt engagemang, *mutual engagement*, som innebär att när medlemmarna gör saker tillsammans, skapas relationer och man tar tillvara allas kompetens. En gemensam professionell verksamhet, *a joint enterprise*, är resultatet av den kollektiva samarbetsprocess som återspeglar den totala sammansättningen av detta



ömsesidiga engagemang. En gemensam repertoar, *a shared repertoire*, innebär gemensamma rutiner, ord, uppfattningar om hur saker skall utföras, symboler och historier som denna professionella gemenskap skapat.<sup>16</sup>

Det finns ett antal studier som belyser lärandet under verksamhetsförlagd utbildning. Flertalet av dessa studier är baserade på intervjudata och eller på data från enkäter.

Observationsstudier har varit mindre vanligt förekommande.

## **13.2 SYFTE**

Det övergripande syftet med denna avhandling var att undersöka läkar- och sjuksköterskestudenters perspektiv på hur och vad de lärt sig under sin verksamhetsförlagda utbildning och hur lärmiljön kan hindra alternativt underlätta detta lärande.

## **13.3 METOD**

En kvalitativ design användes för datainsamling och dataanalys. Analysmetoden fokuserade på variationer i datamassans innehåll genom att identifiera likheter och skillnader.<sup>55</sup> Metoden fokuserade även på att upptäcka mönster i de händelser som observerades.<sup>57</sup>

Studie I – Inom ramen för en enkätstudie insamlades fritextsvar som analyserades med kvalitativ innehållsanalys för identifiering av betydelsefulla områden. För att ytterligare fördjupa förståelsen kompletterades analysen av fritextsvaren med en fokusgruppsintervju och individuella intervjuer. Intervjuerna stöddes även intervjuguide med semistrukturerade frågor som syftade till att belysa lärmiljö, studieresultat, studentdeltagande, handledningsmetod och handledarkompetens.

Enkätens fritextfråga besvarades av 75 läkar- och 23 sjuksköterskestudenter och svaren på denna fråga analyserades tillsammans med intervjudata. Tre läkarstudenter deltog i fokusgruppsintervju. Två sjuksköterskestudenter deltog i individuella intervjuer.

Etnografiska observationer och informella samtal utfördes på en internmedicinsk akutvårdsavdelning (studie II-IV). Observationerna syftade till att kartlägga och beskriva kulturen och förutsättningarna för läkar- och sjuksköterskestudenters lärande på en akutvårdsavdelning.

På avdelningen vårdades patienter med allvarliga infektionstillstånd, akuta andningsproblem, blodproppssjukdomar, förgiftningar, kramper och allergiska reaktioner. Avdelningen hade också ett antal vårdplatser med avancerad teknisk övervakning. Vårdtiderna var generellt korta på avdelningen och man tog emot patienter från akutmottagningen dygnet runt. På avdelningen arbetade undersköterskor, sjuksköterskor och läkare som i sin tur samarbetade med fysioterapeuter, arbetsterapeuter och kuratorer.

Studie II – 21 läkarstudenter, 4 sjuksköterskestudenter och 30 handledare observerades med etnografisk metodik.

Studie III - 21 läkarstudenter and 30 handledare observerades med etnografisk metodik.

Studie IV – 4 sjuksköterskestudenter och 30 handledare var föremål för etnografiska observationer. Fyra av de sjuksköterskor som gjort sin verksamhetsförlagda utbildningen på den aktuella avdelningen djupintervjuades två år efter att de tagit sin examen.

I studie IV kompletterades de etnografiska observationerna och de informella samtalen med djupintervjuer. Dessa intervjuer syftade till att utforska erfarna sjuksköterskors uppfattningar om det långsiktiga utbytet av det verksamhetsförlagda lärandet på den internmedicinska akutvårdsavdelningen.

Intervjuguiden bestod av öppna och utforskande frågor. Frågorna baserades bland annat på resultaten i våra tidigare publicerade studier (studie I och studie II). Vidare inspirerades intervjuguiden av Kolbs teori om erfarenhetsbaserat lärande<sup>10</sup> och Wengers teori *community of practice* (praxisgemenskap).<sup>16</sup> Frågorna i guiden syftade till att systematiskt beskriva deltagarnas: upplevelser av lärandet i den aktuella akutvårdsmiljön; uppfattning om resultatet av lärandet; upplevda möjligheter att medverka; upplevd kvalitet på handledningen, och erfarenheter av den egna professionella utvecklingen.

## 13.4 RESULTAT

### 13.4.1 Studie I – **”Students perceive healthcare as a valuable learning environment when accepted as a part of the workplace community”**

Vi identifierade tre viktiga teman som centrala för studenternas professionella utveckling.

1) *Management, planning and organisation for learning* – Illustrerade hur ledning, planering och organisation för lärande möjliggjorde ett innehåll och lärandeaktiviteter som var relevant för kursplaner och mål för den verksamhetsförlagd utbildningen och hur ledningen påverkade utrymme och resurser för handledning och lärande. Studenterna såg universitets ledning och ledningen av den verksamhetsförlagda utbildningen som två helt separata funktioner

2) *Workplace culture* - Illustrerade studenternas erfarenheter av arbetsplatskultur och personalens interaktioner på arbetsplatsen. Studenterna var väl medvetna om befintliga hierarkier både inom personalgruppen, mellan denna och studenterna och mellan de olika studentkategorierna och hur dessa hierarkier ibland kunde ha ett negativt inflytande på lärandet. Studenterna underströk att kommunikationen och samspelet mellan personalgruppen och dem själva var betydelsefull.

3) *Learning a profession* - Illustrerade betydelsen av handledarnas inställning till studenter, deras entusiasm och engagemang för att skapa relationer med studenterna och för deras möjlighet att lära sig sitt blivande yrke. Temat illustrerade också om och hur handledarna gav återkoppling på studenternas prestationer. En kompetent handledare uttrycktes som en som agerade professionellt och förklarade hur en student kan tänka och agera. Det var också viktigt att handledaren gav studenten möjlighet att utföra saker på egen hand för att på så sätt utveckla sina professionella färdigheter. Studenterna tyckte att de flesta av deras handledare var tillfredställande pedagoger om de bara hade tillräckligt med tid för handledningen.

### 13.4.2 Studie II – ”Community of practice and student interaction at an acute medical ward: An ethnographic study.”

Vi identifierade fyra teman som uttrycker hur studenter anpassar sig och interagerar i en praxisgemenskap.

1) *Complex and stressful situations* - Illustrerade hur komplexa och stressiga situationer stabiliserades genom rutiner och interna kulturbärare. Beroende på typ av aktivitet, tillgängliga teammedlemmar och tid på dagen så varierade sammansättningen av medlemmar i teamet. Hur organisationen av teamen och förändringarna i dessa gick till var inte tydligt för studenterna.

2) *Variable composition and roles of community members* - Illustrerade varierande roller och kombinationer av teammedlemmar. Det var regelmässigt en hög personalomsättning på avdelningen. Ett fåtal medarbetare ansvarade för att såväl introducera ny personal som att handleda studenter. Handledningen av studenterna förväntades ske utan att det påverkade de ordinarie arbetsuppgifterna. Handledarna tyckte dock att handledning var en viktig uppgift. Det var inte alltid tydligt för studenterna vem som hade ledningsansvaret på avdelningen eller vem som hade vilka roller och varför.

3) *Transitions through community boundaries* - Illustrerade hur förflyttningar mellan olika praxiskulturer kunde skapa förvirring, speciellt för studenter som saknade eller hade sparsam tidigare erfarenhet av verksamhetsförlagd utbildning. Sjuksköterskor och undersköterskor var placerade på avdelningen under hela sina arbetspass. Såväl överläkare som underläkare var däremot regelmässigt schemalagda även på andra enheter. Under de arbetspass när de var schemalagda på avdelningen så förflyttade de sig för att bedöma patienter på andra enheter eller för att täcka upp för frånvarande kollegor. Sjuksköterskestudenterna var kvar på avdelningen tillsammans med sina handledare medan läkarstudenterna följde med sina handledare under deras förflyttningarna mellan de olika enheterna.

4) *Levels of importance and priority* - Illustrerade att hierarkier och prioriteringar förelåg. Sjuksköterskor och undersköterskor ansåg sig vara utbytbara och att de kunde ersättas av en kollega medan däremot överläkarna sågs som unika individer med specifik expertkunskap. Hierarkier och prioritering förekom även mellan olika patientgrupper.

### **13.4.3 Studie III – ”Activities at an internal medicine ward - medical students' opportunities to participate and learn.”**

Vi identifierade två teman som belyser läkarstudenters möjlighet att delta och lära på en akutvårdsavdelning.

1) *Nervousness and curiosity* - Illustrerade att läkarstudenterna blev stressade och nervösa särskilt när de inte kunde svara på frågor. För studenter med längre placeringar kunde en nyfikenhet utvecklas över tid. Vi fann outnyttjade möjligheter att stödja studenterna i en utveckling av kompetens att bedöma och närma sig mer komplexa patientrelaterade problem.

2) *Invited and involved* - Illustrerade att läkarstudenterna exponerades för en stor variation av möjligheter att lära, att samverka och att vara delaktiga. Korta placeringar tycktes störa inlärningsprocessen. Handedarnas aktiviteter och studenternas initiativförmåga påverkade om och i vilken grad de blev engagerade i patientarbetet på avdelningen.

### **13.4.4 Studie IV – ”Nurses' perspective on their undergraduate professional learning in acute care.”**

Vi identifierade tre teman som beskriver sjuksköterskornas återblickande uppfattning av vad de lärt sig under den verksamhetsförlagda utbildningen på en akutmedicinsk vårdavdelning.

1) *To handle shifting situations* - Illustrerade hur sjuksköterskestudenterna lärt sig att anpassa sig till varierande situationer, att hantera stress, att skapa tid för lärande samt att hantera hierarkier. Det upplevdes som värdefullt att ha upplevt stressiga situationer som student för att vara förberedd för de varierande och stressiga situationerna som de sedan mötte i sin roll som färdiga sjuksköterskor. Studenterna kände sig välkomnade av sina handledare men att det inte alltid var planerat på avdelningen för deras lärande. Värdefulla lärsituationer uppstod när handledarna hade tid att handleda studenterna och när det fanns tillräckligt med tid för återkoppling. Deltagarna beskrev hierarkier både mellan olika personalgrupper och mellan patientgrupper.

2) *To build relationships* - Illustrerade hur sjuksköterskestudenterna lärde sig att bygga relationer och att interagera professionellt med patienter. Det var inte alltid enkelt att skapa relationer till medarbetarna på avdelningen på grund av en hög genomströmning av studenter på denna. När studenterna tog egna initiativ var det lättare att skapa relationer till medarbetarna på avdelningen. Relationerna till patienter upplevdes som mer värdefull för lärandet till sjuksköterska än de teoretiska studierna.

3) *To act independently* - Illustrerade om och hur sjuksköterskestudenterna kunde träna ett självständigt agerande samt träna att ta ansvar och prioritera i komplexa situationer. Tillfällen med personalbrist kunde skapa lägen då studenterna kunde få ta ett stort patientansvar utan tillräcklig handledning. Studenterna upplevde sig ha ett eget ansvar att ta sin plats, att visa att de ville lära sig och att handledarna kunde lita på dem. Den verksamhetsförlagda utbildningen på avdelningen ökade studenternas förståelse för deras professionella roll och förberedde dem för att kunna agera självständigt som sjuksköterskor.

### **13.5 SLUTSATS**

Praxisgemenskapen på den internmedicinska akutvårdsavdelningen skapade förutsättningarna för studenter att interagera och att lära under den verksamhetsförlagda utbildningen. Vid ankomsten var studentens uppgift att träda in i denna praxisgemenskap, att anpassa sig till dess kultur och att interagera med medarbetarna. Succesivt utvecklade studenterna en professionell identitet om de fick möjlighet att delta aktivt i den direkta patientvården. Läkare och sjuksköterskestudenter uppnådde olika kompetenser och interagerade i praxisgemenskapen på olika sätt. Lärarstudenterna interagerande och lärande fokuserade på frågor och svar av varierande komplexitetsgrad. Potentialen att genom frågor och svar träna medicinsk handlingsförmåga utifrån avdelningens förhållandevis komplexa patientproblem utnyttjades inte till sin fulla potential. Den verksamhetsförlagda utbildningen för sjuksköterskestudenter på avdelningen bidrog till en förståelse av sjuksköterskerollen i akutsjukvård och den utvecklade en handlingsförmåga att agera självständigt i stressade och varierande situationer.

Vi fann att den stressande, varierande och krävande, men samtidigt välstrukturerade och organiserade akutvårdsavdelningen erbjöd stora och utnyttjade möjligheter till professionellt lärande. Det är alltså inte nödvändigt att skapa och strukturera särskilt arrangerade lärsituationer i akutmedicinsk vård. Snarare är det angeläget att mer strukturerat skapa förutsättningar och engagemang att använda de reguljära vårdsituationerna och de patientfall som redan finns för att göra lärandet inspirerande och värdefullt. Avhandlingen visar att den fulla potentialen för ett sådant lärande ännu inte är optimalt utnyttjad.

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