Situating Faculty Development in the Clinical Workplace

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To Jesper, Tinde and Noa

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Abstract

Medical students' access to clinical supervision when rotating through hospital workplaces and the quality of that supervision are and have been an area of growing professional and societal concern. Increased training measures targeted at supervising physicians have been suggested to address this issue. Traditionally, such training has focused on offering physicians opportunities to develop as supervisors in off-site courses. This thesis applies the insights of social practice theory to investigate and discuss the implications of adopting a practice-centred, workplace learning approach to faculty development among clinical supervisors in a Swedish medical education and healthcare context.

In cycles of mixed methods and action research, I construct a model for faculty development and implement it in collaboration with physicians and students in different hospital settings. Workplace learning (practice) theory is applied to analyse and frame the findings from investigations of different stakeholders' experiences of the model. This includes an analysis of the environmental and individual factors that influence the learning- and implementation process. Assessment instruments are developed and incorporated into the model to trigger collective analyses of the students' learning climate and supervision approaches. The validity and reliability of instruments scores are examined. The educational developer's experiences are documented and critically reflected on.

Based on the findings, I propose a model for faculty development– the On-Site Model. The model is underpinned by principles that place value on learning that is: workplace-situated; practice-based; collaborative & co-regulated; student-focused; and autonomy-conducive (guided by appreciative inquiry). The model centers on collaborative development of the learning environment and supervision practice. Together and with the help of students, supervisors analyse the possibilities and barriers for a desired state (an ideal student learning environment) and determine their own intermediate steps and means to develop in this direction.

The analysis of factors influencing the model shows that interrelated structural and sociocultural variables and variables related to individual and relational agency define the workplace learning environment and condition the type of developmental learning afforded by the principles. For instance, segmented care processes, the organizational logic of production, and the length and structure of student rotations influence opportunities for continuity of relationships and collaborations. At the same time, clinical department managers and faculty members challenged structural impediments and supported the creation of infrastructures to enable collaborations, developmental learning and innovations. A salient finding was how clinical supervisors developed a sense of togetherness that empowered them to challenge cultures and structural barriers and achieve desired changes in practice. The instruments proved to have a high degree

of construct validity. However, the thesis problematises how methods are used to evaluate construct validity and the usability of instrument scores. It suggests the use of instruments as part of an open, multidirectional feedback system.

In conclusion, the thesis findings indicate that attention to students' perceptions of the learning environment can contribute to an increased focus on the workplace as a learning environment for physician learners at all levels. It illuminates several strategic implications of an On-Site model. Among other things, I suggest further exploration of the ways in which the model may be integrated as one of many activities into a system for continuing professional development constructed in cooperation between the higher education and the healthcare organizations. I argue that the On-Site model is an important supplement to continuing professional development based on individual physicians' needs for competencies, as it focuses on collaborative practice development and collective competence-building. In extension, this may include the interprofessional collaborative learning and building of collective competence necessary to address current and future needs of healthcare.

Prologue

"It's more of a mutual discovery than a solo adventure"

In 2006, the American actor and satirist Stephen Colbert held a speech for senior graduates at Knox College in Galesburg, Illinois in which he said:

> "…When you go onstage to improvise a scene with no script, you have no idea what's going to happen, maybe with someone you've never met before. To build a scene, you have to accept. To build anything on stage, you have to accept what the other improviser initiates on stage [...] You have to keep your eyes open when you do this. You have to be aware of what the other performer is offering you, so that you can agree and add to it. And through these agreements, you can improvise a scene or a one-act play. And because, by following each other's lead, neither of you are really in control. It's more of a mutual discovery than a solo adventure".

What Colbert is referring to are the key principles of improvisational theatre, "Impro" as advocated by Keith Johnston. Impro is inspired by ideas that originated in children's drama education in the early 20th century and the progressive education movement initiated by, among others, John Dewey – a philosopher, psychologist and educational reformer whose ideas of knowledge and learning have influenced my work and the underpinnings of this thesis in many ways.

If you have ever watched Impro and reflected on what makes a good Impro-performance, you might have noticed that instead of going for an easy laugh based on for instance essential stereotypes, Impro can serve as a tool for playfully referencing cultural experiences and challenging the audience to reflect on social issues. It is a playful negotiation of cultural meaning. It challenges the audience to recognize their own difficulties in talking about certain social and cultural issues.

A core condition for Impro is that the dialogue, characters, actions and story are created collaboratively, in the moment, with a collective responsibility for the outcome. Impro is characterized by thinking and working together without script or director, and the means and ends may change along the way. A widespread misunderstanding is that Impro is an unstructured flow of unregulated activities based on the inspirations and creative competence of each member only. On the contrary, the collaborative process is subject to a set of rules that provides the actors with necessary constraints to frame the creative process and problem solving strategies. A number of factors influence the outcome of the individual and collective efforts. The social and cultural setting influence how the audience reacts and responds to the acting and actions. Space and time and relationships inside and outside the group influence the process. The collective outcome is beyond the sum of performances of the different actors.

These core constitutive elements of the collaborative process in Impro have similarities with collaborations in a dynamic and often unpredictable healthcare context. However, in contrast to theatre performances, collaborations among healthcare professionals are characterized by the complexity of real life activity. The metaphor does not do justice to the contrasting improvisational, contextual and embodied character of the practices of health professionals under the pressure of demands of care production. I am ever grateful to and have the deepest respect for all my physician colleagues who so bravely volunteered to participate in the real life activities and collaborations studied in this thesis. While I as the author take full responsibility for the final interpretations and product, this thesis is the result of a mutual discovery which, without your courage, creativity and persistence – and sometimes sound and productive resistance – in the face of all kinds of obstacles would have been no adventure at all.

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Cillan my friend, you transformed the inside to an outside book cover, bold and beautiful. I am forever thankful. Justina Bartoli, thank you for professionalism and coaching in a stressful time and thank you Jonas Palm for being so engaged and responsive in layout matters.

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To all my friends, what can I say? Shall I compare u to a summer's day? No, thou art more lovely and constant. I 'll say: You create in me the dizzy dancing way you feel when friendships are enduring and real.

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Appended Papers

Paper I: Strand, P., Edgren, G., Borna, P Lindgren, S., Wichmann-Hansen, G., and Stalmeijer, R.E. (2015). Conceptions of How a Learning or Teaching Curriculum, Workplace Culture and Agency of Individuals Shape Medical Student Learning and Supervisory Practices in the Clinical Workplace. Advances in Health Sciences Education, 20(2), 531.

Paper II: Strand P., Sjöborg K, Stalmeijer R.E., Wichmann-Hansen G., Jakobsson U., Edgren G. (2013). Development and Psychometric Evaluation of the Undergraduate Clinical Education Environment Measure (UCEEM). Med Teach. 35(12):1014-26.

Paper III: Strand, P., Wichmann-Hansen, G., Stalmeijer, R.E. Gummesson, C., Edgren, G. (2017). Situating Faculty Development in the Clinical Workplace. Manuscript.

Paper IV: Strand, P., Edgren, G., Wichmann-Hansen, G., Stalmeijer, R.E. Gummesson, C. (2017). Using Mixed Methods to Explore the Construct Validity of Scores from Two Instruments Assessing Clinical Learning Climate and Clinical Teaching in Medical Education. Manuscript.

1. Introduction

Setting the Scene

One of the reasons for initiating this work were the emotionally-charged stories that medical students and physicians shared with me about learning and supervising in the clinical environment. At the outset of the thesis, I was collaborating with physicians and students on the design and delivery of courses for clinicians supervising medical students. I am a speech and language pathologist by profession, familiar with clinical work and accustomed to supervising students in busy and complex hospital environments. While the narratives of learning and supervision in the medical context were familiar, they were different from the more continuous learning and supervision relationships I had experienced as a clinical supervisor. The medical students described experiences of well-organized placements and inclusionary learning environments; these were environments in which they felt welcome and were treated as future colleagues, where they were supervised with thought and care and offered structured teaching and learning opportunities. However, their stories also centred on adverse experiences of learning in the clinical workplace:

> "... I cannot imagine a situation that is more dangerous for patients than a medical student who is truly stressed; you cannot find your way around, you have not been able to change clothes; almost everything practical has gone wrong. People are scolding you for being there – because you should have been somewhere else – or rather – not exist at all. What's more, you are extra stressed because you cannot miss an opportunity since it is up to you and only you to learn this. It is an incredibly bad learning climate, and some very basic things could actually be addressed quite easily to improve it. Unfortunately, there is no medium for evaluating these things; it is difficult as a student to voice this". (Student in focus group Paper II)

The above quote is taken from a recorded focus group conversation between students made at a later time during my studies. It exemplifies the stories students told of confusing, exclusionary and unwelcoming atmospheres, and in some workplaces even hostile attitudes toward them as medical students. The students described environments where they spent most of their time waiting for something to do or for someone to talk to them, feeling too insecure to initiate any actions on their own. Most of the students' stories included vivid descriptions of meetings with individual

supervisors whose interest in them as learners and enthusiasm for supervising overshadowed other, adverse experiences of a clinical placement.

The students' narratives were in line with the findings from student evaluations of clinical learning and supervision in Sweden at the time. National assessments of the Swedish medical programs identified large variations in the students' experiences of learning and supervision in clinical – specifically hospital-based – rotations as a widespread problem in all the programs (the Swedish Medical Student Association 2008; 2010; Lindgren et al. 2011).

Physicians who participated in our courses had similar experiences of great variations and inconsistencies in conditions for supervising students. Whilst course evaluations indicated participant satisfaction and that participants had transferred learnings into practice, conversations with the participants revealed feelings of resignation when confronted with barriers in their clinical environment for implementing the type of supervision in which they believed. Their narratives included emotional reactions from colleagues who felt provoked by the idealized views behind claims of theory and new supervision approaches. New ideas were often perceived as originating from the 'outside'. The gap between reality and practice was a recurring issue in conversations:

> "It's fine to get basic knowledge and theory but it can be very difficult to apply this later. Even if you do practical exercises, the course is always separated from reality and when you get back to reality it's never the same as in the course…" (Supervisor in focus group Paper I)

> "You feel a lot more secure if you know more about how the others view supervision, and there is some kind of aligned thinking in the group around certain issues." (Supervisor in focus group Paper I)

The above quotes are taken from focus group conversations conducted in one of the thesis studies at a later stage. The narratives of supervisors and students' were a strong incentive for a critical scrutiny of the assumptions behind my own ways of working and the strategy of offering individual supervisors opportunities to develop practice in separation from their colleagues and working contexts. In a learning system characterized by time-pressure and competition between healthcare production and education, I had taken on responsibility for constructing and controlling the "what and how" dimensions of learning for busy clinicians. I helped them prepare for and develop practice by creating 'toolboxes' of theory, best-practice supervision methods and feedback behaviours. However, the strategy assumes that the supervisors' learning needs and practices are stable and understood ahead of time. The point of departure for this thesis was the drive to explore alternative ways of thinking about professional learning and practice development. I developed a particular interest in approaches to

professional learning and faculty development[1] grounded in practice theory. Thus, I set out to explore an approach to faculty development as a social practice where professional learning activities are located in the clinical workplace context among physicians who supervise students in hospital rotation.

The thesis background and rationale in summary

The area of concern addressed in this thesis is how educational developers can collaborate and contribute with support to people working and supervising in hospital settings for developing supervision practices and in this way enhance students' learning experiences. The assumption underlying the research questions and direction of the research is that theoretical and methodological individualist approaches to faculty development alone are conceptually and practically insufficient for addressing issues of learning and supervision in the context of complex hospital environments (Heath 2015; Trowler 2015). The insights of practice theory have offered perspectives on professional and workplace learning that take into consideration individual *and* environmental (structural and sociocultural) influences on student learning and the development of supervision practices (Schatzki 2001; Billet 2010; Reich and Hager 2014). Faculty development underpinned by ideas from the field of practice theory emphasizes that developing environments conducive to student learning involves a focus on the situated, relational and embedded learning that takes place in the workplace social practices (Trowler and Cooper 2002; Prebble 2004; Johnson and Boud 2010; Chalmers and Gardiner 2015). Such approaches do not view teaching as a set of knowledge and skills that are value-free, learned, and used in isolation, but rather as practices that occur in context and vary with it (Hager and Hodkinson 2009; Reich and Hager 2014). Practice frames for faculty development suggest that educational developers locate faculty development in the workplaces of teachers and collaborate with students and teachers to identify the opportunities and barriers to practice development that arise in the course of work (Boud and Brew 2013). In recent years, there has been a growing body of literature in medical education that highlights the need for alternative – more relational and context sensitive – approaches to faculty

[1] *Faculty development* is the term used in this thesis for a variety of activities that occupy people deployed at faculty development units or centres for teaching and learning/educational development. The terms *faculty development*, *educational development*, *instructional development*, and *academic (staff) development* (Gosling, 2009; Amundsen and Wilson 2012) are variously used in higher education journals. The terms have different connotations and are used differently in different parts of the world. In this thesis, I have chosen to use faculty development since it is a frequently used term in the medical and health professions education literature for professional learning, professional development or educational development activities at strategic, policy, curriculum or individual levels. It refers to the actions and activities undertaken by people working with faculty or other professionals involved in medical and health professions education, (for instance in the clinical workplace), but also of faculty members themselves .

development practice and research (Mac Lean et al. 2008; O'Sullivan and Irby 2011; Leslie et al. 2013; Steinert 2012; Steinert et al. 2016). However, there is a paucity of qualitative studies that have explored faulty development located in the workplace social practices of physicians and which have focused on the supervision of undergraduate medical students. Without qualitative research and the study of particular cases exploring the lived experiences of the people concerned, it is difficult to gain a contextualized understanding of the implications of a practice approach to faculty development. Consequently, it seemed reasonable to believe that adopting and studying a practice approach to faculty development in the clinical workplace could be of practical value and at the same time potentially contribute to a broader knowledge base within the field of medical education and faculty development research.

Overarching aim

In general, this thesis seeks to investigate and discuss the implications of conceptualizing and enacting faculty development as a social practice, situated in the context in which physicians work and supervise students. More specifically, I set out to design a model for professional learning and practice development, implement the model with the help of physician colleagues in different hospital settings in a Swedish medical education and healthcare context, and study how the model works in practice from the perspective of various stakeholders. The ultimate purpose of the model was to stimulate collaborative approaches to the development of undergraduate clinical supervision practice as a means to create added value to students in terms of enhanced clinical learning experiences.

The theoretical framework

The theoretical framework applied to analyse the findings is the workplace learning theory proposed by Billet (2001); i.e. a theory situated within the field of practice theory. The theory is applied to frame physicians' conceptions of learning (Paper I), the conceptual grounding of the instrument for assessing workplace learning climates (Study II), and to make sense of the findings from the process of implementing faculty development in the workplace (Study III). The theoretical grounding of the MCTQ is "Cognitive Apprenticeship" (Collins et al. 1989; Stalmeijer et al. 2010a). The underpinnings of both instruments are outlined in the section "Background and Rationale".

Table 1 Summary of work	
Paper I Physicians conceptions of practice	In a preliminary study, I explore the ways in which physicians conceptualize medical students' workplace learning and supervision practice in the hospital environment (Paper I). The aim was to gain a deeper understanding of the nature of the specific practice in focus for the faculty development model and the contextual circumstances that condition learning and supervision from the perspective of the supervisors themselves.
Paper II & IV Development of tools to trigger collaborative analysis of practice	The aim of the studies described in these papers was to develop a new questionnaire, as well as a Swedish version of an existing questionnaire, that could be incorporated into the faculty development model to provide systematic student-feedback to people in the workplace. The feedback instruments are implemented in Study III as tools for mirroring practice, and they trigger collaborative, student-focused analyses of the overall learning environment as well as of individual supervision approaches (Paper III). Paper II describes the first stage of development and validation process of an instrument for evaluating students' perceptions of socio-emotional, physical and cognitive dimensions of the clinical learning and supervision environment. In a series of steps from conceptualization through the psychometric analysis of scores, the aim was to define the content domain and intended target construct and to examine evidence of construct validity of scores based on internal structure. Paper IV describes the second stage of the validation process of this questionnaire as well as of a Swedish version of an existing questionnaire for feedback to clinical supervisors: the Maastricht Clinical Teaching Questionnaire (MCTQ). In this study, I examined various types of supporting or refuting evidence of the construct validity of the instrument scores and the usability of the feedback provided by the instruments.
Paper III Develop a conceptual framework for a faculty development model, apply and study the model in practice	Paper III describes two cycles of action research conducted over a period of 4.5 years where the aim is to a) develop a conceptual framework for a workplace-situated faculty development model, and b) apply and study the model in a clinical context. In a planning stage, I define a set of learning principles based on practice theory and common features of teacher development, work development and health intervention models inspired by sociocultural perspectives on learning, and an action plan influenced by the findings from the previous studies. In two cycles of inquiry, I apply the principles in practice in collaboration with clinical supervisors, students, administrators, faculty members and clinical department managers engaged in medical students' learning in different hospital settings. I investigate how the principles are perceived and experienced by the people concerned and how individual and environmental variables influence the learning and implementation processes. The questionnaires are implemented and studied within the frame and settings of this study; however, the findings are presented in Paper IV.

Methods

In coherence with the theoretical approach, there is a social constructivist epistemology underpinning the methodology. In the first study, the design applied is an interpretative framework and an inductive-deductive qualitative content analysis approach. Focus group data and interview data is triangulated. However, the research questions in the different phases of the research each demanded a different analytical approach and study design (Creswell 2009). While I position my research within the interpretative paradigm (Denzil and Lincoln 2011), I have taken a pragmatist position (Morgan 2014) to address the different research questions inspired by the process-based approach to knowledge put forth by Dewey (1938; 1997). In Papers II and IV, I apply two types of mixed method designs where I triangulate qualitative and quantitative data: an exploratory (Paper II), and a triangulation mixed methods design (Paper IV). In Paper III, the study design is action research, and several methods are used for collecting qualitative data. I used a Classical Test Theory (CTT) approach to perform statistical analyses of quantitative data. To examine construct validity of scores from

the two instruments, I adopted the view of construct validity as a unitary concept, which means that all validity should be conceptualized under this single overarching framework.

The Outline of the Thesis

In this introduction, I have:

- provided some background information about the point of departure and rationale for the thesis;
- summarised the aim and scope of the thesis papers, and
- briefly outlined the theoretical framework and methodology guiding the work.

The remaining chapters are organized as follows: Chapter 2 contextualizes the thesis studies in the relevant literature and demonstrates how the studies differ from previous works on faculty development in medical education. In Chapter 3, I define the aim and scope of the thesis, the central research question, the specific sub-questions addressed in the studies, and the value of further investigation of the topic addressed. In Chapter 4, I introduce the theoretical framework on which I draw. In Chapter 5, I give an overview of the methodological approach; the epistemology and values that underpin the approach, the study designs, selection of participants, methods for collecting and analysing the data, and strategies for promoting quality and rigor. The key findings are synthesized in Chapter 6, while Chapter 7 provides a final analytic discussion of the findings, the conceptual and empirical contributions to the field, methodological challenges, practical implications, future research and conclusion. Finally, an abstract in Swedish is provided, followed by References and Appended papers.

2. Background and Rationale

The ultimate concern of this thesis is medical students' workplace learning experiences and the engagement of clinical supervisors in the students' learning. In this section, I argue that enhancing medical students' workplace learning experiences is not only an issue in a Swedish context, but a matter of global professional and societal concern. I outline some of the cognitive and sociocultural approaches that have been applied to explain medical student workplace learning and supervision practices and discuss their relevance for faculty development approaches. Finally, I introduce the practice approach and argue that faculty development as a means to address issues of student learning and clinical supervision needs to take into consideration individual *and* structural as well as sociocultural influences on learning and supervision in an increasingly complex healthcare environment.

The Swedish Medical Education Context

The literature on medical students' and supervisors' experiences of learning and supervising in clinical rotations suggests that the accounts of both well-supported and demotivating learning and supervision environments given by Swedish students and supervisors are not unique. The stories are probably recognizable to many medical students and their supervisors in various cultural contexts. Medical education draws on a long tradition of learning through workplace experiences, although undergraduate programs are organized differently and the opportunities for workplace learning vary. In Sweden, a 5.5-year-long university undergraduate curriculum is followed by a mandatory 18-month internship, delivered by the county councils. Medical students spend time in primary care centres, hospitals (secondary care) and specialized care centres (tertiary care) to develop knowledge and skills and build their professional identity as physicians. From around year three, the students rotate through a number of placements of varying length during their clinical years. Placements at secondary care departments such as internal medicine, obstetrics and gynaecology, paediatrics, orthopaedics, psychiatry, infectious diseases, neurology, surgical wards, intensive-care medicine and emergency medicine departments are often included. In recent years, the strong demarcation between pre-clinical and clinical education has begun to dissolve,

and increasing efforts are being made to find ways for effective integration of work-related learning already in early years.

Student Experiences of Learning and Supervision in Hospital Settings

While these placements potentially provide rich and motivating learning environments, over the past two decades a body of research has demonstrated that medical students in many different parts of the world experience large variations in the quality of clinical learning and supervision, for a variety of reasons. Studies of undergraduate medical students' workplace learning describe experiences of arbitrary access to supervision, insufficient opportunities for active learning and limited feedback on performance, especially in hospital settings (Irby 1995; Van Der Hem-Stokroos et al. 2001; 2003; 2004; Daelmans et al. 2004; Prince et al. 2005; Wichmann-Hansen 2006; Dolmans et al. 2008; Liljedahl 2016; Hägg-Martinell et al. 2017). Observation and time studies have demonstrated that students spend time with supervisors, but largely as silent 'observers' (Wichmann-Hansen 2004; O'Neill et al. 2006; van Hell et al. 2009; Skyvell Nilsson 2010; Liljedahl 2016). For instance, a study by O'Neill et al. (2006) demonstrated that only 7% of the learning episodes involved a medical student actively involved in patient work under direct supervision.

Studies moreover illustrate how some clinical workplaces are perceived as exclusionary to undergraduate students. Issues of work structures, power hierarchies and the hidden curriculum – i.e. the culturally situated norms and values – are factors that have been shown to hamper undergraduate students' participation in practice and thus influence learning and supervision (Boor et al. 2008; Phillips and Clarke 2012; van der Zvet et al. 2014; Liljedahl 2016; Hägg-Martinell et al. 2017). Observation and interview studies of medical students' learning in Danish hospital rotations demonstrated that the students remained in peripheral positions or were excluded from the workplace communities of practice. They received little help in making sense of their experiences, and their motivation diminished throughout the course of clerkship. (Wichmann-Hansen 2004).

The complex contextual characteristics of workplace learning

It might be unsurprising that 'moving into' the clinical workplace for the first time can be an overwhelming experience for a medical student. Nor is it surprising that moving from one workplace, team or specialty to another and finding one's place and space physically and socially every time is a challenge for learners in these environments, especially when they are new to their professional roles (Hoffman and Donaldsson

2004; Lempp 2005; Kilminster et al. 2010, 2011). Even more qualified doctors describe feelings of uncertainty and confusion in new positions and as newcomers to a clinical work environment (Zuka and Kilminster 2014). Working and learning in the clinical environment involves recurrent transitions and periods of learning – not only to manage clinical work, but also relationships with clinical supervisors and other people in the workplace (Teunisson and Westman 2011). In recent years, physicians and other health professionals, in Sweden as well as in other parts of the world, have engaged in the supervision and teaching of an increasing number of learners at various educational levels. Ongoing substantial changes in the healthcare delivery system involve increasing costs of and demands on healthcare, which in many ways have resulted in more stressful working conditions for healthcare staff (Anell et al. 2012). Structural changes include moving services from hospital inpatient care towards outpatient care and primary care facilities, which has in turn impacted the conditions for hospital-situated undergraduate education (ibid). Increased specialization has fragmented clinical expertise; rotations are becoming more complicated and the segmentation of care processes influences opportunities for continuous relationships between students, supervisors and patients (Holmboe et al. 2011;Hirsh et al. 2012).

Considering all of these influencing factors, we might accept a certain degree of variation in learning and supervision conditions for newcomers in the clinical context. However, addressing how clinical learning environments can be conducive to undergraduate medical students' learning is of professional and societal interest for several reasons. Students' perceptions of learning environments have been demonstrated to influence their wellbeing, professional behaviours and achievements (Genn 2001a,b; Roff and MacAleer 2001). The cost/benefit issue; i.e. whether the amount of (inactive) time students spend in the workplaces is effective, is highly relevant from a socioeconomic aspect. Moreover, medical students' perceptions of the learning environment have been shown to influence medical graduates' choice of specialty and locality, influencing the supply of physicians in different areas (Cleland et al. 2012; 2014). Globally as in Sweden, the distribution of physicians over specialties and geographical areas is a growing concern, since these choices may not meet societal and community needs (Lefevre et al. 2010; Aslam et al. 2011; Seyoum et al. 2014).

In conclusion, addressing issues of quality in clinical learning and supervision is not only in the interest of medical schools and the medical profession, but it is also a matter of societal interest. Workplace learning, especially in hospital settings, is characterized by complexity and influenced by multiple forces; not least, organizational, structural and cultural variables condition learning and working and the supervision and teaching of newcomers as well as of continuing learners (Bleakley 2006; Bleakley et al. 2011). The complex contextual characteristics of workplace learning are of consequence for the choice of theoretical and methodological research approaches for explaining and addressing issues of supervision and learning, which in turn influence the direction of faculty development initiatives and interventions.

Cognitive and Sociocultural Views on Learning

Individual's agency as a driver of systemic change

In the medical education literature, studies of student workplace learning and clinical supervision have either focused on the internal processes of the mind or, in more recent years, on the sociocultural views of learning as a process of enculturation into a community of discourse, practice, and thinking (Mann 2011; Dornan et al. 2014). Apprenticeship models have long since been the core of clinical teaching and supervision in medical education. Theoretical and methodological individualist approaches (Heath 2015) have been largely applied at explanatory and practice levels, underpinned by the assumption that the quality of student learning is predominantly determined by individual teachers' beliefs about learning, pedagogical choices and capacity to act in the face of obstacles(ibid). The exercise of individual agency – and the responses of the students as active, interpretative learners – is seen as the driver of systemic educational change (Trowler 2015). Consequently, a body of research on clinical learning and supervision in undergraduate medical education has focused on features of 'good' clinical teachers/supervisors (Kilminster et al. 2007; Sutkin et al. 2008; Stenfors Hayes et al. 2011;) and teaching (Irby 2014). Research has demonstrated that the supervision provided by individual supervisors is a determinant of the outcomes of undergraduate student learning in clinical rotations (Irby and Papadakis 2001; Roop and Pangaro 2001; Dolmans et al. 2002; Wimmers et al. 2006). Clinical supervision directly influences and compensates for other factors, such as for instance, a large number of students or limited case mix (Dolmans et al. 2002; Wimmers et al. 2006). However, the characteristics and scope of the supervision activity and actions of supervisors in these studies are only briefly introduced. The terms clinical supervision and clinical teaching are often used interchangeably in the literature, which indicates that supervision and teaching in undergraduate clinical rotations are conceptualized as similar activities. Some studies suggest that the role of the clinical supervisor contains a clearer focus on sharing what it is to be a doctor, on professional development and role modelling, than the role of the teacher (Kilminster et al. 2007; Stenfors-Hayes et al. 2011). Kilminster and Jolly (2000) suggested a general definition of clinical supervision in medical education, based on reviews of research in postgraduate medical educational contexts and on general models of clinical supervision across professional fields (ibid). Clinical supervision was defined as

> the provision of guidance and feedback on matters of personal, professional and educational development in the context of a trainee's experience of providing safe and appropriate patient care (Kilminster and Jolly 2000 p. 829).

Kilminster et al. (2007) identified the quality of the supervisory relationship as the single most important factor for effective clinical supervision. They argued that there

was no satisfactory theoretical account for clinical supervision in the specific setting of clinical medical practice (regardless of educational level), and that empirical evidence for effective clinical supervision practice was scarce (ibid). The above definition has been applied to define the role of clinical supervisors in undergraduate clinical rotations (Dolmans et al. 2002; Kilminster et al. 2007). However, the workplace learning conditions for undergraduate medical students and the relationships with supervisors are significantly different from those of postgraduate students and trainees.

In studies of undergraduate students' perceptions of 'good' clinical teachers and supervisors, some highlighted characteristics are, on the one hand, expert knowledge (being clinically competent) and, on the other hand, interpersonal and non-cognitive skills. These include negotiation and assertiveness skills, warmth, empathy, listening skills, and the ability to express one's own emotions (Sutkin et al. 2008). A body of research focusing on the actions of clinical supervisors and teachers at undergraduate levels confirms the importance of individual coaching of students and systematic, personalized feedback (Van Der Hem-Stokroos et al. 2003; Dornan 2012; Dornan et al. 2014). The effectiveness of learner-centred and active learning approaches across educational settings and levels is well supported with evidence (Michael 2006). Learning and supervision approaches built on constructivist views on learning and instruction emphasize active learning pedagogy, the process of keeping students mentally, and often physically, active in their learning through some activity that forces them to reflect upon ideas and how they are using those ideas (ibid).

Cognitive perspectives on teachers' learning

The focus on the knowledge, skills, and actions of individual teachers has influenced faculty development research and practice in medical education. In response to models of workplace learning based on a teaching curriculum, educational developers have consequently concentrated on how to build faculty development to prepare individual clinical teachers and supervisors for these practices and support them in developing relevant competencies. To offer individuals opportunities to develop as teachers in faculty development programs, courses and workshops have been, and still are, widespread in higher and medical education institutions as a strategy for enhancing learning and teaching environments (Mac Lean et al. 2008; Steinert et al. 2006; 2016; Leslie et al. 2013; Saroyan and Trowler 2015).

This strategy, which is largely inspired by cognitive approaches to conceptual change (however, considering situational, motivational and affective variables that may affect knowledge restructuring), has been successful in many ways. Two "best evidence" syntheses on academic (faculty) development (Prebble et al. 2004) and teacher education (Timperley et al. 2007) arrived at the same conclusion: teachers' conceptions about the nature of teaching and learning have the most important influence on how they teach. An understanding of teachers' theories of practice is key in building

professional development activities that can make a difference to students (Prebble et al. 2004; Timperley et al. 2007). Faculty development programs can be effective in transforming teachers' conceptions about teaching and learning, which in turn have been demonstrated to influence teachers' approaches to students' learning and students' approaches to learning (Prebble et al. 2004; Gibbs & Coffey, 2004; Postareff et al. 2007; 2008; Trigwell and Prosser 1996; Trigwell et al. 1999). Reviews covering more than 20 years of faculty development research in medical education report that faculty development appears highly valued by participants. Participants have reported changes at the level of individual behaviours and to some extent of structural changes (Steinert et al. 2006, 2016; Leslie et al. 2013; Chalmers and Gardiner 2015). In conclusion, there appears to be a general agreement in the faculty development literature that teacher development programs have a positive impact on teachers and students.

On the other hand, the extent and long-term effects of the impact of the strategy on the teachers and the teaching and learning environments are less researched and evidenced (Prebble et al. 2004; Steinert et al. 2006, 2016; Amundsen and Wilson 2012; Leslie et al. 2013; Chalmers and Gardiner 2015). Conclusions from the aforementioned synthesis of the faculty development literature include that

- short training courses are unlikely to lead to significant change in teaching behaviour. They tend to be most effective when used to disseminate information about institutional policy and practice, or to train staff in discrete skills and techniques.

- the academic work group is generally an effective setting for developing the complex knowledge, attitudes and skills involved in teaching (Prebble et al. 2004 p.ix).

Amundsen and Wilson (2012) argue that we can only draw tentative and weak conclusions about the effectiveness of educational development practices that are based on reviews with limited inclusion criteria and a strong focus on effectiveness in terms of individual change. The authors used different questions in their review of faculty development studies in higher education, which queried the nature of educational development practice and the thinking that underlay the practice. Their conceptual review yielded a framework with six foci of practice: skill, method, reflection, disciplinary, institutional, and action research or inquiry. The authors propose that this six-cluster framework provides a new way of thinking about the design of practice and a more meaningful basis for investigating the consequences of educational development practice. In medical education research, intervention studies have demonstrated that it can be hard to improve clinical learning environments and behaviours of clinical teachers and supervisors through training courses. For instance, three Dutch studies demonstrated that introduction of training as an attempt to improve the quality of

supervision and feedback had very little, if any, effect on supervision and feedback in practice (Daelmans et al. 2006; Van Der Hem-Stokroos et al. 2003; 2004)

Sociocultural perspectives on professional learning

Sociocultural perspectives on students' and teachers' learning have shifted attention away from the individual mind processes and towards an emphasis on the context-dependent character of learning, the role of social interactions and the cultural environment on learning (Hager et al. 2012). What is learnt is specific to, and grounded in, the situation in which the learning takes place:

> (…) knowledge is not an entity in the head of an individual, which can be acquired, enriched, or changed, but rather an activity that cannot be considered separately from the context in which it takes place. Therefore, learners do not accumulate knowledge from the outside, but rather participate in activities that are distributed among the individuals, tools, and artefacts of a community. (Mason 2007 p.2)

The essence of sociocultural perspectives on student workplace learning and on the professional learning and conceptual change process of their teachers and supervisors is that learning and work cannot be separated. In this view, 'preparation' approaches are not an effective approach to student or teacher professional development. Preparation approaches are based on the assumption that predetermined skills and knowledge are acquired or transformed to apply or transfer into a learning context as needed at a later date. However, the aforementioned multiple forces, the structures and cultures of specific workplaces oftentimes constrain the individual supervisors choices and capacity to act independently according to their beliefs – and thereby the opportunity to effectuate changes in supervision practices and workplace learning conditions for students (Hafler 2011; Trowler et al. 2013; Trowler 2015). With the emergence of social constructivist and sociocultural theories, changes in rotational models aimed at enhancing workplace learning have focused on replacing traditional apprenticeship models with more outcome-focused, structured, systematically assessed, and supervised workplace learning (Heeneman et al. 2015). Based on the notion of competencies as outcome indicators of the educational process, assessments *for* learning are emphasized throughout medical programs (ibid). To perform regular assessments of student competencies or, in recent years, assessing and determining the degree to which students can be trusted with performing certain professional activities unsupervised, Entrustable Professional Activities (EPA) is becoming essential for workplace supervisors in medical education (ten Cate et al. 2015).

In conclusion, from a sociocultural view, learning is essentially a socially situated phenomenon. Consequently, not only students' clinical learning, but also teachers' learning should take place in rich social and physical environments where learners are invited to communicate, interact, utilize learning opportunities and deal with problems of everyday practice.

Integrating individualistic and sociocultural, structural perspectives

A reflection I made when navigating through the higher and medical education literature was that individualistic versus the sociocultural views on professional learning seem to be widely separated binaries. The views are presented as largely conflicting and incompatible in the ongoing debate on the potentials and limitations of the different views on professional learning. However, it is also argued that these views (with regard to explanations for conceptual change) can be complementary or integrated, leading to further understanding of the learning processes (Mason 2007 Caitrns and Malloch 2011). This piqued my interest in contemporary theories on workplace learning, rooted in the field of practice theories, that emphasized the relational interdependence between the individual and the social, situational, within conceptions of learning throughout working life and continuing professional development (Billett 2002; 2010).

Billett's workplace learning theory views learning as shaped through the interactions between situational factors such as workplace norms, practices, and values and individual factors, sourced beyond and prior to participation in the particular workplace (Billett, 2002). Learning is an interaction between the mind of an agentic individual and a socially constructed community of practice.

From a faculty development perspective, this view on workplace learning and the general insights of practice theory offer a way to conceptualize and enact faculty development as a social practice embedded in the workplace (participatory) practices. In comparison to a focus on preparing individual teachers to be agentic through formal, offsite courses, it offers an alternative orientation towards faculty development 'in situ', located in the workplace, and a focus on holism, context, relations *and* individual agency.

In the next section, I outline some of the implications of "the practice turn" in social sciences for research on medical student learning and the role of workplace supervisors (Schatzki et al. 2001). I point out that physicians' conceptions of student learning and supervision have been insufficiently studied from a sociocultural and practice perspective. I introduce some relevant faculty/academic development orientations in higher education that are grounded in practice theory, including some teacher- and work development models that have particularly inspired the conceptual grounding and learning principles that guide the faculty model studied in this thesis (Paper III). An element of existing models that has particularly influenced the faculty development approach studied in this thesis is the use of "mirror material" – tools to mirror and trigger collaborative analysis of work activity and practice. (Engeström 2001 Kerosuo et al 2010). Therefore, this section includes the rationale for the development and validation of construct validity of scores from a new questionnaire. Finally, I identify the knowledge gaps in the medical education literature on faculty development that the thesis proposes to address.

The 'Practice Turn'

Holism

Whilst "practice theory" is a term applied to a of number of different philosophical approaches and theoretical orientations, a general feature of practice theory in contrast to other forms of social cultural learning theories is that it denotes

> any theory that treats practice as a fundamental category, or takes practices as its point of departure (Stern 2003 p. 185).

Among the important characteristics of practice theories is holism – a holism serving to reject the traditional division between approaches that explain social phenomena (for instance, learning and education) by means of individual actions, and approaches that explain phenomena by means of structures or social wholes (Schatzki et al. 2001, Stern 2003; Reich and Hager 2014). Another core characteristic is the close attention to particular practices and the context within which they are located (Stern 2003). There is no general agreement of how a 'practice' should be defined, what a practice amounts to, what people 'do' when they are engaged in a practice, or the identity of a 'social' workplace practice. Stern (ibid) describes practice as something people do; i.e. a disposition to behave in a certain way not just once, but on a regular basis (Stern 2003 p.186). However, practice is not only what people do, but also the meaning of their actions as they occur in a specific context. Louds and Cambell (2015 p.356) quote Boud and Brews (2013), describing a social practice as

> …a complex entity comprising interrelated sayings, doings, relationships, meanings, artefacts, and emotions that cannot be broken down into packages of decontextualized skills and knowledge.

Albeit acknowledging the diversity of practice theories, Reich and Hager (2014) suggested a framework of 'six threads' that are prominent in explanations of professional practice:

Practices as 'knowing in practice' – practice is not a product of learning but a collective and situated process linking knowing, working, organising, learning and innovating.

The sociomateriality of practices – practice is a sociomaterial phenomenon, which involves not only human actors but also non-human objects and artefacts in space and time.

Practices as embodied – practice consists of speech (what people say) plus the activity of the body, or bodies, in interaction (what people do, more often than not together) – a play of voices and bodies.

Practice as relational – practices encompass a diversity of types of relations; amongst the people, between the diverse human actors and the material world and between material objects as the spaces in which practices occur, change or alter.

Practices exist and evolve in historical and social contexts – practice is shaped by complex social forces, including power.

Practices as emergent – practices change, evolve, and are not fully specifiable in advance (Reich and Hager 2014 pp. 418-430).

The authors advocate that the threads illustrate that practice theory moves conceptualizations of learning towards more nuanced and complex ways of collective and sociomaterial understandings (ibid) "challenging us to reimagine professional learning and the frameworks that support [it] – in workplaces, in professional bodies, and in formal education institutions" (Reich and Hager 2014 p.430).

Students' learning in *and through work*

In higher education, an implication of the practice turn is a shift in approaches to student workplace learning from preparedness models (emphasizing learning *about* and *for* work) to models that use the workplace as a context within which students can learn *in* and *through* work (Keating 2006; Guile and Griffiths 2001; Fuller and Unwin 2003; Sheehan et al. 2005; Billett 2010). In medical education, theories of experiential learning (Kolb 1984; Dornan et al. 2007; Yardley et al. 2012), community of practice theory (Wenger 2000; Liljedahl 2016;), activity theory (Engeström and Sannino 2009; de Feijter et al. 2011), workplace learning theories (Billlett 2002; Eraut 2004; Illeris 2015;) and actor network theory (Latour 2005; Zuka and Kilminster 2014) are examples of theories that have been applied to refine understanding of the process and outcomes of medical student workplace learning.

Recently, Dornan et al. (2014) presented a review of 168 empirical papers on clinical clerkship education across primary, secondary and tertiary care published between 2000 and 2006. The authors concluded that "supported participation in practice" best described how medical students learn in clerkships in the studied contexts. Students learn when they are given affective, pedagogical, and organisational support. Affective dimensions of learning were underscored. According to the authors, an implication is that the learning that is the result of the process cannot be defined as a set of competencies since it is too tacit, complex, contextualised, and individual (Dornan et al. 2014 p. 721) Another implication of sociocultural and practice perspectives on professional and workplace learning in medical education is that it highlights some of the disadvantages of the system of multiple, short individual rotations in many medical programs. For instance, it has been argued that the system hinders continuity of relationships, participation in the workplace social practices and peer-learning, and thus both individual and collective learning. New clinical education models such as

longitudinal integrated clerkships (LICs) have evolved based on continuity as a learning principle (Hirsh et al. 2012; Greenhill and Poncelet 2013).

The assumptions behind the construct of the learning climate scale

In connection to Paper II (Strand et al. 2013) and the development of the questionnaire in this thesis, I conducted a (non-systematic) review of contemporary theoretical and empirical literature on student workplace learning grounded in practice theory and socio-cultural perspectives to inform the theoretical construct of the instrument. The results are presented in more detail in the paper. In summary however, an assumption based on the review is that favourable clinical learning environments are characterized by:

Invitational quality

- Opportunities to participate and learn from work experiences
- Interaction patterns and student inclusion
- Student agency and engagement

Organizational quality

- Preparedness of all parties for student entry
- Space and resources

Pedagogical quality

- An autonomy-supportive environment
- Enhances students' reflective capabilities (Strand et al. 2013 p. 1016).

(These categories were elaborated on in a second stage, informed by our empirical findings to form the theoretical construct for the clinical learning climate measurement scale and questionnaire.)

Altered view of the role of workplace supervisors

The insights of practice and sociocultural theory have accordingly influenced how we conceptualize the role and contribution of people in the workplace to students' workplace learning in higher education. Studies emphasize that the role of workplace educators has become less that of instructor and more that of facilitator, mediator and broker (Keating 2006; Evans et al. 2011). In medical education, the strong focus on the impact of individual clinical teachers and teaching has been questioned, and other, indirect and direct, forms of guidance from people at workplace and the influence of support provided by other health professionals and teaching teams have been at the

centre of attention (Pratt et al. 2009; Swanwick and Morris 2010). The power of peer-learning, highly active roles of students and how student agency can be supported to help them engage effectively in workplace learning have emerged as key qualities of workplace learning (Topping 2005; Richards et al. 2013).

Autonomy support

One of the assumptions drawn from the mentioned literature review is that autonomy-supportive supervision is among actions of clinical supervisors in clinical environments that are conducive to students' learning. Research within the field of Self-Determination Theory (Ryan and Deci 2000) is concerned with how controlling versus autonomy-supportive environments influence functioning and wellness, as well as performance and persistence. SDT advocates that environments and people in positions of authority (i.e. supervisors, teachers and leaders) that support autonomy, relatedness, and competence facilitate engagement, healthy development and optimal functioning. Examples of autonomy-supportive approaches are metacognitive approaches that facilitate reflection, goalsetting and independent problem solving (Reeve and Halusic 2009).

Cognitive apprenticeship

The cognitive apprenticeship approach is a model underpinned by theories of situated learning and autonomy-supportive teaching. The approach builds on 'traditional' master/apprenticeship relations. Students develop thinking and acting under the supervision of experts; however, the cognitive apprenticeship approach focuses on students' active involvement and attention to cognitive processes underlying expert performance, such as problem-solving, meta-cognitive skills and articulation. The underlying construct is a meta-cognitive approach to students' learning and "learning through guided experience" used to externalize the tacit processes that underlay professionals' thinking and actions in practice (Collins et al. 1989). Cognitive apprenticeship is the construct underlying the Maastricht Clinical Teaching Questionnaire, a questionnaire that was developed to offer feedback to individual clinical supervisors on how medical students perceive their teaching behaviours (Stalmeijer et al. 2009; 2010a,b). In this thesis, this questionnaire is translated to Swedish, the construct validity of scores from the Swedish version is examined, and the usability of the feedback generated is investigated (Paper IV). The rationale for this decision is described under the headline "Tools to Mirror and Analyse Practice".

How do physicians conceptualize student workplace learning?

A conclusion drawn from my literature search was that a large body of research has focused on student perceptions of learning in the clinical workplace. Research on

physicians' perspectives on workplace pedagogy is less extensive, and a majority of these studies have focused on the perceptions of clinical teaching and the clinical teacher (Stone et al. 2002; Buchel and Edwards 2005; Kernan et al. 2008; Duvivier et al. 2009; Dornan et al. 2005; Knight and Bligh 2006, Williams and Klamen 2006; Calkins et al. 2012). An exception is a recent study that investigated interactions between practitioners and students using discourse analysis. The study disclosed aspects of power relations and what students afforded their supervisors socially of value to understand workplace learning discourses (van der Zvet et al. 2014). At the outset of the thesis, I found a paucity of studies that have investigated physician conceptions of the nature of student learning in the clinical workplace, the ways they think of their contribution as clinical supervisors to student learning, and how their thinking relates to practice theory. The higher education literature offers a body of work on conceptions of learning among university teachers, including the medical education setting (Dahlgren et al. 2006). However, the three major meta-categories of conceptions of learning among university teachers suggested by Dahlgren et al. (ibid) in an analytical summary of empirical studies reveal that these – learning as accumulation, learning as transformation and learning as application – are largely related to the notion of learning as acquisition underpinned by cognitive learning theories. In agreement with Hager (2004), I find this mapping of conceptions of learning of little help for a meaningful understanding of how people in the clinical workplace conceptualize and enact supervision to support learning.

In conclusion, it is crucial to address this gap of knowledge and explore how physicians conceptualize student learning and supervision, since it can contribute knowledge of theoretical and practical value and inform faculty development. Consequently, this was the rationale for conducting the first study (Paper I) related to the overarching aim of the thesis. In the next section, I extend the review to outline previous research of practice-frameworks for faculty development in higher education .

Practice Frameworks for Faculty Development

Major changes in faculty development – orientations

The 'practice turn' has had a number of implications for research on professional practice and learning and accordingly also faculty development research and practice. As we utilise this approach, challenges arise with regard to "the best methods for investigating co-productive, relational practices and collective learning" (Reich and Hager 2014 p. 430). Frameworks grounded in practice theory are among many other approaches that have evolved to address the limitations of methodological individualism as a means to support development of favourable learning and teaching

environments. The role of faculty development units in higher and medical education institutions across the world have undergone major changes over the past three decades (Gibbs 2013; Austin and Sorcinelli 2006; McLean et al. 2008). Gibbs (2013) provides an overview of the variety of practices and conceptual underpinnings in different countries and the different change mechanisms that they adopt. Comprehensive trends include policy-based strategies, where educational developers are involved as partners in visionary and strategic work (Gibbs 2013; Austin and Sorcinelli 2013). Faculty development units have moved from more peripheral positions towards the centre of institutional decision-making (Gibbs 2013), and FD initiatives no longer take place in isolation from 'big picture' imperatives (Gosling 2001, Gibbs 2013; Schroeder et al. 2011; 20153. There is a growing scholarly approach to faculty development, acknowledging a broad range of theoretical underpinnings and the complexity of evaluation strategies (Land 2004; Taylor 2010; Chalmers and Gardiner 2015; Baume 2016).

A practice frame for faculty development among academics

The practice perspective on the teaching and learning of academics advocated among researchers in higher education (Trowler and Cooper 2002; Boud and Rooney 2015; Boud and Brew 2013) is a reaction to some of the centralized formal activities undertaken by educational developers as

> insufficiently grounded in the social practices of academic work and those who undertake it, and as being implemented with insufficient consideration of the milieu required to support it (Boud and Brew 2013 p. 209)

Inspired primarily by the practice theory position of Schatzki (2001), Boud and Brew (2013) outline the implications of a practice frame for faculty development among academics. They suggest a view on the work of academics as a social practice, to build on the traditions of this practice and situate activities in the academic workplaces. According to Louds and Campbell (2015 p.356), this approach entails

> working with academics to maximize development opportunities that arise in the course of the work itself and on addressing those aspects of the work that actually inhibit development (…) These opportunities are contextualised, addressed in collaboration with the workgroup and in situ: importantly, they involve a genuine imperative to learn.

To organize and study faculty development activities that separate academics (or practitioners in general) from their colleagues and contexts, makes little sense since learning how to teach is embodied, mediated, relational and situated in the events and activities embedded in the academic practices (Boud and Brew 2013; Louds and Campbell 2015).

Approaches to address educational development among academics in university settings have suggested a shift in the educational developer's role from acting as the institutional teaching and learning 'expert' to collaborative models where educational developers work in partnership with academic leaders at various levels (Debowski 2014; Trowler and Cooper 2002). Trowler and Cooper (2002) termed the social context in which academics work as the "teaching and learning regimes". These are the constellations of assumptions, rules and norms and practices developed over time that guide teachers' actions and characterize their discourse of learning and teaching. In several studies, Mårtensson and Roxå (Roxå 2014; Mårtensson 2014) explore how university teachers rely on trusting and inspirational conversations with a few others who constitute significant others/significant networks. The more professional contexts or 'microcultures' support such conversations, the higher the number of significant relations within the workplace. The local level leadership in turn has a significant impact on the development of microcultures. Their studies suggest that supporting an increase of significant relations within and between microcultures is an effective strategy for faculty development (Mårtensson 2014). Recent studies have explored initiatives intended to contribute to the development of the individual as well as to the work of the organization by temporarily relocating members of staff at academic institutions to work and collaborate with educational developers at faculty development units (Loads and Campbell 2015; O'Sullivan and Irby 2014; O'Sullivan et al. 2016). Another direction suggests that educational developers locate activities in the workplace social practices and build on these practices as professional learning communities to support continuing learning (Boud and Brew 2013; Chen et al. 2017).

Some of the implications of adopting a practice approach described by Boud and Brew (2013) have inspired the approach taken to faculty development in this thesis, albeit in a clinical setting. In sum, Boud and Brew (ibid) suggest that adopting a practice-theory framework to faculty development in the context of academic practice among other things involves

- a holistic approach, treating teaching and student learning not as a separate, but as an integrated aspect of academic work
- educational developers working with academics utilizing opportunities in everyday work and finding ways of addressing the limitations of learning in the normal context of academic practice
- locating faculty development in the workplace social practice not as a 'training and development' model, but as a model of developing practice

- a greater focus on peer learning in context (Boud and Brew 2013 pp.208-221).

Practice-oriented models in other workplace settings

The framework for faculty development in this thesis has been also inspired by educational models in other workplace settings. When I expanded my search to include literature on educational models in teacher education, health education interventions, professional (workplace) learning in general, and work development, I identified a number of critical features of models influenced by practice theory or sociocultural perspectives on learning that are common across educational settings. These models are moreover characterized by bottom-up, participatory strategies for change. (An overview of the models and some common critical features of the models are presented in Paper III. The learning principles deriving from a synthesis of these features are presented in the chapter "Findings" and in Paper III.) A feature of several of these models are different kinds of materials to stimulate individual and collective reflective practice (Engeström et al. 1997;Timperley et al. 2007). Inspired in particular by the model for developing work practices – "The Change Laboratory" – initiated by Engeström et al. (1997), I decided to incorporate tools into the faculty development model that could be used to mirror and collaboratively analyse practice. This idea led to the development of a questionnaire for this purpose. In the following sections, I will briefly outline the background and rationale for Paper II and Paper IV.

Tools for mirroring and analysing practice

In the 'Change Laboratory', the use of "surfaces"; i.e. tools for analysing and reflecting on work activity, is a central activity. The model is grounded in Cultural-Historical Activity Theory, CHAT and the theory of Expansive Learning (Engeström and Sannino 2010). Among a number of surfaces that represent different levels of abstraction and theoretical generalization, there is what is called a "mirror surface". This surface is a space for reflection, used to represent and examine experiences from work practice, problems and disturbances, but also new ideas and solutions to problems. Examples of mirror materials are for instance videotaped work episodes, stories, interviews, feedback from "customers", feedback and performance statistics (Engestrom et al. 1997).The idea of using mirror material has particularly influenced the approach taken in this thesis, and it was the reason for reviewing the medical education literature for instruments that could be used to collect feedback from students (the "customers" at the centre of the professional learning activities, in this case). The intention was to use the student feedback in combination with materials that mirrored the participants'

experiences of work and supervision, such as interviews, videos and narratives (Paper III).

The value of providing learners with systematic feedback as part of an ongoing process to facilitate learning is emphasized in the educational literature (Hattie and Timperley 2007; Evans 2013). Questionnaires evaluating student perceptions of the learning environment and individuals' supervision behaviours provide opportunities to include systematic feedback as mirror material from larger groups of students in comparison to interview data. However, the view of professional learning as situated and embedded in the workplace social practices is of consequence for how feedback is conceptualized and used in educational activities (Evans 2013).

The rational for developing a learning climate questionnaire

The notion of a workplace learning environment as elaborated by Billett (2002); Ellström et al. (2008) was the point of departure for focusing on a questionnaire evaluating perceptions of the learning environment (Paper II; Strand et al. 2013). My intention was to use questionnaires not only as instruments to stimulate an exchange of feedback between individuals, but to trigger and support student-focused, collaborative analysis of (some) socio-emotional, socio-material and cognitive aspects of students' learning environments in the specific workplace. Consequently, I searched the literature to find a) learning climate assessment questionnaires, and b) questionnaires that could be used to provide feedback to individual supervisors, but that could also be used for reflections at group level. The existing climate assessment tools I identified were a) focused on the academic environment as a whole, b) primarily developed for postgraduate workplace environments, or c) focused on a few aspects of supervision behaviours and/or social learning activities (Paper II: Strand et al. 2013). Consequently, I found these instruments inadequate for the purpose of providing feedback on student perceptions on multiple dimensions of the clinical learning environment. A more detailed review of the existing instruments in the medical and health education literature at the outset of the thesis and the reasons why I determined these to be unfit for the purpose are presented in Paper II.

In conclusion, there was a paucity in the literature of instruments that evaluated undergraduate medical students' perceptions of the learning climate, conceptually grounded in sociocultural and/or practice perspectives on learning in the clinical workplace; this was the rationale for engaging in the development and validation process of such an instrument (Papers II and IV).

The rationale for the translation and use of the MCTQ

The MCTQ

The framework for faculty development in this thesis has focused on collective practice needs, but also on factors related to individual agency such as motivations, preconceptions of learning, etc. I felt that it was reasonable to combine a tool that mirrored the collectively created climate with a tool that mirrored and provided feedback on individual behaviours grounded in ideas of situated learning. From among several instruments for providing feedback to clinical supervisors, I identified the previously introduced MCTQ as a suitable instrument (Stalmeijer et al. 2010a).

The questionnaire has been used in several educational and cultural contexts, and psychometrical evaluations have found a high degree of construct validity of scores from the instruments (Stalmeijer 2010a,b; Boerboom et al. 2011). The instrument is suitable for assessing a student's perception of a clinical supervisor's approaches to teaching and learning and aspects of the learning climate in a specific supervision situation. Scores and free-text comments can be summarized to mirror and analyse supervision behaviours at group level. The MCTQ consists of 14 items with 5-point Likert scales for assessing teaching methods and learning climate, one item rating the supervisor's overall performance (1-10) and two open-ended questions asking students to describe a) the strength of the supervisor's behaviours and b) areas to improve. However, I found no studies of its use in a Swedish medical education context and subsequently no translated version of the instrument psychometrically evaluated in this context.

In conclusion, there was an incentive for the development and validation process of a Swedish version of the MCTQ (Paper IV).

In the next and final section of the background, I argue that there is a need for practice approaches to faculty development research in the clinical medical education context, and summarize the rationale for the thesis.

Practice-oriented faculty development research in the clinical context

Shifting focus from practice approaches to faculty development practice and research in the academic, university campus environments to the medical education literature on faculty development in the clinical context, in recent years there has been a noticeable increase in publications that call for more context-sensitive and relational approaches. (Mac Lean et al. 2008; Steinert et al. 2012; 2016). For instance, O'Sullivan and Irby (2011) suggested a systems approach to faculty development design and research inspired by practice-based professional development of schoolteachers, continuing medical education, healthcare quality improvement frameworks and workplace learning (ibid). The authors suggest e.g. a direction towards more systematic

empirical research on how teachers learn and co-construct meaning in the workplace social practices. This expanded model advocates research on educational process and outcomes focused on two communities of practice:

> the community created among participants in faculty development programs and the communities of teaching practice in the workplace (classroom or clinic) where teaching actually occurs (O'Sullivan and Irby 2011 p.421).

This research approach emphasizes the exploration of previously insufficiently studied components of faculty development such as the facilitator perspective, the context in which faculty members teach, components related to the workplace such as relationships and networks in that environment, the organization and culture of the setting, and the specific teaching/supervision tasks and activities.

Paucity of studies adopting a practice frame in a clinical context

At the same time, the aforementioned reviews of faculty development in medical education indicate that courses and workshops are the most studied faculty development activities targeting clinical teachers and supervisors so far. The predominant method used has been surveys (Steinert et al. 2006; 2016; Leslie et al. 2013;). To date, there is a striking lack of empirical, qualitative research providing knowledge on the implications of faculty development that is conceptually grounded in a workplace learning theory and located among physician colleagues in the clinical context (O'Sullivan and Irby 2011; Leslie 2013; Steinert et al. 2011).

More recently, studies in medical education have applied practice theory and qualitative approaches to explore the non-formal, work-based learning processes of novice clinical teachers (Cook 2009), or how clinicians become teachers in relation to clinical communities of practice and institutions (Cantillon et al. 2015). Action research has been applied to explore the implications of formal, structured, workplace-situated learning activities among medical teachers and health professionals in non-clinical contexts (Laksov Bolander et al. 2008; Mubuuke and Leibowitz 2013; Sandars et al. 2012) or in clinical contexts among postgraduate clinical supervisors (Clapham 2008).

Previous research among practitioners in schools, universities or other workplace settings provides valuable knowledge of the implications of adopting a practice frame for faculty development; however, learning and supervision in the clinical workplace environment is markedly different from the learning and teaching that takes place in academic institutions. Whilst physician practice involves academic work and student learning, the core activity of hospitals is patient care. A practice approach to faculty development as a means to address supervision and learning in the context of medical practice has to consider the learning conditions and affordances of a patient- and service-centred environment (Swanwick 2005; Bleakley et al. 2011).

In conclusion, there is a need for theoretical/methodological faculty development research and practice approaches that are contextually sensitive and relational as a means to address student clinical learning conditions.

The thesis rationale in summary

In this background, I have argued

- that concentrating on a theoretical or methodologically individualistic approach alone neither enables us to explain supervision and learning behaviour in the clinical workplace, nor does it allow us to intervene in an informed way.
- that there is a need for theoretical/methodological approaches that are more contextually sensitive and relational at both the explanatory and the FD practice level.
- that mirror materials to trigger analysis of practice are valuable tools in work and teacher development models grounded in practice theory. A questionnaire that produces valid and reliable information can be a useful instrument, providing systematic feedback from larger groups of students at various points in time to stimulate collaborative, student-focused analysis of student clinical learning and supervision environments.
- that there is a paucity of adequate instruments in the existing literature. The MCTQ questionnaire, a well-studied tool used to provide clinical supervisors with feedback on a student's perception of a clinical supervisor's approaches to teaching and learning, has not been translated or used in Swedish settings previously.
- that while there are studies that explore the implications of adopting a practice approach in academic settings, there is a paucity of empirical qualitative research that explores the implications of adopting a practice frame for faculty development in the clinical, medical education, context. Moreover, how physicians conceptualize students' workplace learning and clinical supervision in relation to practice perspectives on workplace learning in medical education has not been studied sufficiently.
- that without knowledge of the lived experiences of such an approach of different people concerned, we cannot gain a deeper understanding of if and how it is meaningful as a means to enhance student learning experiences.

In the following chapter, I define the aim and scope of the thesis, the central research question addressed, the specific sub-questions addressed in the four studies, and the scope of the thesis.

3. Aim and Research Questions

In this thesis, I address the aforementioned gap in the medical education literature of qualitative research that has adopted a practice frame for faculty development as a means to support physicians in developing undergraduate supervision practice. Applying the insights of social practice theory, I seek to investigate and discuss the implications of conceptualizing and enacting faculty development as a workplace social practice in the clinical context. More specifically, I set out to identify principles underpinning a workplace-situated faculty development model and study the process of implementing the principles among groups of physician colleagues who supervise medical students in hospital settings in a Swedish medical education and healthcare context. My intention at the outset of this thesis was to conduct research that could be of practical value and at the same time potentially contribute to a broader knowledge base within the field of medical education and faculty development research.

The central research question addressed in this thesis is:

- What are the implications of applying workplace learning (practice) theory as a framework for faculty development aiming to support physicians working and supervising in hospital settings to develop supervision practices and enhance students' learning experiences?

The aims and research questions of each study

This thesis comprises four overlapping studies, each with a different focus of inquiry, and study designs to address the sub-questions that are related to the central research question.

Paper I

An implication of applying the lens of practice theory is an attention to how the particular supervision and learning practices are defined by the physician supervisors themselves and how their thinking relate to the specific context within the practices are located. Therefore, the inquiry starts with a concern for the nature of the specific practice from the perspective of the supervising physicians – the target group of the faculty development approach. The aim is to map out the ways in which physicians conceptualize student learning and supervision practice (Strand et al. 2015). The findings from this study informed the decision to put the notion of the workplace

'learning environment' rather than individual competencies at the centre of the faculty development approach. This decision led to the idea to start with a collaborative mapping of a current and desired state of the student learning environment and supervision practice assisted by instrument that provide a student perspective

The two sub- questions addressed are:

- How do physicians (in a Swedish medical and healthcare setting) conceptualise medical students' learning in the clinical (hospital) workplace?
- How do physicians conceptualise their contribution as clinical supervisors to student workplace learning?

Paper II and IV

The inquiry continues with the investigation of the construct validity of scores and usability of the information yielded by two feedback instruments. The instruments are implemented in Study III as tools to mirror practice and trigger collaborative, student-focused analyses of the overall learning environment as well as of individual supervision approaches (Paper III).

The overarching aim of Papers II and IV is to develop a new questionnaire (and a Swedish version of the Maastricht Clinical Teaching Questionnaire (MCTQ), and to investigate whether these instruments can provide valid and reliable information on how students perceive social, emotional, physical and cognitive aspects of the clinical learning and supervision environment to people in the studied settings. In a series of steps from conceptualization through the psychometric analysis of scores, the specific aim of Paper II (Strand et al 2013) is to define the content domain and intended target construct for a climate assessment instrument (named the Undergraduate Clinical Education Environmnet Measure – the UEEM) and to examine evidence of the construct validity of scores based on internal structure. Paper IV describes the second stage of the validation process of this questionnaire and the validation process of MCTQ. In this study, I examined various types of supporting or refuting evidence of the construct validity of the instrument scores and the usability of the feedback provided by the instruments.

The specific research questions addressed are:

- What is the construct validity of interpretation of scores from the UCEEM and the Swedish version of the MCTQ?
- How do different stakeholders perceive the usability of the information generated with each of the two instruments?

Paper III

The third and final part of the inquiry addresses issues of design and guiding principles for the faculty development model (Study III). It comprises two cycles of a longitudinal action research study. The aim is twofold: first, it is to review literature to establish guiding principles for a conceptual model. Second, it is to explore how the principles work in practice from the perspective of various people concerned (the supervising physicians, students, faculty members, administrators and clinical department managers). I investigate how factors related to individual agency and structural and sociocultural variables in the immediate and surrounding learning environment influence the learning and implementation process. The action research design allows for the exploration and analysis of my own experiences as the educational developer through the use of a research diary to monitor the process. This part of the thesis directly addresses the central research question and a related sub-question:

- What are the implications of adopting a social practice framework to faculty development among clinical supervisors in a Swedish healthcare and medical education context?
- In what ways do structural, sociocultural and agency variables influence the learning and implementation process?

The scope of the research

In line with the social-constructivist epistemological approach, the goal of this research is not to generalize findings. I seek instead to provide a rich, contextualized understanding of some implications of a practice approach to faculty development situated in the workplace through the study of particular cases and the exploration of certain aspects of the experiences of those involved. The intention is to contribute thick descriptions detailed enough to permit transferability. In other words, the idea is to "generate interpretations, to extrapolate, and to make inferences in order to construe meanings" (Eisner 1998, p.2011 in Polit and Beck 2010 p. 1451). Accordingly, the validation process of the instruments is based on samples limited in size and a narrowly defined context, which offers the opportunity to follow the groups more closely. The mixed methods study designs enable a holistic view on construct validity and the opportunity for a validation process that includes an investigation of how stakeholders interpret, make sense of, and integrate the feedback into their daily practice (Moss 1998; Lane 2013; Evans 2013). It is important to note that the questionnaires are not intended to be used as a research method, to measure learning climates, or to assess individual supervision strategies in order to provide supporting or refuting evidence of outcomes or effects of a faculty development intervention. This thesis does not seek to demonstrate a cause and effect relationship between the actions of the action researcher and the actions of others, or to find closure, as in 'problem resolved'. Instead, through

reflexivity and conceptual thinking, I hope to contribute case-based knowledge to a meaningful discussion of the possibilities and challenges of the approach that can potentially offer value to the larger community of faculty development researchers and practitioners, as well as to the local community.

The study settings are limited to hospital (secondary care) settings, since hospital settings in particular have been the environments that international studies and national assessments identify as environments with varying access to and varying quality of clinical supervision. The scope of the study does not include an analysis of socio-material and space-related aspects of the learning environment. The analytic approach is restricted to the analysis of "human agency" aspects and the sociocultural and structural aspects of the environment from an intra-professional perspective.

In the following chapter, I provide an overview of the theoretical framework that has influenced the research questions and that is applied to frame the analysis of the findings.

4. Theoretical Framework

Workplace Learning Theory

The primary theoretical framework applied to analyse and frame the data in this thesis has been the workplace learning theory proposed by Stephen Billet (1996; 1998; 2001; 2002; 2006; 2011), but also related workplace learning theories that, like Billett, focus on how reciprocity between structural and agency factors shape learning. (Ellström 2008; 2011 Hodkinson and Hodkinson 2007 Engeström and Sannino 2010). These workplace learning theories have offered a framework for analysing factors influencing the workplace learning of the students' and clinical supervisors who have participated in the thesis studies, and how improvements to the quality of that learning could be effectuated. The workplace learning theory proposed by Billett is one of the many workplace learning theories derived from the aforementioned paradigm shift in the social sciences that directed attention to the notion of situated learning (e.g. Lave and Wenger 1991; Eraut 2004; Illeris 2015; Fuller and Unwin 2004; Ellström 2008;). The most influential of these in terms of the impact on contemporary discourse and number of publications is the theory of legitimate peripheral participation (Lave and Wenger 1991; Wenger 1998) and the related Community of Practice (CoP) theory.

'Work' and 'place'

Over the past decades, workplace learning theories have evolved in various directions and into different concepts, and as such, the connotations of "work", "learning" and "workplace" are not the same as they were twenty years ago (Cairns and Malloch 2011). Work – as in labour, job, employment – is used to describe a profession or an occupation; i.e. what we do. It describes an activity or a role, often linked to class and social status. However, the concept has developed and transformed, and today describes a broader activity, across a wide range of new social and cultural conditions, based on modern-day technologies, along with new ways of social interactions and networking. Autonomy, self-scaffolding and self-motivated actions are becoming frequent features of many types of work (ibid). In the case of this thesis, the "work" referred to is the work carried out by physicians. The "workplace" refers mainly to the clinical – especially the hospital – workplaces where physicians, other healthcare professionals

and others who are part of the workforce in these settings carry out tasks related to the care of patients. Workplace refers to a physical location – a space for work and for learning (ibid). However, a place for work and learning may also refer to a virtual location or other locations where we think and operate cognitively or interact socially in relation to work (ibid). In this thesis, workplace-situated faculty development refers to faculty development (professional learning or practice development activities) located spatially within a specific physical (hospital) workplace or nearby. Other dimensions of location relevant for the analysis of the thesis, such as temporal and social dimensions, will be addressed in the chapter "Discussion".

A workplace practice

When physicians carry out work in the hospital settings, they are participating in a number of different practices of the clinical (or other) workplaces. The section "Background and Rationale" (p. 27) introduces some of the various meanings of practice and a social practice. Where Lave and Wenger (1991) focus their analysis on 'the community of practice', Billet primarily uses the concept of 'workplace participatory practices' or 'social practices' (Billett 2002). I will use the concept 'workplace practice' to describe the practices of physicians located in the clinical workplace. In addition to performing the specified physician tasks, the workplace practice is defined by the cultural norms and rules, ways of behaving developed by the groups of people carrying out the work, by employment conditions, management and organizational logic (Billett 2011; Ellström 2011; Hodkinson and Hodkinson 2007). The history of the workplace also defines its practices. Changes are often gradual. Hospital workplace practices are influenced by external factors, the healthcare system, the county council (in Sweden), government regulations, and societal norms and expectations. The complex hospital-workplace practices largely affect workplace learning.

Human (individual) agency

The 'agency' of individuals is a recurrent concept in the thesis analysis, emphasized in contemporary workplace learning and practice theory. Giddens (1984 p.14) defined human agency as an ability 'to intervene in the world', to 'act otherwise', and 'make a difference' by exercising 'some sort of power'. Perseverance in the face of obstacles is guided by a sense of purpose and commitment (ibid).The levels of autonomy and power within given structures and cultures further determine agency. Things – material entities – have agency; however, this concept will not be used further for framing the data in this thesis.

Relational agency

The concept of collective (Archer) or relational agency (Edwards 2005; 2010) was useful in the thesis analysis. According to Edwards, relational agency involves a capacity to offer support and to request support from others. It offers an extended version of individual agency, and Edwards posits that it can be learnt as a capacity to align one's thoughts and actions with those of others in order to interpret problems of practice and to respond to those interpretations. (Edwards 2005 pp. 168–169) Collective or relational agency can contribute to the development and transformation of workplace practices, structures and cultures over time, as people interact, but can also be used to reproduce existing practices (Archer 2000; Edwards 2005).

Relational agency connects with Billett's focus on relational interdependence (Billett, 2006). Billett recognises the importance of personal understandings sourced beyond and prior to a situation in mediating interpretations of new situations. Concordant with Billett, Edwards argues for an attention to the negotiations in which individuals engage as they work in and with their social surroundings (Edwards 2005; Billett 2006. Burkitt (2015) emphasizes how agency only can be practised in joint actions. "Agency emerges from our emotional relatedness to others as social relations unfold across time and space" (Burkitt 2016 p. 322.).

Workplace learning

Co-participation and workplace affordances

Workplace learning has been defined as "the relationship between the human process of learning and working" (Cairns and Mulloch 2011 p.149). Learning is inherent in work and work is inherent in learning (ibid). Workplace learning can be understood at a personal, organizational level or in broader societal terms (ibid). Drawing on a series of empirical studies, initially from 5 workplaces (Billett et al. 1996; 1998; Billett 2000), Billet suggested that workplaces' invitational quality, i.e. the degree to which individuals are welcome or 'invited' to participate in the workplace practices (i.e. workplace affordances), is central to the quality of the learners' experiences. He found that the learners who were afforded the richest opportunities for participation in combination with direct or indirect guidance reported the strongest development. Billett (2002), in accordance with Engeström (2001) and Ellström (2008), regards the participation metaphor as a vague concept expressed in early sociocultural theories of workplace learning. He stresses the capacity of individuals to exercise agency, to elect how and to what degree an individual practitioner engages in what is afforded him/her (Billett, 2002). Guided participation alone cannot not guarantee learning. The process of learning is co-constructive, and individuals' engagement in the social practice is shaped by socially- and culturally derived values, knowledge, and personal histories.

Learning may be superficial or committed as a result of the learner's values and interest to engage (ibid).

Co-participation refers to the reciprocal relationships between the readiness of the workplace to invite individuals or groups of individuals to participate in the workplace practices and how individuals elect to engage in what is afforded them. In the studies of this thesis, the concept is applied as a platform for building an understanding of medical students' learning and the workplace pedagogic practices of supervising physicians (Billett 2002).

Intentional learning

Billett (2002) argues that the notion of informal or unintentional learning (Eraut 2004) is fundamentally negative, since the concept alludes to what it is not. Thus, there is a risk that workplace learning is perceived as inferior to learning in educational institutions. Ellström (2011) emphasizes that the concept of informal learning is useful when referring to the learning that happens regularly in everyday work and life, when learning is not the primary goal. Billett (2011) postulates that work practice has intentions in that respect; the structured goal-directed activities are inherently pedagogical. The structuring of workplace activities has dimensions associated with learning for sustaining practice. Therefore, describing learning through work as 'informal' or unintentional is incorrect.

Distribution of workplace affordances

According to Billett (2011), affordances are expressed at different levels – cultural, societal and situational – and they are selective; i.e. they are distributed differently among learners or groups of learners within workplaces. Factors such as race, gender, status of work, employment status, status as learners, personal relations and workplace affiliations influence the distribution of affordances. While CoP theory has been criticised for failing to conceptualize power relations adequately and for oversimplifying the relationship between novices and more experienced practitioners, Billett stresses components of status and power in these relations (Hager 2011). I found this to be a useful analytic framework for analysing the distribution of affordances among the different groups of learners involved in the thesis studies. However, both Billett's theory and the CoP theory (Lave and Wenger 1991) have been criticised for failing to address the dynamics of the workplace practices and the mechanisms behind radically new patterns of social relationships at work (Engeström 2001). I thus found the works of Ellström (2008) useful for understanding the different types of learning that the hospital workplaces may afford, and how these characterize a learning environment.

Adaptive and Developmental Learning

Ellström 2008, drawing on the works of Billet (2002) and Fuller and Unwin (2003), among others, suggests that there are two modes of qualitatively different but complementary modes of workplace learning. 'Adaptive (reproductive) learning' has its focus on the mastery of certain tasks or ways of working in accordance with prevailing routines (Ellström, 2008; 2011). 'Developmental (innovative) learning' has its focus on individual or collective development that occurs when individuals or groups within an organization begin to question established ways of working and develop new ways of coping with situations (ibid). The notion of development learning is related to Dewey's (1938) notion of inquiry, to Engeström's activity theory concept of expansive learning (2001), and to Argyris' and Schön's works on investigative leaning (1974). Engeström for instance, who locates his (activity) theory in the cultural historical tradition, suggests expansive learning as a metaphor for learning beyond the participation/acquisition dichotomy that he suggests account for e.g. some types of collaborative work in medical workplaces (Engeström 2001). Ellström (2011) stresses that both modes of learning are equally necessary in the workplace and everyday life. Moreover, the modes of learning should be considered as two extremes on a continuum, with other, combined modes in between (ibid).

Workplace learning environments

Theories of workplace learning entail that we can organize the workplace not only for production, but also for learning (Wenger (1998; Billett 2002; Ellström Fuller et al2008.). Following Billet (2002), a workplace has a readiness for learning, and the invitational quality defines a learning environment, whereas Fuller and Unwin (reported in Evans et al. 2006) describe two types of qualitative different learning environments as restrictive and expansive learning environments.

Ellström makes a distinction between enabling and constraining workplace learning environments (2008) and link these two types of learning environment to different conceptions of learning and working conditions.

> "An enabling learning environment refers to working conditions and practices that are likely to promote a balance between reproductive and developmental learning, that is, an environment where individuals are able to alternate between these two modes of learning. In contrast, a constraining learning environment refers to conditions and practices that are likely to constrain both reproductive and developmental learning, or to promote reproductive learning at the expense of developmental learning" (Ellström 2008 p.7).

Workplace learning is value-based and – as illustrated in the section "Background and Rationale" – not necessarily a good thing in and of itself. Students or physicians may

learn 'poor' working practices very effectively, depending on sociocultural and individual mechanisms. Studies have demonstrated that the perceptions of teachers and staff of a working environment link strongly to how students perceive the learning climate in this environment (Genn 2001b). The organizational climate in a workplace (for instance a clinical workplace) is generated from the nature of interactions among managers and working-learners. The quality of leadership is of great significance. Productive environments for teachers have been given less attention in comparison to students' learning climate (Genn 2001b; Hodkinson and Hodkinson 2007; Palmgren 2016). Hodkinson and Hodkinson (2007) stresses that addressing the learning culture is an effective way of improving workplace learning environments for teachers. To change culture according entails making changes to existing working conditions and practices (Hodkinson and Hodkinson 2007). Recent medical education literature has emphasized how the learning cultures including behaviours of role models, contribute to enculturation and development of professional identity. (Philips and Clarke 2012; Cleland and Johnston 2012). Workplaces produce cultures that often remain unwelcoming to outsiders and new learners must conform to professional culture to be included and successful in the environment (Jin et al 2012) The focus on competencies and outcomes-based system has broadened to encompass social identity theories to understand how individuals take on professional status (ibid).

In the following chapter, I describe the epistemological stance that underpins the methodological approach. I outline the general and specific study settings and give an overview of the participants, selection, and data collection methods. I give details of the three-study design and the methods applied to address the research questions of the three phases of research.

5. Methods

Methodology and Philosophical Assumptions

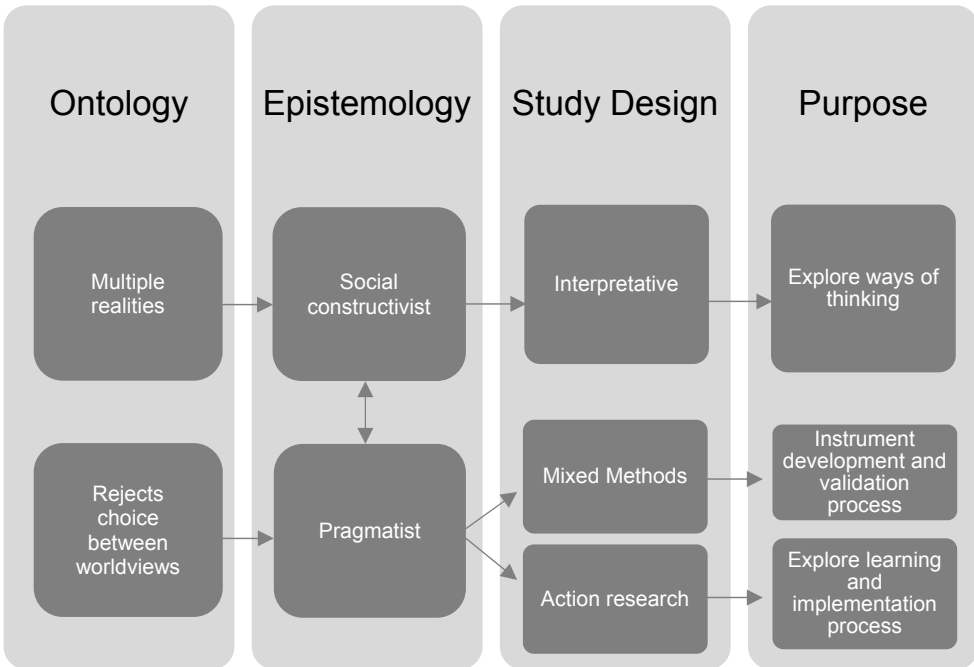


Figure 1.
The figure illustrates the methodology, i.e. the ontological and epistemological position, the related three study designs, and the purpose for their application.

Ontology and epistemology

Terminology

To prevent terminological confusion, I have used the definitions of the terms methodology, design, and method suggested by Creswell and Plano (2011). According to Cresswell and Plano (ibid), methodology is a consequence of the researcher's

fundamental philosophical assumptions (ontological and epistemological), and is the framework that underpins the entire research (ibid). Study design refers to the alignment of philosophical assumptions to specific methods of data collection. In this thesis, I have applied three types of designs to address the central research question and sub-questions: an interpretative design, two types of mixed methods designs, and an action research design. 'Methods' refers to the specific sampling approach and methods for data collection and data analyses applied.

For the sake of consistency in the thesis, I have chosen to centre on 'study design' and outline the philosophical underpinnings of these designs. It is noteworthy that although my philosophical assumptions have influenced the direction of the research, the research questions, and choices of design, it has also worked in reverse. The research questions are to a certain extent method-driven (More 2006). "Our ways of seeing, and of framing questions, are strongly influenced by the methods we have at our disposal, because of the way we see shapes that we can see, and what we think we can ask". (More 2006, p 13).

Multiple realities and socially, co-constructed knowledge;

The research questions in each different phase of the research demanded a different analytical approach and study design. Nonetheless, the designs are all grounded in the belief that there are multiple realities (Creswell 2008; Denzil and Lincoln 2011). The meaning of reality is created from the perceptions, lived experiences and interactions among those concerned with its existence (Creswell 2008; Denzin and Lincoln 2011). A social constructivist epistemology underpins the methodological decisions made in this thesis, which – in line with the above ontological stance – emphasises that a diversity of interpretations can be applied to the world (Creswell 2009). As knowledge is socially co-constructed, my role as a researcher when addressing the research questions in this thesis is to construct a subjective account of the investigated phenomenon, through the different experiences of the participants and through the interaction between us (Dewey 1997, Vygotskij 1997; Gordon 2009;). From this standpoint, interpretations are not regarded as "the way things are". There are no truths waiting to be discovered; an interpretive element always determines the ways in which a phenomenon is understood. Hence, I have applied cycles of iterative interpretative procedures for collecting and analysing data (Carr 2006 p. 429).

In the first part of the thesis, I chose an interpretative study design to explore the subjective perceptions and lived experiences of the participating physicians. As a researcher, interacting with participants and interpreting their statements, I actively participated in the construction of knowledge, transforming statements into themes illustrating the different and contrasting thinking of the phenomena investigated – students' learning, clinical supervision and supervisors' learning.

Rejecting the paradigm war – mixed methods

Although I position my research within the interpretative paradigm (Denzil and Lincoln 2011), I came to take a pragmatic, non-purist view of reality and of the strict connection between paradigm and methods (Morgan 2014). Since the research plan evolved and new research questions emerged, the "roadmap" came to include a route of instrument development and thus, methods for collecting and analysing quantitative data. A pragmatist philosophy allows for the prioritisation of the best way of addressing a research question over paradigm and the mixed use of qualitative and quantitative data. However, the 'how to' questions about a sound methodology and appropriate methods reflect only a limited aspect of the message of pragmatism (Morgan 2014; Johnson and Onwuegbuzie 2004). The decisions made to apply the mixed methods study designs were a consequence of the 'why to' do the research (Creswell and Plano Clark 2011). Questionnaires offer opportunities to collect data from a large number of students in a relatively short amount of time. However, although it collects quantifiable data, the method is no more objective in its character than the other methods used. Questionnaires do not provide truths about the properties of an environment. The interpretability and usability of the systematic student feedback offered is the subject of scrutiny in this thesis.

Moreover, the third part of the thesis describes a route of action and inquiry where I explore the perceptions and experiences of actions and activities of various people involved, including my own experiences as a facilitator and an educational developer. The choice of the mixed methods and action research study designs was based on the desire to contribute knowledge that could potentially inform practice, knowledge of local value for both participants and educational developers, and knowledge of interest to a larger community of practitioners and researchers. These designs are rooted in the interpretative framework, but based on a pragmatist view on the construction of knowledge (Herr and Anderson 2005).

Pragmatism as advocated by John Dewey (Dewey 1938) was reorienting philosophy away from the metaphysical discussions on the nature of reality or truth. Dewey and other pragmatist philosophers rejected the forced choice between one or the other of the two views on reality as objective or subjective (Morgan 2014). The study designs are inspired by the process-based approach to knowledge put forward by Dewey (1938) in which the concepts of experience and inquiry as a basis for research play a central role. The philosophy of pragmatism advocated by Dewey and others "emphasizes the practical application of ideas by acting on them to actually test them in human experiences"(Gutek 2014, p. 76). The process of examining beliefs through actions underlies the search for knowledge. In contrast to 'traditional' epistemologies that draw a dividing line between theory and practice, the inquiry is not conceived only as a mental phenomenon (Kaufmann 1959, p. 829). In Dewey's view, research is one form of inquiry that, like all inquiry, involves action and operations, either with objects or

symbols (ibid). Inquiry in turn is one form of experience, a continuous iterative cyclical process that involves reflection on actions to decide on belief and to reflect on beliefs to decide on actions (Morgan 2014; Kaufmann 1959). Experiences always occur in a specific context, and they are conditioned by the nature of that context. Reasoning based solely on past experiences is insufficient because experiences are historically and culturally located and environmental conditions are ever-changing (Morgan 2014, p 1047). Current truths, meaning and knowledge are tentative and change over time (Johnson and Onwuegbuzie 2004). The elements of inquiry are described by Kaufmann (1959 p. 830):

> By instituting a problem we outline a plan of action. This plan is then carried out by actually creating the conditions that are required for the solution of the problem. Like any other plan of action, the initial plan of inquiry may have to be substantially modified in the course of this process.

Action and inquiry as a basis for research

While the above described iterative, cyclical approach applies to most action research designs, there are many different theoretical underpinnings and ways to conduct action research (Kemmis 2002a; Kemmis et al. 2002; Herr and Anderson 2005; Koshy et al. 2011). Some action research designs influenced by pragmatism emphasise that the nature of knowledge is best viewed in terms of "what works", or the success of the practical application (Gutek 2014). However, as previously emphasized, the goal of the action research in this thesis is not to evaluate the effectiveness of the approach in terms of learning outcomes of supervisors (or students). The cycles of action research are studies of context specific cases, and there is neither closure nor the resolution of problems. This thesis addresses action research questions related to the process, rather than to the outcome of "actions" and learning. Questions addressed are questions such as "in what way", "why" and "for whom". As argued by Denzin (2012 p 81), this goes beyond the pragmatist view of inquiry as merely a problem-solving activity.

The specific action research design in this thesis draws on the works of Dewey (1938) and Kurt Levin (1946), and in Levin's line of action research traditions, on the action science advocated by Argyris and his works in collaboration with Donald Schön (1974). Argyris and Schön contributed to pragmatic and experiential learning approaches to research on professional learning (Kolb 1974), the notion of the reflective practitioner (Schon 1983), their two "theories of action", and the models for single- and double loop learning, which moved the cycle of inquiry based on experiences towards abstraction. Knowledge and learning can be achieved through reflecting critically on governing values and "theory-in-action" as an alternative to experience. Various forms of workplace social dialogue to encourage, resource and sustain high involvement work practices are central in this approach (Herr and Andersson 2005; Koshy et al. 2011). Moreover, the action research design in this thesis follows the tradition of action

research that is more concerned with transforming and developing practice than replacing practice. This practice-based approach emphasizes 'what is already there', and the mapping of current practice as a valuable starting point and a platform to build on further, followed by a process of integrating the new instead of adding something separate, or something "extra on top" (McIntyre and Hagger 1992, p 271).

This action research approach differs from the more progressive emancipatory tradition of Participatory Action Research (PAR) – an overarching term for different forms of collaborations – which is aimed at supporting oppressed groups to identify and act on unequal power relations, policies and practices underpinned by e.g. feminist theories and critical theory (Herr and Anderson 2005). The form of collaboration applied in the two cycles of action research in the study is similar to PAR traditions where outsiders collaborate with insiders on a common area of concern to influence, for instance, educational practice or working conditions (ibid).

Axiology – the insider researcher values

Pragmatist and interpretative inquiries are value-bound. Values are widely recognized as having an influence on the type of inquiry applied in this thesis. My values as a researcher have an impact on what I choose to investigate, what I see, and how I interpret what I see (Johnson and Onwuegbuzie) 2004. In my case, my values are rooted in my cultural background and personal history; some have sprung from my clinical work, in the process of developing as a clinical supervisor, teacher and scholar in the community of professionals in which I currently work (Creswell 2008). I share the visions of freedom of inquiry and an emphasis on fairness and social justice with many PAR researchers. In line with these moral values, the research conducted in this thesis is based on the belief that "individuals and social communities are able to define the issues that matter most to them and pursue those issues in the ways that are the most meaningful to them" (Morgan 2014 p. 1050). These values and the range of professional experiences have influenced my interest in and approach to educational research and practice. The anecdote below illustrates one of experiences:

> As a newly graduated speech and language pathologist, I worked at a primary care centre with children with language disorders. Behavioural interventions were the predominant treatment principles at the time. My intention was to utilize a child/person-centric approach. However, the intervention strategies I used focused largely on facilitating isolated language or communication behaviours within the therapy room. I felt growing frustration over the fact that my ability to make a difference for the child was conditioned by factors outside rather than inside the therapy room. I realized that facilitating the children's development of functional communication was far more thorough and substantial in scope than providing expert advice and training programs. To understand the challenges a child was facing, I had to reconsider the how and the why strategy, move

> out of the therapy room and address the child's needs and interactions in the natural social setting. I came to work more with the children among their peers and parents. Parents and day-care staff became more directly involved in the activities. Eventually, intervention strategies included both therapy room sessions focused on improving the child's communication skills based on developmental sequences and collaborative efforts, activities situated in the child's social environment.

My professional development as a clinician, clinical supervisor and teacher are interconnected. The systemic approach and social constructivist view of communication and language development – as situated within the family as a social system and within the wider social and relational context of the patient – came to guide my work as a clinician. The values underpinning this approach have influenced my assumptions about professional learning and consequently the direction of the thesis studies, which is reflected in the choice of the participatory faculty development approach studied and the theoretical framework applied.

The study settings

The studies took place in various hospital settings. The participants were medical students from the Lund medical education program or people working at the Faculty of Medicine, Lund University, and/or in affiliated teaching hospitals in various geographical locations in southern Sweden. The hospital (secondary care) setting was chosen, as mentioned earlier, because hospital settings in particular are the clinical settings that have been most identified in international studies and national assessments as problematic in terms of reports of adverse learning experiences (see "Background and Rationale"). The regional (county council) setting was chosen for practical, logistic and financial reasons.

From the outset of the study until the present, the medical programme curriculum in Lund has been subject to limited changes, mainly in course syllabi. (The programme is currently preparing for curriculum changes including changes in the clinical placements structure). The programme is outcome-based, horizontally integrated and problem-based throughout the preclinical years (2.5 academic years). After some clinical exposure in their first years, the students' clinical practice, mainly based on blocks of study by specialty, begins in academic year 3. The students rotate between different hospital and out-patient clinics approximately 4 days a week. In general, the duration of one clinical rotation is between 1 and 8 days, with one or two longer placements of 4 or 5 weeks (the amount and length of placements varies). During their final 6 months, students spend 4 weeks at a primary care centre.

In general, the students are not assigned a specific clinical supervisor during a hospital rotation. The students' patient meetings and practical training are usually supervised

by the attending physicians. The physicians engaged in clinical teaching and supervision of undergraduate students are employed by the county councils and regional hospitals, or have a combined employment at the University and the county council. Residents-in-training play a central role in supervising undergraduate students. In many rotations, they are the ones who most frequently supervise students in clinical situations.

The faculty development setting

Swedish higher education is currently facing increasing costs, a changing system for quality assurance, and growing demands for high quality education from rising student numbers(Swedish Higher Education Authority 2010; 2014). Autonomy reforms are providing universities and university colleges with more powers to determine their own internal structures. The Higher Education Ordinance from 2002 states that university teachers must complete Compulsory Higher Education Teacher Training (CHETT) to be granted permanent positions (Lindberg-Sand and Sonesson 2008). However, the size and organisation of this training has not been regulated in the Ordinance. Intended learning outcomes for CHETT have been suggested based on SoTL and linked to an estimated workload of 10 weeks. In the context of a changing higher education system in Sweden and globally, this has been seen as one step to assure the quality of teaching in higher educational institutions. However, teacher training has not been required for clinical teachers (involved in undergraduate medical education) who are employed by the county council. Apart from student awards, there is neither institution-supported recognition for good performance nor consequences for non-performance. At the outset of the thesis, the strategic plan of the Faculty of Medicine (2007-2011) at Lund University stressed the need to enhance workplace learning and the supervision of students in the medical and health education programmes by "promoting the development of the clinical supervisor role". At the FD unit, we worked at various levels (individual, programme, institutional policy levels) to influence the turning of policies into practice. Among the strategies was offering clinical supervisors learning opportunities in intra- and interprofessional short courses and workshops.

Visual Diagram of Settings and Studies

Study design	**Interpretative**	**Mixed methods**	**Action research**	**Mixed methods**
Papers	**I**	**II**	**III**	**IV**
			AR cycle 1	AR cycle 2
Relation between data and papers				
Type of data	QUAL	QUALand QUAN	QUAL	QUALand QUAN
Data methods and sources S= Students, CS= Clinical supervisors, ED =Educational developers; F= Faculty, CDM = Clinical Department Managers, A= Administrators				
No. of focus groups/participants	4/21 CS	1/6 S 1/5 S,CS,ED		1/10 S
No. of individual interviews/participants		7/7 S;CS	60/34 CS.	4/4 S 9/3 F 4/2 CDM 19/19 CS 2/2 A
No. of written feedback data sets		15Written feedback on items	26 Written reflections	32 Written evaluations of activities
No. of audio-recorded discussions/groups			5/4	
No. of completed questionnaires (UCEEM + MCTQ)		350 + 344		145+293
Researcher's diary Participant text data				

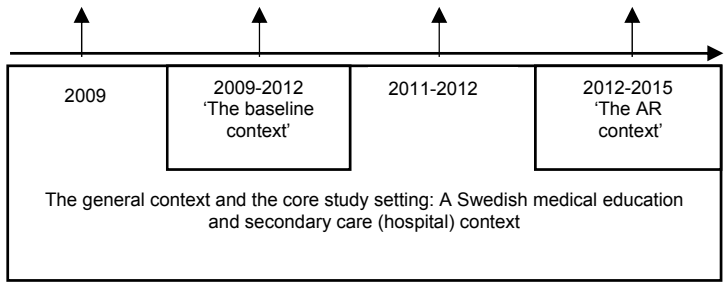


Figure 2.
The relationships between settings, data sources, the type of data collected, the thesis studies and study designs. Some data-sets were used in more than one study and different types of data collected with different methods was triangulated for the purpose of enhancing data saturation or for comparing and merging different types of data to address the specific research question. The settings of the studies are named 'the general context', 'the baseline context' and 'the action research context'. The general context is the core setting in which all of the studies took place, and from which all participants were invited and selected for participation (Papers I-IV). The baseline context is the first setting in which the instruments were implemented (Paper II). The action research (AR) context is the setting in which cycle 2 of the action research study takes place and the setting where the instruments are implemented the second time (Paper III and Paper IV).

Overview of Study Designs

In this section, I provide an overview of the four overarching study designs applied in the thesis: An interpretive design, an exploratory mixed method design, an action research design and a triangulating mixed method design.

Paper I: An interpretative study design

To address the first research questions, how physicians conceptualize medical students' learning in the clinical workplace and their contribution as clinical supervisors to students, I conducted a qualitative study and applied an inductive-deductive content analysis approach (Paper I).

Qualitative content analysis approach

Content analysis is not only a data-analysis method, but also a study design in many ways similar to, for instance, grounded theory. According to Krippendorff (2013), qualitative (or interpretative) content analysis approaches originate from literary theory, social sciences (symbolic interactionism, ethnomethodology), and critical theory (ibid). Originally, content analysis was developed for the quantitative analysis of text data, a method for the systematic counting and categorization of words, quantifying of facts and the measuring of, for instance, the volume of coverage of subject matters in mass media. Today, it comprises a family of different quantitative and qualitative approaches (ibid).

In the past decades, content analysis has been widely used in health studies, especially in nursing and the allied health literature, not the least by Scandinavian researchers (Hsieh and Shannon 2005; Elo and Kyngäs 2008; Graneheim and Lundman 2008; 2017).Different qualitative content analysis approaches use different terms and explanatory logic; however, all approaches use a systematic, step-by-step way of thinking about and conceptualizing qualitative data (Elo and Kyngäs 2008; Graneheim and Lundman 2004; 2017; Hsieh and Shannon 2005). The specific steps, terminology and logic used in the thesis are described in the section "Data Analysis".

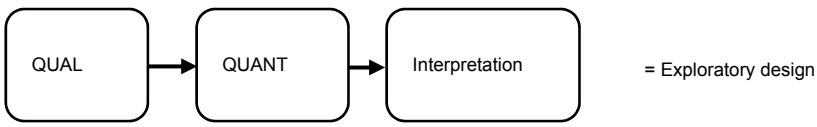
The choice of content analysis was based on the flexibility of the approach, which allowed for various theoretical frameworks and analytical tools (Krippendorff 2013). It was a suitable approach since it can be used to analyse written and verbal communication in an inductive or deductive way to build up models, conceptual maps or patterns of thematic relationships (Elo and Kyngäs 2008), which was a recurrent aim in all parts of the thesis. The specific methods applied for coding the data and interpreting the patterns derived were two types of qualitative content analysis approaches, which Hsieh and Shannon (2005) have referred to as conventional and

directed content analysis, and Elo and Kyngäs (2008) have labelled inductive and deductive content analysis.

Data triangulation

In this study, I collected and triangulated two types of qualitative data yielded from a) conversations between physicians in focus groups, and b) individual interviews with physicians. The data was collected and analysed in sequences. More details are presented in the section "Overview of Data-Collection Methods and Participants" and in Paper I (Strand et al. 2015).

Paper II: An exploratory mixed methods study design



The first stage of instrument development

Paper II describes the first stage of the development of a questionnaire and examination of construct validity of scores based mainly on internal structure. The purpose of the new instrument was to enable evaluation of students' perceptions of a few significant aspects of the clinical workplace educational climate (see "Background and Rationale"). The study design applied is what Creswell and Plano (2011) have defined as an exploratory, mixed methods design where qualitative and quantitative methods are employed in a series of steps from conceptualization (defining the domain, the intended target construct) through psychometric analysis of scores (ibid). The timing of the analysis data was sequential, which means that the methods were implemented in two distinct phases. In this case, the qualitative data was collected and analysed before the quantitative data was collected and analysed (ibid). The data sets were connected, not merged.

The intention was to develop a relatively short instrument (20–25 items) in order to minimize the time required to fill in the questionnaire and to lower the risk of dropouts (Steiner and Norman 2008). The questionnaire included an open-ended question for collecting qualitative data. Qualitative data was collected in the first stage of implementation of the instrument (Paper II), but the analysis of this data is presented in Paper IV (Figure 2). The quantitative aspects were emphasized in the weighting of evidence for which items to include, and items representing a facet that fit poorly in the inventory were not included in the calibrated instrument (Streiner and Norman 2008). Figure 4 is a visual diagram of the exploratory design and illustrates

the procedures of the first stage of development of the instrument, which was named "The Undergraduate Clinical Education Environment Measure" (Paper II: Strand et al. 2013).

Paper III: An action research study design

In order to address the research questions in Paper III, I applied an action research study design (the specific tradition behind the specific design and its underpinnings have been described earlier in this thesis) and conducted two cycles of action research over a period of four and a half years (Figure 2). Each cycle consisted of four stages: planning, actions, observations and reflections. Figure 3 illustrates the two cycles and the different stages of the research process. Action research is seldom a linear process with a finite ending or conclusive results. In this study, the stages of the cycles overlapped and the plans for actions were modified along the way. The empirical findings from each stage of the study (Paper III) helped to determine which questions to ask, what actions to take next and which methods to use. Each stage of inquiry contributed to a deepening understanding of the practice approach under study (Herr and Anderson 2005; Koshy et al. 2011; Johnson and Onwuegbuzie 2004; Creswell et al. 2006). This made it difficult to account for the research process in the traditional "background-method-finding-discussion" order. Therefore, I chose a hybrid between the traditional scientific journal structure and the first-person report and action research narrative when describing the action research study in Paper III, and a more or less chronological order to describe the research process and how findings informed the next step of actions (Paper III).

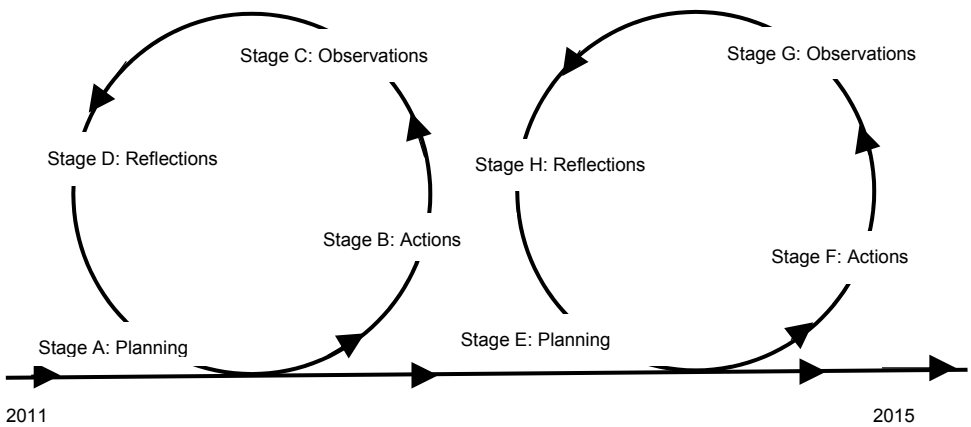
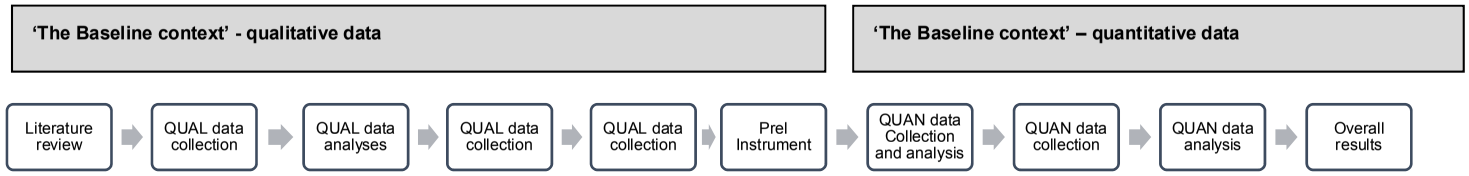


Figure 3.
Overview of the research process. The two action research cycles and the different stages of the research process.



Identify target construct and build conceptual model/Composition of item pool | **Implementation**

Procedures	**Procedures**	**Procedures**	**Procedures**	**Procedures**	**Procedures**	**Procedures**	**Procedures**	**Procedures**
Literature review to inform conceptual model	Input from students/end-users Focus groups /interviews with students & supervisors	Content analysis Composing items	Input from students/end-users Focus group Ratings of item relevance	Input from students/end-users Ratings on item relevance Written feedback	Pilot Study Pre-test of items, tests for internal consistency, data quality	Sample of students (n=463) .	Test for internal consistency Scaling assumption Exploratory factor analysis	Con-struction of scales Evidence of construct validity
Product	**Product**	**Product**	**Product**	**Product**	**Product**	**Product**	**Product**	**Product**
Theoretically grounded dimensions	Transcripts	5 Themes Conceptual model Item pool 66 items Likert response scale	Preliminary 45-item inventory	38-item inventory 5 dimen-sions	Numerical scores Suggestions for item modifications, order of items	350 compl. Questionnaires Numerical item scores	Factor pattern Cronbach alpha Corre-lations	The UCEEM/ Two over-arching scales and 4 subscales

Figure 4.
Visual diagram of the exploratory design applied in Stage One of the development and validation process of the Undergraduate Clinical Education Environment Measure (the UCEEM), including type of data, procedures and products of the first stage of instrument development (inspired by Creswell and Plano 2011).

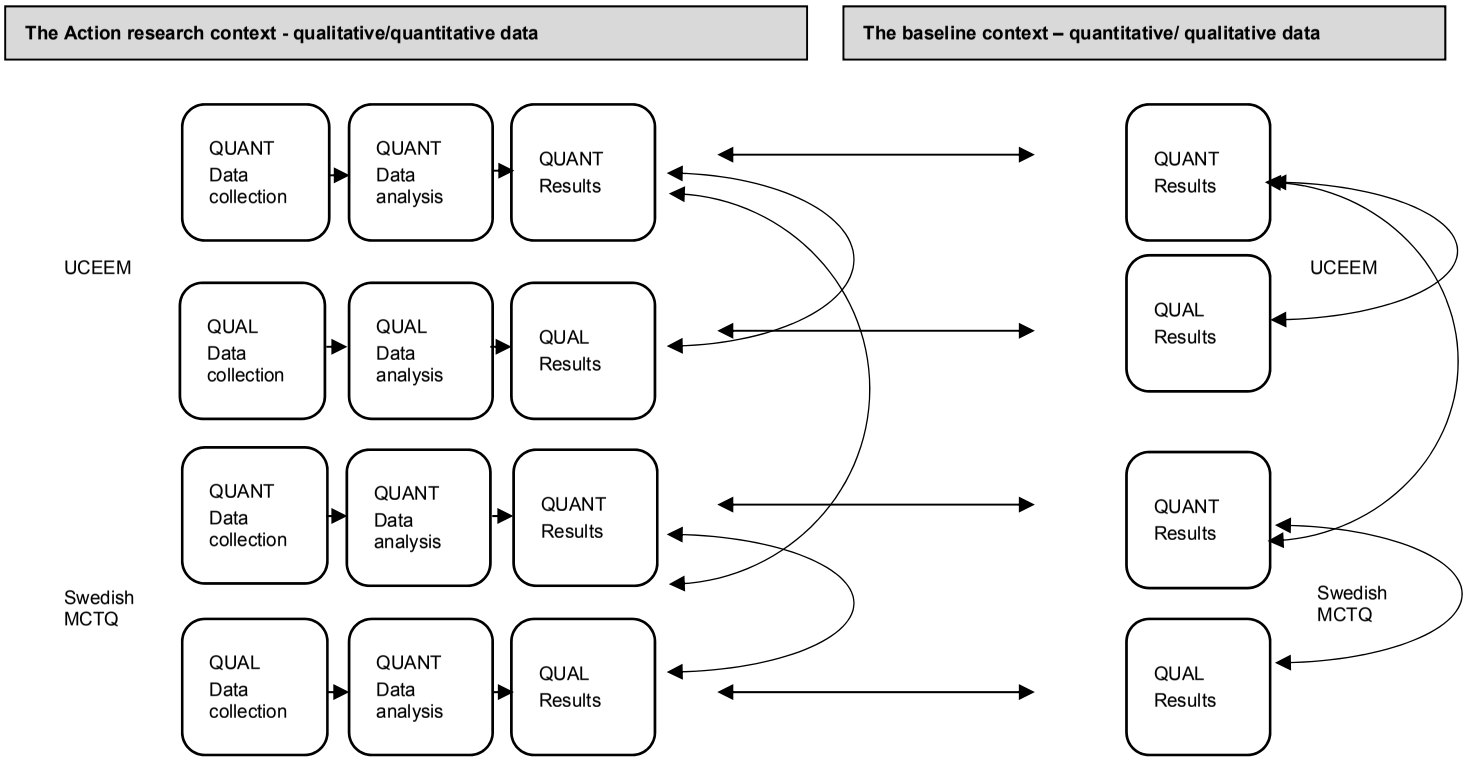


Figure 5.
Visual diagram of the triangulation design applied in Stage Two of the development and validation process of the UCEEM and the Swedish version of the MCTQ. The arrows illustrate the merging and comparisons of the results from analyses of different types of data.

Summary of the procedures of the action research

Cycle 1

The initial planning stage (A) focused on exploring the literature to provide a rationale for the FD model and inform design decisions. Directed (deductive) content analysis was applied, and critical features related to social practice and/or socio-cultural frameworks were identified (Hsieh and Shannon 2005). Based on these features, I formulated five interrelated guiding principles for a workplace-situated FD approach. An action plan was formed that included strategies for how to engage participants, location, scope and type of activities, etc. The participants worked together with a focus on a) the mapping of current and desired states of supervision practice in their workplace environment (i.e. the student rotation in which they supervised), and b) establishing joint goals and deciding on actions to improve practice. The participants carried out actions and evaluated the possible impact on practice and the value of their actions for the students. Pre- and post-'learning-project' interviews were conducted with the participants.. The findings informed the subsequent cycle procedures.

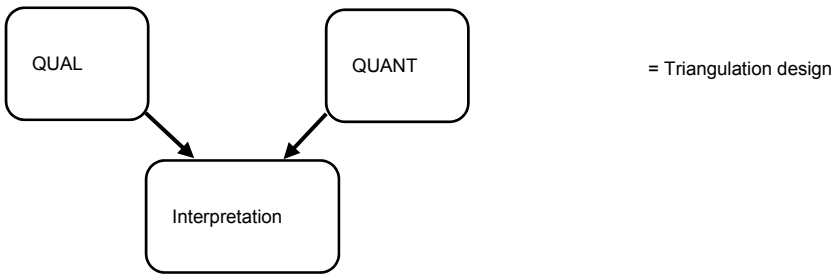
Cycle 2

In a second cycle, all physician staff at two different departments, including academic staff members and clinical department managers, participated in faculty development activities in flexible small groups and whole group meetings based on the same principles. Students were directly involved in activities and contributed systematic feedback, which was collected regularly via the questionnaires (the UCEEM and the MCTQ). Administrators were involved in the planning of activities and distribution of questionnaires. Several methods were used to collect data from various sources.

Paper IV: A triangulation mixed methods study design

The aim of Paper IV was to further investigate the construct validity of interpretations of scores from the UCEEM and from a translated, Swedish version of the MCTQ by examining evidence based on a) response process, b) internal structure, c) scores' relation to other variables, and d) consequences of use. This approach advocates the use of construct validity as a unitary concept; all validity should be conceptualized under a single overarching framework, i.e. construct validity (AERA 1999, 2014; Beckman et al. 2005; Cook & Beckman 2006; Higgins & Straub 2006). The validity categories have common characteristics that are not mutually exclusive. Reliability is considered evidence of internal structure (Cook & Beckman, 2006). The intention was also to investigate how different stakeholders perceive the usability of the information gathered with the two instruments. After the translation process and feedback from students on items, the quantitative phase of validating scores from the MCTQ followed the same

procedures as the development of the UCEEM described in the visual diagram (Figure 4). The Swedish version was administrated to the students in 'the baseline context' (Paper II). However, both stages of the development and validation process of the Swedish version of the MCTQ are described in Paper IV. Both instruments were implemented in the second cycle of the action research study (Paper III), which enabled the collection of quantitative and qualitative data to conduct a mixed methods study. The study design applied for this purpose was a triangulation mixed methods design (Creswell and Plano 2011).



A triangulation mixed methods design involves comparing quantitative, numeric data with qualitative data in different ways (ibid). The timing of the data analyses was both sequential and concurrent; for instance, to examine relations to other variables, qualitative and quantitative data was analysed in sequence and then connected. In other stages, quantitative and qualitative data was analysed at the same time and merged to address the research questions; for instance, quantitative and qualitative data describing aspects of response process was analysed at the same time and merged to examine responses. Moreover, the design was a "fixed" mixed methods design in that the use of quantitative and qualitative methods was predetermined and planned at the start of the research process. However, it was emergent due to issues that developed during the research process, and procedures were implemented according to the patterns of interplay with participants and the contextual conditions. Figure 5 is a visual diagram that illustrates the triangulation design and offers an overview of comparisons between datasets and types of data in Paper IV.

Overview of Data-Collection and Participants

Data collection methods

Qualitative data was collected in the thesis studies in conversations with focus groups and in individual (in-depth) interviews (Papers I-IV). The questionnaires (the UCEEM and the MCTQ) were used to collect qualitative and quantitative data (Papers II-IV). In Paper III, participants provided text documentations of action plans, web-based presentations, letters, power-point presentations and other material describing their models to colleagues and students in the workplace as specifically-made student evaluations. I kept a research diary in which I monitored and reflected on methodological issues and the actions and thinking of the researcher and facilitator during the research process (Paper III).

Data-triangulation and selection of participants

In general, the intention was to select participants who could best inform the research questions and enhance understanding of the topic under study in each paper – i.e. a purposeful selection of participants to achieve representativeness (Kitto et al. 2008; Sargeant 2012). Thus, I sent invitations to individuals who were registered as teachers on university mailing lists to participate in focus groups (Paper I) and to faculty members responsible for student placements. We also used the snowball technique to reach clinical supervisors not employed by the University. The same sampling techniques were used in Paper III. To reach participants from various hospital settings, we sent invitations to all identifiable clinical department managers and all faculty members responsible for clinical rotations at a wide range of clinical departments and hospital settings (the general context). Naturally, a willingness to participate influenced the selection, since it is reasonable to assume that those participating were interested in supervision, and the perspectives of others who were less interested were represented to a lesser degree. In other respects however, the final participants were representative of the population. The final groups of participants included both specialists and residents-in-training, men and women of various age groups and diverse cultural backgrounds, and with varying experience of medical practice and supervision (Papers I and III).

Paper I

In Paper I, four focus groups with clinical supervisors (n=21) were held to facilitate an exchange of ideas and enable the contrasting of different ways of conceptualizing learning and supervision in flexible dialogue. The semi-structured conversations allowed for a responsiveness to what the participants are saying in the moment and

discussions to evolve, but with a clear overall structure. The interview guide questions are described in Paper I.

Cycles of inductive content analysis resulted in a conceptual map of physicians' conceptions of student learning and supervision (Paper I). The findings contributed information that guided the design and implementation of the faculty development model. However, while the focus group method generated rich and thick data (rich relating to quality, and thick relating to quantity) (Fuchs and Lawrence 2015), we identified a need for more detailed everyday tacit descriptions of how physicians contribute to student learning as clinical supervisors in various situations and contexts. Moreover, we wished to collect and integrate additional data on socio-emotional aspects of engaging in student learning. Thus, we decided to use the opportunity provided to collect the data in the individual opening interviews with participants (N= 34) in the first cycle of action research (Paper III).

The questions in these opening interviews were semi-structured and condensed due to the limited amount of time (30-60 minutes) that the busy clinician could provide. The participants were prepared – all participants provided a written reflection on the issue in focus which was used as a starting point for the interviews. Targeted questions relating to the preliminary themes derived from the focus group data were avoided and the interviews were guided by the same questions and probes used in the focus groups, with additional probes to generate more detailed and additional data.

The opening interviews provided tacit descriptions of how the participants experienced their roles as clinical supervisors in various situations and contexts and emotions related to student learning and supervision.

Paper II

In the first stage of instrument development (Paper II), the population of interest were medical students (in rotations in hospitals settings) and end-users. Participants were purposefully selected from the 'the base-line context' (Figure 2). The baseline context is a broad range of different clinical rotations, various clinical departments, and in- and outpatient clinics at several different teaching hospitals. The students who participated in focus groups and interviews were students at various stages in their clinical education. Since there was an extensive body of work extant in the Medical Education literature on medical student perceptions of learning in clinical, secondary care environments (see "Background and Rationale") we decided *not* to increase the number of focus groups or individual interviews with students. Instead, based on the same reasoning as in Paper I, we decided to triangulate data from different data sources, yielded with various methods. Thus, we decided to invite and include different categories of potential end-users, who contributed perceptions on clinical learning climates at various stages of the instrument development that informed the target construct and reviewed item relevance based on their different roles in student education. An overview of

participants and methods is provided in Figure 2. The visual diagram illustrates the step-by-step procedures (Figure 4). In summary, the methods used and participants were:

- One focus groups with students (n=6)
- Individual interviews with key informants: three students and four physicians/clinical supervisors (n=7).
- The data from the four focus groups in Paper I (participants n=21) contributed the perspective of clinical supervisors and was incorporated.
- One focus group with three students, a clinical teacher and educational developer (n=5). The participants in this focus group also discussed and provided input on the items of the translated Swedish version of the MCTQ.
- Written feedback on item relevance and wording was provided from various stakeholders (n=15), educational developers (n=5), students (n=4), physicians (n=2), and residents-in-training (the latter also includes clinical teachers).
- Students in a pilot study (n=77) pre-tested items. The Swedish version of the MCTQ was tested in the same pilot study. According to Streiner and Norman (2008), a sample of more than 50 students is adequate for pre-testing the number of items in question.
- Both instruments were finally implemented in a first setting (the baseline context). The first subset of the population were all of the medical students in semesters 6–10 (n=463). According to Field (2000 p. 443), this sample size is adequate for exploratory analysis to be useful (at least 10-15 subjects per variable). The students in the pilot group were not part of this sample, as recommend by Streiner and Norman (2008).

The systematic process of development of the instrument, especially the procedures for development of the conceptual model, followed the recommendations of the Patient-Reported Outcome Measurement Information System (the PROMIS) standards (NIH 2009; 2012). The procedures are summarized in Figure 4. Prior to publication, the English translation of items was discussed with native English speakers, health professionals and researchers for translatability and cultural relevance.

Method to obtain responses – A Likert scale.

A five-point Likert rating scale ranging from ‘‘fully disagree’’ to ‘‘fully agree’’ with a middle position labelled “neutral” was designed based on the following recommendations by Streiner and Norman (2008 p. 44- 54):

- Likert scales offer consistency (reduces burden on respondents).

- A middle point should reflect a middle amount of the attribute, not an inability to answer the question.
- Avoid negatively worded items and reversing the order of responses at random (from low to high from high to low, which may yield responses that are confusing and difficult to interpret).
- The five-point scale was based on studies suggesting a minimum of 5-7 responses. Reliability drops when the categories are fewer, however, as many as 10 steps have been found less easy to use, requiring more time to fill in, and there is evidence that people are unable to discriminate much beyond 7 categories. Reducing the number of responses to five does not affect the scale adversely (Streiner and Norman 2008 p.52).

Paper III

Cycle 1

In the first cycle, seven groups of physicians (n= 34) from four clinical departments participated in individual, opening interviews and pre-learning project interviews (n=26). The purpose of the individual interviews was – in addition to the purpose mentioned in connection to Paper I – to explore the ways in which individual and environmental factors may influence the learning process, experiences of the learning process, etc. The data collected in opening and final interviews was triangulated. Two follow-up interviews were conducted 2 years after the project; the purpose of these was to examine whether supervision models initiated by participants were still in practice, and if so, to gather perceptions on how and why.

Papers III and IV

Cycle II

In the second cycle, 'the action-research context' included two clinical rotations (4- and 5-weeks-long) at two clinical departments at the same teaching hospital. Faculty, clinical department managers, a majority of physician staff and some students participated in all small- and large-group faculty development activities. Individual interviews with different stakeholders were conducted in order to obtain detailed narratives and a diversity of perceptions of the student learning environment, as well as of the process of developing supervision practice and the FD activities. Another purpose was to gain views on the usability of the instruments as feedback tools (Paper IV). The supervisors interviewed were deliberately selected to ensure a) a mix of residents and specialists, b) supervisors who had participated in a majority of the FD-activities, and c) a mix of supervisors. In summary, the methods used and participants were:

Individual interviews were conducted at different points in time between 2012 and 2014 with

- three faculty members (n=9),
- two clinical department managers (n=4),
- clinical supervisors (n= 19) and students (n=3).
- The questionnaires were administered to all students placed at the departments in the 'action research context' at different points in time between 2013-2015 (no of completed UCEEM/MCTQ =145+293). The students who participated in interviews and focus groups (Papers III and IV) were selected from the same sample of students.
- One focus group with students was conducted; it was aimed at facilitating an exchange of experiences and potentially contrasting perceptions of the learning environment and use of the questionnaires from students who had either received a larger or a smaller number of individual feedback forms (MCTQ).

Data analyses

Overview of qualitative data analyses

All qualitative data sets were audio-recorded and transcribed verbatim. In the first study, I used the Open Code 3.6 software for organizing qualitative data (Sahlén 2009). I later abandoned the software and worked with paper, pens and storyboards to gain an overview of the data and perform the coding procedures. At the time I did not have access to other appropriate software for analysing data. As mentioned previously, qualitative content analysis was applied to analyse all of the qualitative data collected in the thesis studies. The systematic, step-by-step abstraction process of inductive or inductive-deductive analyses (conventional-directed) was applied with the purpose of building up conceptual maps and describing patterns of thematic relationships (Elo and Kyngäs 2008; Hsieh and Shannon 2005).

The specific steps used in the studies are described in detail in Paper II. However, the flowchart below provides an overview of the specific steps and terminology used, inspired by a synthesis of the collected work of Elo and Kyngäs (2008), Graneheim and Lundman (2004; 2017), and Hsieh and Shannon (2005). I use the term 'pattern code' and other terms (see flowchart) that describe the additional tactics for generating patterns of meaning used by Miles and Huberman (2014). In this thesis, the term pattern code is used as a proxy for the term 'category' used by Graneheim and Lundman (2008) or the term 'concept' suggested as an alternative (Elo and Kyngäs 2008).This choice was made to underline the attempt to identify patterns of interrelated meanings rather than narrowing down the meanings to a few mutually exclusive categories, and

to avoid the terminological confusion that could be a consequence of using the term concept at one abstract level when investigating and mapping 'conceptions'.

The inductive process

In general, the other researchers from the research team and I performed an open coding of transcripts to make sense of the whole. Alternatively, several researchers independently carried out initial condensation and pattern coding (the details are described in each of the studies). This was followed by a process of iterative cycles of inductive and deductive (directed) content analysis, which I mainly applied myself (Hsieh and Shannon 2005). The participants' own words and expressions were used in the first phases of organizing and reorganizing the material. In the following steps, members of the group and I compared and revised the tentative pattern coding. We did not always reach consensus in the initial stage, and the process of resolving differences was usually based on new examples of coding and abstraction processes I had made until we had reached a common understanding. The research diary was helpful for documenting and monitoring decision points.

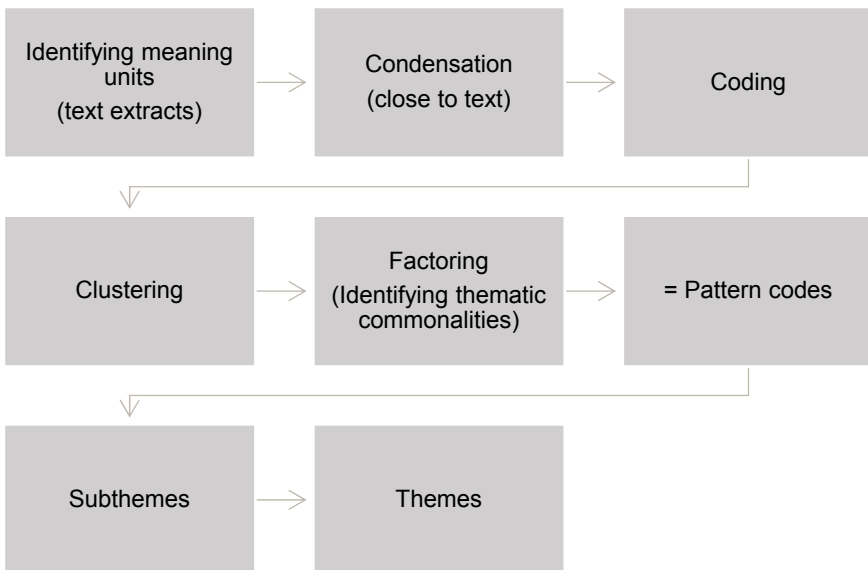


Figure 6.
The inductive abstraction process. The figure illustrates the different steps of the pattern coding of qualitative data. The codes are labels that summarize the condensated segments of data. The codes are reflective of more than one key thought and can be clustered in different combinations. The pattern codes, emerging from clustering and factoring, are explanatory/inferential codes showing regularities and patterns in the data. The pattern codes are interrelated and form circular, rather than linear, relationships (Miles and Huberman 2014). The sub-themes are labels for an additional abstraction level and interpretations of the relationships between pattern codes. The themes are the result of a clustering of subthemes.

The deductive process

The deductive process started with the development of a matrix of analysis, based on the preliminary interpretations from analysis of previous data sets. I then coded the text for correspondence with or exemplification of the matrix. Text that did not fit the matrix was coded and clustered separately (Elo and Kyngäs 2008). Additional patterns based on the principles of inductive content analysis emerged, and new pattern codes and subthemes were constructed. The specific procedures of triangulating the data are described in each study, and complementary details are provided in the section "Study Designs".

Overview of quantitative data analyses

Classical Test Theory (CTT) and statistical analyses

A psychometric evaluation was performed to determine the construct validity of scores based on the previously described standards regarding construct validity as a unitary construct (AERA 1999, 2014).

While there are a range of applicable theoretical frameworks and methods for conducting psychometric evaluations and statistical analyses (Item Response Theory, Rasch Model or Generalizability Theory), I used a Classical Test Theory (CTT) approach to perform statistical analyses of e.g. data quality, performance of items, tests of internal consistency (interrelatedness of a sample of items), etc. (Hobart & Cano 2009). The software used for performing the analyses was PAWS Statistics for Windows Version 18, and in the second stage Version 20 was used (SPSS Inc. IBM, Chicago, IL).

CTT is a theory of measurement that defines theoretical constructs as expected values of a test score. CTT is based on the assumption that the score a person obtains (observable score) on a test (on a scale) is the sum of a true (error-free) score and an error score (Streiner and Norman 2008). CTT is concerned with the relations between these three variables, since these relationships state something about the quality of the scale scores.

Testing dimensionality – factor analysis

To test for dimensionality of the scales, I conducted Exploratory Factor Analysis (EFA). The procedure used was principal axis factoring, and two different rotations were applied at the two stages of the validation process. Prior to factor analyses, I tested for correlations between items with the total score (corrected item total correlation) and items with lower correlations. Prior to the factor analyses, I performed the Kaiser–Meyer–Olkin test and Bartlett's test of sphericity to confirm that the sample was adequate and that factor analysis was useful. In the first stages of the development of

the learning climate questionnaire, a conceptual model was constructed that consisted of 5 different dimensions of the learning climate and was based on theory and empirical data. Confirmatory Factor Analysis (CFA) is the recommended statistical approach for testing whether the data fit a hypothesized measurement model based on theory and empirical work (Fox 2010). However, the choice fell on Exploratory Factor Analysis (EFA) as a method for determining factor structure. In hindsight, CFA might have been a better choice for verifying the dimensionality of the a priori model. However, both methods are frequently used to understand the shared variance of measured variables that is assumed to be attributable to a factor or latent construct (ibid). EFA allows all of the items to load freely and without constraints, and thus the possibility of considering alternative structures (Fabrigar et al. 1999). Once the underlying structure has been identified, it is possible to make predictions about the factor structure and use CFA to test these predictions on a sample of students with similar characteristics (ibid). We employed Principle Axis Factoring (PAF) and not Principal Components (PC), since PAF is recommended for exploring the underlying factors of a theoretical construct (Fabrigar et al. (1999 p. 276). Two types of rotations were used: in the first stage, I applied orthogonal rotations (Varimax rotations). However, the literature suggests that this rotation should be applied when one wishes to identify factors that are uncorrelated with each other. Since we expected the factors that emerged from rotations to be correlated with each other, I applied oblique rotations (Promax) in the second stage of the validation process. This is a rotation that produces factors whose correlation with each other can be expected, and it is used when data is expected to depart from normality of distribution, which was the case in Paper IV (ibid). A combination of psychometric and interpretable criteria recommended by Schönrock-Adema et al. (2009) was applied for factor analysis. The criteria and procedures are described in detail in Paper II.

Factor correlations

To study internal relationships between the factors in the first stage of validation process (Paper II) I used Pearson's correlation coefficient. In the second stage (Paper IV), I used Spearman's rank order correlation instead, since Spearman's is recommended for evaluating relationships involving ordinal variables, which are the variables in question in these studies. Spearman rank-order correlation evaluates associations between variables rather than the linear relationship between two continuous variables, which is the case of Pearson product moment correlation. Spearman's was also used for evaluating relationships between scale scores of the two instruments (as a means to examine construct validity based on scores' relations to other variables).

Estimates of reliability

Estimates of reliability is an important procedure, and these reliability-estimates can be obtained in various ways. In the thesis studies, we used Cronbach's alpha, a widely-used

measure to estimate internal consistency. Cronbach's alpha was used in comparison to other estimates (e.g. parallel tests estimates) since it only requires one test and thus is easier to use. Standards for what makes a "good" or "excellent" alpha differ in the literature, and reports of acceptable to good alpha values usually range from 0.70 to 0.95. In the thesis studies, I followed the recommendations of Tavakol and Dennick (2011) and considered alpha levels below 0.70 conspicuously low (due to a low number of items, poor inter-relatedness between items), and levels above 0.90 as conspicuously high, (suggesting that some items might be redundant as they are testing the same question, but in a different shape). It is important to note that alpha increases with the number of items on a scale. My intention was to develop a shorter, multidimensional scale, which means that the shorter scales could be expected to have lower reliability estimates as measured with alpha.

Other item and scaling analyses

I tested for skewness and kurtosis (i.e. whether assumptions regarding approximate normality of the distribution of responses for each item and scale were satisfied). Other tests performed were analysis of item response rates, and floor and ceiling effects were studied both in the subscales and for the instrument as a whole. (Hobart & Cano 2009).

Procedures to ensure data quality and trustworthiness

Each of the appended studies includes detailed descriptions of the procedures applied to assert the quality and authenticity of the data. I have also accounted for the step-by-step systematic abstraction and interpretation process in the above section. Paper I contains a detailed account of the analysis process, exemplified with extracts from the data and coding schemes. This section will give an account of the more general strategies employed to promote the quality and trustworthiness of the research.

Triangulation

Triangulation was applied at various levels and in various ways. Data source triangulation was enabled by collecting and merging data from various groups of participants to give voice to different perspectives and thereby a comprehensive view on the topics being studied (Sargeant 2012). Data was collected from different sources (e.g. text documents, group discussions, narratives) and using various methods (e.g. focus groups, individual interviews, questionnaires). The analysis of each data set was done to a large extent in a first stage, then merged and triangulated with analysis of other data sets. All oral data was audio-recorded and transcribed verbatim, with the exception of the individual interviews in Paper II, where interviews were based on written comments from participants and notes were taken when the comments were

being discussed. We consistently applied researcher triangulation (Sargeant 2012; Herr and Anderson 2005). Each members of the research group made an independent coding of transcripts (an open coding to make sense of the whole, or a detailed coding). This was followed by a process of iterative cycles of inductive and deductive content analysis applied by researcher PS. The members of the research group then reviewed interpretations, which were revised and reviewed in iterative cycles; the aim was not necessarily to achieve absolute consensus, but to address selective interpretations or 'blind spots' (Herr and Anderson 2005; Mann and MacLeod 2015). The members of the research group, their roles, and relationship to the studied setting are accounted for in Papers I, III and IV. I take the opportunity here to specifically mention the contributions of researchers Ulf Jakobsson and Christina Gummesson, who in Papers II and IV respectively contributed with expertise on psychometrical measurement scales (together with Gudrun Edgren) and supervised interpretations of quantitative analyses.

Respondent verification

Respondent verification (Kitto et al. 2008) or member 'checking' (Angen 2000), i.e. presenting the researchers' findings to participants to determine whether they are coherent with participants' viewpoints, is a common criterion for external validity. This criterion for validity has been criticized, since participants may be ambivalent, and their perceptions may change over time or contradict one another; thus, member checkings become a process of increasing data rather than verifying it (Angen 2000; Mercer 2005). However, our findings were presented to all participants in Paper I and in Cycle 1 in Paper III and discussed with academic staff at the two departments in Cycle Two. The latter generated a number of additional perspectives on interpretations, but overall there were few comments on the analysis from participants to whom the results were presented. On the other hand, a more elaborate strategy and platform to discuss interpretations with participants would have presumably contributed valuable insights into their perspectives. This is an activity that could have been prioritized more highly, and at the same time it is an issue of participants' time and motivations, and of logistics.

Transparency and critical reflexivity

While my values and philosophical assumptions as an insider researcher have been addressed in the previous section, Paper III also includes critical reflections on my position as insider (action) researcher and the potential influence of my relationships with participants on the quality and trustworthiness of the data. As an educational developer, I had collaborated with health professionals and physicians for several years on the design and delivery of courses for undergraduate and post-graduate clinical supervision in the south of Sweden, and as such I was known to some of the participants prior to the studies. However, with the exception of a previous and ongoing collaboration with some of the students and one participant in Paper III, I was not in any working relationship with any of the participants selected. My position in the social

hierarchy at the workplace lacked formal power. My position in the social status hierarchy among academics (as a PhD student) did not wield any power with participants that could positively or negatively influence their careers or positions; nor were participants a socially vulnerable group. I therefore believe that the influence of the power relations between myself and participants on the research process was limited. This did not exclude the risk of the risk of unspoken loyalties, or of participants being pragmatic in their views due to present or future professional relationships. Moreover, we developed a relationship over time that could presumably influence what the participants were willing to share with and say to me. One way of addressing this was to involve other researchers – temporary or more permanent members (unknown to participants) of the research groups – to co-chair focus group sessions or conduct interviews (e.g. post-project interviews in Paper II, Cycle 1). Some data was also collected in writing to enable participants to more freely express their experiences of the learning process and facilitator strategies.

Democratic and catalytic validity

In addition to 'traditional' qualitative research criteria to assert quality, we used complementary measures proposed for the specifics of insider (action) research, the concepts of democratic and catalytic validity (Herr and Anderson, 2005: Mann and MacLeod 2015). Democratic validity refers to whether multiple perspectives and interests have been taken into account. Valuing professional or vernacular knowledge and the benefits of varying degrees of and modes of collaboration are closely related to democratic validity. Catalytic validity refers to the re-orientation and change of focus of the researching practitioners' view of reality (ibid). Specific concerns related to ethical dilemmas and democratic and catalytic validity are discussed in Paper III and summarized in the "Discussion" chapter. The mode of collaboration between myself as an insider researcher and the participants in Paper III can be described as cooperative and characterized by co-learning (Herr and Anderson 2005). I investigated my own FD practice and collaborated with the target groups in the workplace to determine priorities and share new understandings while the research team and I remained responsible for gathering data, interpreting findings and writing the manuscripts.

Ethical aspects

In accordance with the Ethical Review of Research Involving Humans, sections 4a and 4b of the Statute 2003:615, the Swedish law does not require ethics committee approval for the kind of studies conducted here (The Swedish Research Council 2003). Nonetheless, I applied for an advisory statement in which I described the overall plan for the research project, the potential participants (including students), and the possibility of researcher observations in settings were patients were present. The ethical vetting board did not consider the study in need of ethical approval under Swedish law (Advisory statement received Dec. 7, 2011).

Information and consent

Throughout the study, participants were informed of the study goals and procedures, confidentiality of responses, and that participation in groups, interviews and other research activities was voluntary. This information was provided in writing through e-mails and on the internet, or orally in meetings by researcher PS or academic staff members and managers in department meetings. Steps were taken to avoid possible adverse effects. One dilemma was the distribution of the MCTQ in Paper III; the students independently determined the three supervisors to whom they wished to give anonymous or non-anonymous feedback. The decontextualized anonymous feedback and random system for choosing supervisors (the possibility that those "in between good and bad" never received feedback) raised ethical questions. Students and supervisors emphasized that the usability of the feedback would increase if logistics were improved for distributing the feedback more equally among staff. Although written and oral information about the distribution and possibility of individual feedback had been provided, some supervisors expressed surprise regarding the feedback. There were positive, but also adverse and unintended consequences as a result of the feedback. As a temporary solution, I gathered the feedback forms and asked participants to actively respond if they wished to receive their feedback, but this was seen as a logistically more complex operation, and the final solution was to enclose feedback in an envelope that a supervisor could choose to keep and open, or not. With the exception of myself and potentially also members of the research team, only the clinical supervisors had access to their individual feedback (MCTQ forms). All data was saved on a secure server, and confidentiality was maintained within the research team. Participants in interviews, audio-recorded group discussions and focus groups provided written informed consent.

In the next chapter, I summarize and synthesize the key findings of this thesis.

6. Summary and Synthesis of Findings

Key finding 1. Conceptions of learning are mediated by context

Learning as Membership, Partnership and Ownership

Three overarching themes emerged from the interpretation process of the data collected in Paper I. They represent the different ways the participating physicians conceptualized students' workplace learning: *Learning as membership, Learning as partnership,* and *Learning as ownership*. Each of these overarching themes consisted of three sub-themes that describe differences in conceptions of a) the nature of the workplace learning process, b) the ways supervisors contribute to the students' learning, and c) how contextual factors and agency factors interact and thus influence student learning in different ways. Pattern codes describe the detailed characteristics (thematic commonalities) of each way of conceptualizing learning (Paper I: Strand et al. 2015).

The learning as membership theme reflects an understanding of students' learning as an external process that arises when students interact with people and artefacts in the workplace environment. Inclusion and insider status provide access to the learning opportunities, intentional, structured and goal-oriented guidance, and pedagogy inherent in the workplace participatory practices. Membership shapes the content and structure of the student's learning, student identity (transformation from student to doctor), and the environment (participation influences the composition of the community).

The learning as partnership theme reflects an understanding of learning as a multidirectional process that arises from the sharing and collaborative meaning-making between student and clinical supervisor. Learning arises from close interaction and continuity of personal relationships, from thinking together as a small team (supervisor and student or group of students) within the workplace community of practice. The content and structure of the learning process are shaped by patient problems and the personal learning needs of supervisors and students.

The learning as ownership theme reflects an understanding of learning as an internal process arising from instructional relationships. The focus is on the student's personal learning experiences and on the acquisition of knowledge and skills. The content and structure of learning centres on procedures, skills training, and on putting theory into practice.

Supervision – a multifaceted practice

Conceptions of *how supervisors contribute to student learning* varied with a focus on external, internal or collective learning process and contextual factors. Supervision is a multifaceted practice, and clinical supervisors contribute to learning by acting as role-models, mediating student participation, providing affective support, engaging students in joint problem solving or teaching procedures. However, regardless of external or internal focus, supervision centres on the notion of "this is what we do here". Membership involves attention to norms and behaviours in the specific practices and in relation to others. Students are perceived as part of the workforce, although they are not employed. The purpose of students' learning in the clinical workplace is enculturation. Ownership, on the other hand, involves attention to the specific procedures and skills that students have to 'be familiar with' or master. Students do not contribute to work and teaching as a separate activity that competes with healthcare production. The purpose of student workplace learning is preparation for practice.

While the membership, ownership and partnership themes had distinct characteristics in terms of a focus on participation or acquisition, they were not mutually exclusive in terms of motivational, affective, interactional or situational aspects of the learning process. Nor were the differences between the membership and ownership themes (between a notion of learning as participation or as acquisition) interpreted as qualitative differences with regard to teaching and learning approaches. Both the membership and ownership themes described contributions of supervisors characterized by teacher/supervisor-centred and learner-centred behaviours. Instead, conceptions reflected 'qualitative' differences in learning and supervision related to differences in environmental conditions and individuals' readiness to engage. The themes reflected a tension between physicians' theories of the purpose and desired nature of student workplace learning, but also what was possible in the specific context.

A key finding was that conceptions of student learning and physicians' contributions as supervisors – regardless of internal or external focus – were characterized by an attention to contextual variables that defined the learning environment as enabling or constraining (Ellström Billett). The nature of student learning and supervision was moreover described as shaped by how supervisors and students chose to exercise agency to utilize affordances in a specific environment or challenge the constraints of a workplace *or* rotation structure.

For instance, participants described how the type of learning afforded by a workplace is related to the length of a placement, which in turn influences whether it is seen as a temporary source for knowledge acquisition or a site for teamwork-related, membership learning experiences. In a highly specialized medical facility, patients move quickly through the system and physicians/clinical supervisors constantly alternate between wards and outpatient clinics. Constraints are imposed by reciprocity between access to patients, teachers, space and resources (e.g. tools needed to practice skills), the number

of students on the rotation and their confidence and ability to apply their knowledge and skills. This environment might afford students to observe others at work, or to perform practical tasks at a low level of responsibility when space and time allow. Exercising agency as a clinical teacher might involve making the most of it by utilizing artefacts creatively, or arranging case-based discussions for students to practice clinical reasoning if patients are not available. In another environment (for instance, an internal medicine ward), learning as an external process is enabled by work structures and a readiness to include students in the work (regardless of placement length) and the student's engagement or resistance in participation. Students' resistance to performing routine work influences the invitational approach of individual supervisors and their readiness to exercise agency to include students. Partnership is enabled in learning environments characterized by a climate of trust. In learning cultures that marginalize or treat students as non-legitimate learners (non-workers), the engagement in supervision and sharing approaches call for the commitment and confidence of the supervisor (and students) to exercise agency, challenge the culture and pursue their sharing strategy.

Placing enabling learning environments at the centre of faculty development

A practice framework entails attention to the nature of the specific practice in which the faculty development activities were supposed to be located from the perspective of the target group, i.e. the supervising physicians. **The findings, which indicated a contextualized understanding of student learning, informed the decision to put the notion of an enabling clinical learning environment at the core of the faculty development approach in contrast to individual supervisors' learning.** This decision led to the idea of starting with a collaborative analysis of a current and desired state of the student learning environment and the development of an instrument for learning climate assessment that could be used to assist this analysis, functioning as a mirror material. Moreover, in line with the literature reviews on Continuing Professional Development (CPD) of teachers that focus on the potential of a learning system where all members of the learning process can benefit from the process (Dencombe and Armour 2004), the membership and partnership themes steered attention towards activities that enabled multidirectional learning and multidirectional feedback. Such a system includes the experts' development following collaborations with novices. The facet of multidirectional learning in physicians understanding of workplace learning informed the decision to involve students directly in the activities and to include MCTQ to enable feedback from students to individual supervisors and to include and involve students directly in the activities at certain points in time.

Key finding 2. A high degree of construct validity

The final result of the first stage of development and validation process of a learning climate assessment questionnaire was a 25-item instrument with a nested design of two overarching scales, each containing two sub-scales: *the Undergraduate Clinical Education Environment Measure (the UCEEM)* (see Appendix 1.) The dimensions corresponded closely to the themes in the a priori conceptual model.

Comparing student and physician perspectives on workplace learning

The data from student focus groups and interviews revealed some differences regarding the environmental variables that were in focus. Student themes contained a focus on certain aspects of an enabling environment that were discussed less among the interviewed physicians; for instance, only a few of the participating supervisor/physicians felt that they had knowledge of the expected learning outcomes of the rotation. Peer learning, interprofessional learning, diversity and equity aspects were in focus among students as elements of a favourable learning environment, but they were only mentioned briefly among supervisors. Both groups did bring up experiences of power structures influencing the invitational quality of a workplace, for instance, environments and learning cultures where gender stereotypes or professional status hierarchies were reinforced and difficult to challenge since they were considered normal in the particular workplace practice. We attempted to include these dimensions in the a priori climate instrument (UCEEM) themes. However, the theme ′student preparedness and engagement′ was not represented in the final model (Paper II Strand et al. 2013). While all end-users (including students) rated the items as highly relevant, no factor solution that included these variables met the psychometric criteria. The item "I get the opportunity to learn together with students from other professions here" was also excluded, since this item showed significant skewness and kurtosis, and a corrected item total correlation done prior to the factor analysis showed low correlations for this item ($r< 0.30$). The results indicated that opportunities to learn with students from other professions were very scarce. The decision to exclude the above items was based on the results from the psychometric assessment, despite the fact that users rated student preparedness and engagement and interprofessional learning as important aspects of an environment conducive to learning. The analysis of qualitative data in Paper IV also identified aspects of the learning environment emphasised by the students that were not represented in the existing scales. These described for instance: the level (low or high) of medical knowledge of the individual physician or the team; the importance of being exposed to many different patients and diagnoses; and the importance of effective pedagogical leadership at the department. Moreover, the students emphasized how meetings with engaged individual supervisors made a difference to otherwise adverse experiences of a learning climate.

The statistical analysis of scores from the two-item "equal treatment" scale showed ceiling effects in both settings (Paper II and Paper IV). Interpretations of the qualitative data collected in Paper IV suggested modifications of two items, i.e. the items in the equal treatments scale, to resolve some ambiguities and move toward wording that reflected respect of 'differences in individuals', 'equal opportunities', 'the managing of diversity', and/or 'inclusivity'. The results also point towards adding items to this two-item scale. Two items is not optimal for a scale, e.g. because the alpha value may be biased.

The factor analysis of the Swedish version of the MCTQ resulted in a two-factor solution (Paper IV) consistent with the intended underlying construct of the original Dutch instrument (Stalmeijer et al. 2010a). The detailed results of the psychometric analyses of scores from both instruments are provided in Papers II and IV.

A key finding was that the construct validity of scores was supported by evidence from several sources, among which was evidence based on internal structure (factor structure and internal consistency) and responses, including response process. Qualitative data (narratives describing the learning (climate, free text comments, other evaluations of the same environment at the same time) provided contextual information explaining scores' patterns. This source provided some evidence supporting construct validity of scores based on the scores' relations to other variables. Moreover, the qualitative data provided some insight into how the different stakeholders made sense of the information received from scores, and actions taken based on the information. The data provided no consequential evidence in the sense that we can demonstrate a positive impact of the assessments on student-learning environments or that the feedback helped shape sound supervisory practices. We identified consequences in line with the intended use, as such supporting construct validity, but also unintended, potentially adverse consequences. Usability was by large supported by students and department stakeholders. The feedback facilitated behaviours in line with the intended; they were easy to administer and inexpensive and the students felt a willingness to respond, appreciating for instance the opportunity to express their opinions about invitational aspects of the learning environment and supervision – aspects on which they did not usually comment in course or rotation evaluations. Faculty, clinical supervisors and managers made different inferences based on the feedback, however. The perceptions of the credibility and usability of the feedback varied. Students and supervisors commented on the one hand on the benefits of structured anonymous feedback protecting students from negative reactions, and on the other hand, on the drawbacks and ethical aspects of anonymous, decontextualized and single-direction feedback.

While we have described the findings related to the usability of the feedback instruments separately, these were part of other findings made when exploring the process of implementing faculty development in the clinical workplace practice described in the next section.

Four key findings are presented below. Firstly, I present the learning principles that guided the specific faculty development approach – the On-Site Model – informed by reviews of literature and the empirical findings from Papers I and II. Secondly, I present the key findings made through exploring the experiences of various stakeholders of the learning and implementation process, including my own, and of influencing individual and environmental variables.

Key finding 3. Five learning principles guiding an 'On-Site' Model

The literature review conducted in the initial planning phase of the action research study resulted in the identification of critical features related to social practice and/or socio-cultural frameworks in a number of teacher-, faculty- and work development models. Based on these features and the empirical findings from Papers I and II, we formulated five interrelated learning principles underpinning a workplace-situated FD approach, "The On-Site Model".

The principles place value on learning that is:

- workplace-situated,
- practice-based,
- collaborative & co-regulated, and
- student-focused; and on
- autonomy-supportive facilitator strategies (guided by appreciative inquiry).

The educational approaches reviewed, the related identified critical features and the essence of each principle are outlined in Paper III. An action plan was formed that included strategies for how to implement the faculty development model, including the instruments, and how to put the principles into practice. For instance, the plan included strategies for how to engage participants and with whom to collaborate, the location of activities (where, when, and in which practice), the scope of activities, communication strategies, and logistics (the previously described development of an instrument). An implication of our findings from the review and empirical data was also to stimulate the incorporation of other 'mirror material' involving student perspectives on the learning environment and supervision strategies. The plan was put into action. The cyclical inquiry and collection of data from various sources with different methods provided insight into why and how people elected to engage, the lived experiences of the principles in practice, the learning process, factors influencing the process, and the facilitation of learning guided by the principles. The findings are presented in detail in Paper III.

Key finding 4. Significant others motivated participation

The participants reported various types of reasons for participating in the faculty development activities, reflecting both intrinsic and extrinsic motivations.

A key finding was that an incentive for participating was when participation was prompted, modelled, or valued by significant others to whom the participants felt, or wished to feel, connected. Participants also described how the opportunity to share workplace- or discipline-specific supervision challenges with colleagues, to learn from each other, and/or act collectively to address student workplace learning conditions were incentives for participating in the study and workplace-situated activities. Faculty development was therefore acceptable among supervisors who reported that they were not driven by self-motivation to develop as supervisors. While some participants declared the above motivations for participating or intrinsic motivations such as an appreciation of learning, others made it clear that an important (extrinsic) reason for participating was the opportunity to obtain the certificate mandatory for residents-in-training.

Key finding 5. 'Togetherness' empowered participants to lead change

Individual variables, variables related to affordances latent in the immediate group environment, and workplace affordances influenced how participants elected to engage and the learning process (Figure 7) A detailed account of the interrelated influencing variables in each of the two cycles of implementation and research is provided in Paper III).

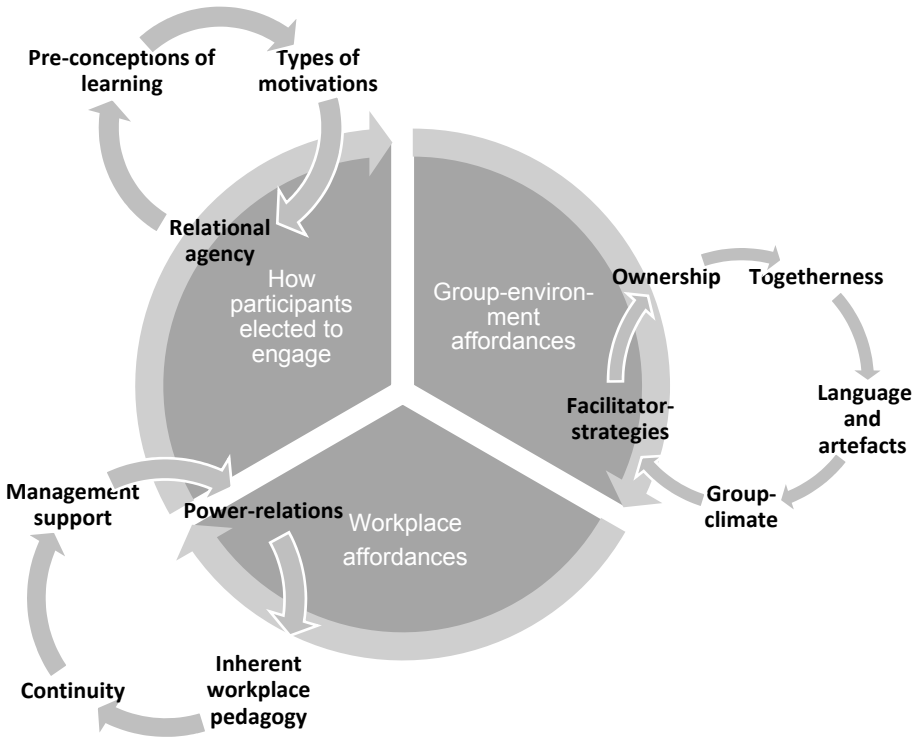


Figure 7.
The figure describes the three overarching themes: How participants elected to engage – Agency; Affordances latent in the immediate group environment; and Workplace affordances and the pattern codes emerging from the first cycle data, describing variables influencing the learning process. The influencing factors (pattern-codes) are circularly related within each overarching theme, and the overarching themes are in turn circularly interrelated.

The individual variables (sourced beyond and prior to a participant's participation) were for instance the type of motivation described above or preconceptions of learning and professional development activities. For instance, the learning principles of collaborative and co-regulated autonomy-supported approach contrasted with the professional learning culture to which many participants were accustomed. Different patterns emerged from the data that described an appreciation of the 'ownership' of the learning agenda and the autonomy on the one hand, and how the initial time-consuming runway of uncertainty created tension on the other. The process of becoming a functioning group contrasted with the efficient clinical work structures. Similarly to the previous findings of perceptions of student learning environments, we found how the different workplace environments were more or less conducive to the learning of clinical supervisors and development of undergraduate supervision practice. This was related to the readiness of the workplaces and managers to afford opportunities

for continuity of participation, the power structures, hidden curriculum or tensions between service and the learning needs of students and supervisors. For instance, while managers supported collective participation and student-oriented structural changes, planned learning had to be abandoned because of sudden calls to clinical work or an increase in waiting lists for certain types of patients, which influenced plans for students' active learning. The hidden curriculum influenced the feasibility of involving students in patient work, although department managers and colleagues formally approved of ideas and structures.

A key finding was that the development and exercise of relational agency was a significant variable influencing how successfully the practice with the group or issue was undertaken. The sharing of ideas, uncertainties, positive and negative feelings towards students and practice with colleagues facilitated feelings of togetherness and collective empowerment. This in turn led to increased confidence and commitment to challenge current practice and contributed to achieving the desired development of practice despite structural barriers and resistance among colleagues. An appreciation of autonomy and a sense of togetherness were related to the development of a capacity to work and think together – the development of relational agency.

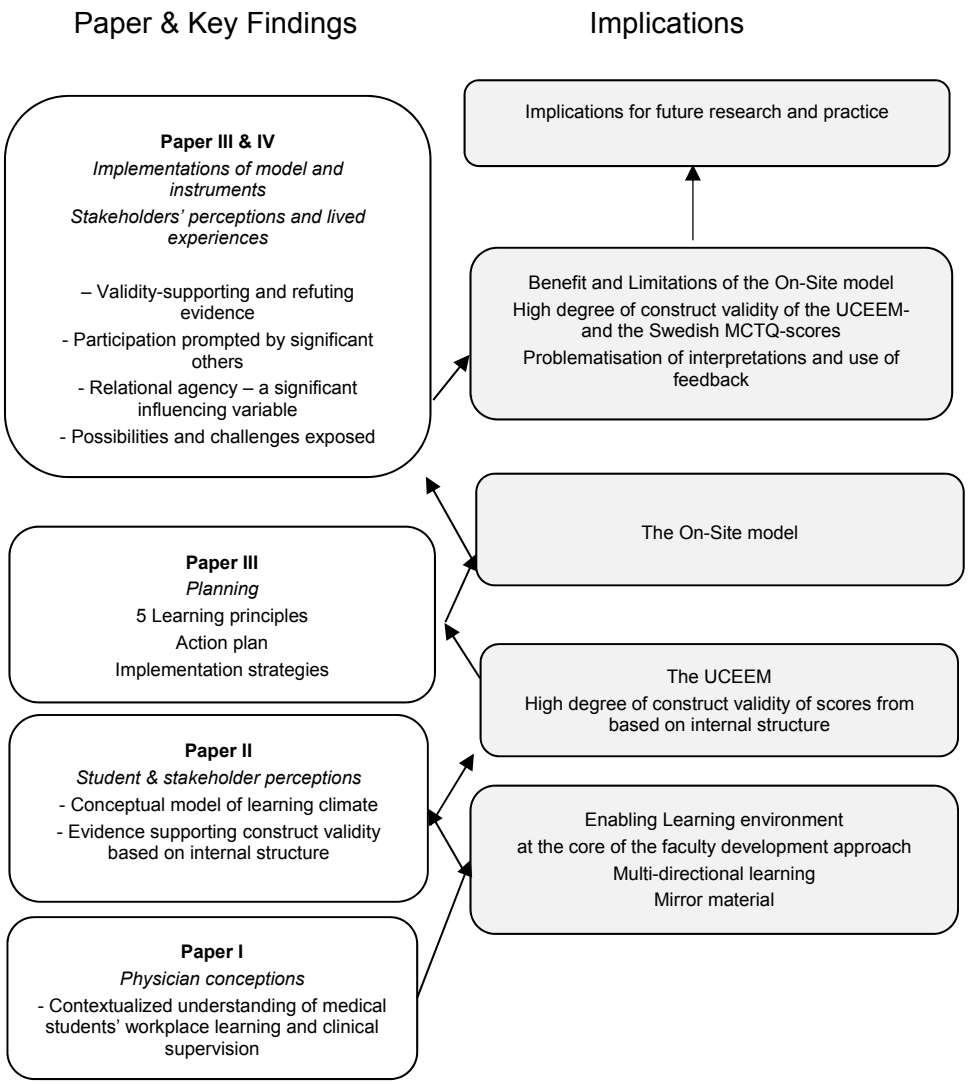
Key finding 6. Possibilities and challenges of the On-Site Model

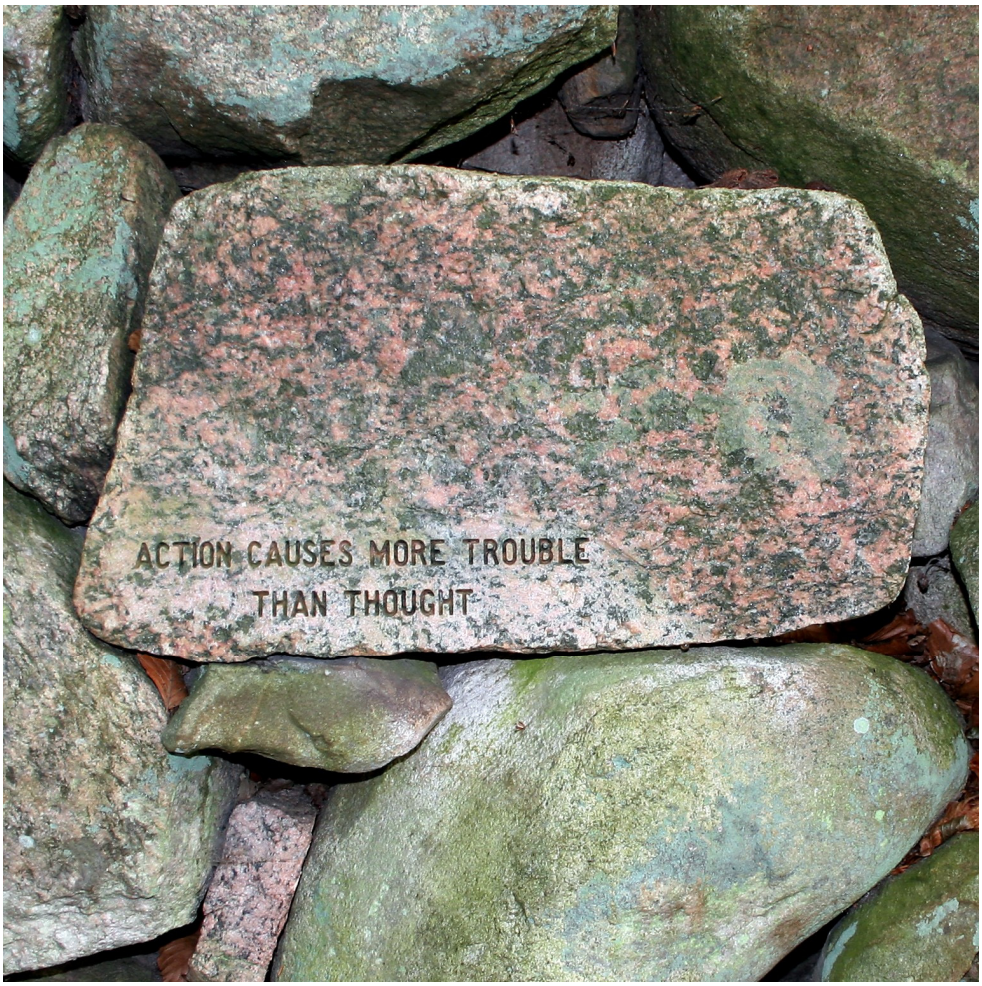
The patterns emerging from interpretations of the data exposed possibilities that were afforded and challenges that were encountered when the principles were put into practice. Data (e.g. quotations) and interpretations in terms of pattern codes illustrating the inferences drawn are provided in Paper III.

Table 2. A list of possibilities and challenges exposed when the learning principles of the 'On-Site' Model were put into practice.	
Flexibility and Vulnerability	- Variations in characteristics and scope of 'learning projects' indicated that the principles afforded **flexibility,** a responsiveness to differences in motivations and contextual conditions (such as disciplinary context, type of care, structure of work and student rotation). - At the same time, the findings indicated a **vulnerability** of the approach to a number of interrelated influencing factors (Figure 7). For instance, the learning process and the outcomes of their actions were influenced by: individuals' acceptance of the principles and its implications; by group climate (team-think or group-think-like behaviours); facilitator behaviours; a lack of continuity in relationships between participants and to students; the social hierarchies and value systems of the workplace practice. - **Hidden curriculum** factors beyond policies, management support and the removal of structural barriers influenced attempts to make changes to workplace practices.
Opportunity to work and think together – to enact relational agency	- The collaborative, co-regulated learning contributed to **a sense of togetherness**, perceived as beneficial for the development of supervision practice but also for challenging other aspects of work and power hierarchies (e.g. conditions for residents-in-training). - In the second action research cycle and setting, one pattern emerging from the data described that the collective participation of physician staff, faculty, managers and students was perceived as contributing to **a social cohesiveness** and providing **an opportunity to work in the same direction** beneficial to the organization.
Holistic, relational and systematic approach to learning and practice development	- The workplace-situated activities offered opportunities for the participants to reflect not only on cognitive responses to supervision situations, but also on **socio-emotional aspects** of supervision and related work issues. - **Tensions were surfaced** with regard to work structures and working relationships that influenced supervision. Collaborative activities contributed **scrutiny of several aspects of practice**, including medical practice and the working environment. - The strain of multi-directional learning and systematic feedback (enabled by student involvement in activities and questionnaires) contributed to **an attention to enabling and constraining aspects of the learning environment** for all physicians.
Not everyone on board – hidden curriculum	- Although the collective approach was by and large openly endorsed by the physician staff, a pattern that emerged from the data contrasted with the above, describing **a critical stance towards the involvement of "everyone"** in activities preparing for students. For instance, there were different perceptions among faculty members, supervisors and managers regarding whether all physicians actually were enthusiastic and "on board". - Patterns described a weariness of "togetherness" and an insufficient impact on practice (experiences of "**all bark no bite**").
Individual versus collective needs	**Positive consequences for individual supervisors** of the group activities and individual feedback, e.g. positive feelings from sharing practice were reported. "The fact that we know each other brings reflections to more advanced levels" and "the collective reflections among staff gave a deeper understanding of the processes at play when supervising" (extracts from 'Written Evaluations,' Paper III). Other positive consequences reported were increased self-confidence or desired changes in supervision behaviours. - A contrasting pattern described how individuals endorsed collective participation, but nonetheless felt **the need for a more individually challenging learning agenda,** such as skills training or a more structured, competence-based or quality improvement approach to changes in practice.
Re-orientation of the role of facilitator and educational developer	- Participants reported opportunities provided by my 'moving in' to the workplace as an educational developer; for instance, a **continuity of relationships between the educational developer and the people in the workplace**, logistical benefits, and a signal to the organization that students' clinical education was being taken seriously. - Difficulties involved were related to being an effective part in the physicians' open-ended collaborative, co-regulated learning process as a facilitator. For instance, it was challenging to provide enough structural support and at the same time refrain from making quick fixes, and to resist the role of service provider. - Important insights I made included **re-focusing from structural support to group process support** and from providing external scholarly input **to providing and co-producing mirror materials, internal input,** together with supervisors and students. A dilemma was the limited opportunities to sufficiently meet the individuals' needs for task complexity or encourage more scholarly approaches. Another challenge concerned the risk of being perceived as a 'tool' for the department managers or medical program, helping out to regulate staff to do things differently. I was also balancing between the role of external critical friend – emphasizing the empowerment, active involvement and responsibilities of the participants for developing practice – and **the risk of being a service provider**, providing convenient evaluation scores to stakeholder "customers".

Figure of Key Findings and Implications

In sum, the thesis findings suggest some implications of adopting a practice frame to faculty development among physicians supervising undergraduate medical students in hospital settings that will be discussed and problematized in the following chapter in relation to previous research in the field. Figure 8 summarizes the findings from the data sources and the implications in different steps.





Photograph by Jesper Magnusson, showing Wanås Wall by Jenny Holtzer (with permission from Jenny Holtzer)

7. Discussion

Three Major Contributions

This thesis makes three major contributions to the field of faculty development in medical education.

Firstly, the thesis shows that physicians' conceptions of student workplace learning and clinical supervision – regardless of internal or external focus – are characterized by an attention to how contextual variables shape the nature and quality of student learning. Learning and supervision is moreover understood as shaped by how supervisors and students choose to exercise agency to utilize affordances in a specific environment or challenge the constraints of a workplace practice or rotation structure.

Secondly, the thesis demonstrates that the scores yielded by the UCEEM and a Swedish version of the MCTQ demonstrate a high degree of construct validity based on several categories of evidence obtained in Swedish settings. The step-by-step validation process of the UCEEM, using mixed methods study designs, suggests that the questionnaire is a usable instrument for evaluating medical students' perceptions of a workplace learning environment. At the same time, the findings demonstrate both intended and unintended consequences of use, indicating that the weighting of evidence from various categories of evidence to determine degree of construct validity and usability, *and* turning scores into meaningful feedback, is complex.

Finally, drawing on the insights of practice theory and empirical findings, the thesis proposes a model for faculty development: the On-Site model. Five learning principles were identified on the basis of previous research that recognizes practice theory as an approach to professional learning and practice development and on the empirical findings. The thesis contributes an analysis of multiple stakeholders' experiences of the On-Site learning principles in a Swedish context and offers insights into the opportunities and limitations of practice-centred faculty development as a means to enhance students' learning experiences. Below I discuss each of these contributions.

A contextualized understanding of students' workplace learning

In line with previous studies that have explored university teachers' conceptions of the learning of students (Dahlgren et al. 2006), clinical teachers' conceptions of teaching, or the role of clinical teachers and clinical supervisors (Stenfors-Hayes et al. 2011), this thesis demonstrates that physicians' conceptions involve an understanding of learning as an internal process. However, the thesis adds new insights, showing that physicians also understand learning as an external process of participation (membership) and/or as a multidirectional process; the cognitive and meta-cognitive focus is mutually beneficial for students and supervisors (Strand et al. 2015). One reason may be that the theoretical framing enabled an attention to the interrelationship between individual supervisors' agency and the social circumstances within conceptions of learning (Billett 2006). Where previous analyses have focused mainly on qualitative differences in approaches to teaching and learning based on understandings of how students acquire knowledge and skills, the thesis demonstrates that physicians conceptualize clinical supervision as a multifaceted activity. The physicians in this study not only focus on how to contribute as clinical teachers, but also on the collective invitational approach and how to take a stand on environmental constraints to contribute to a transformation of the student as well as of the community. The thesis analysis takes the impact of the context on the participants' conceptions into consideration (Mason 2007). The findings suggest that the discourse, tools and artefacts of the clinical workplace practices in which participants supervise mediate the physicians' conceptions of learning and supervision.

Implications of physicians' conceptions for faculty development

These findings link well with the notion of a faculty development approach that departs from the potential of workplace learning and an enabling versus a constraining clinical learning environment, rather than generic teaching skills (Ellström et al. 2011; Boud and Rooney 2015); this was the approach taken in this thesis (Papers II-IV).

The study moreover shows that some physicians perceived supervision as an opportunity for mutual learning. This suggests the potential of a multi-directional element of the supervisory relationship in undergraduate medical education in contrast to a sole focus on how newcomers learn from experts (Lave and Wenger 1991). Community of practice theory has been criticized for oversimplifying the supervisory expert/novice relationship, but the potential for more experienced physicians to learn from collaborations with novices remains insufficiently studied (Azmitia 2000, in Duncombe and Armour 2004) compared to for instance peer-learning among students (Topping 2005).

In sum, one implication of the analysis of physicians' conceptions of learning and supervision produced in this thesis is to move conceptualizations of faculty

development for this group towards the notion of an embedded workplace learning system where the professional learning of students and supervising physicians are aligned and embedded.

Purpose and structure of student placements

These findings have implications related to the structure and purposes of student workplace learning. The workplace learning research (Chapter 4) and the body of work on medical students' various learning experiences in the clinical workplace (Chapter 2) highlight that workplace learning is not necessarily a good thing by nature. The clinical workplace learning environments can provide exceptionally rewarding learning, or mundane experiences that lead to little learning for undergraduate students or continuous learners, depending on whether they are enabling or constraining (Evans et al. 2011; Ellström 2008; Billett 2011).

Evans et al. (2011) argue that much theorizing and research on student workplace learning in higher education derives from the contexts of employment. A consequence is that medical school policies and practices focus on students' status, as not employed, and that the purpose of workplace learning is not work, but preparing students for work. Clinical learning practices are also based on the reasoning that students benefit from moving between contexts and settings since they need to be exposed to and learn about multiple specialties, and because it provides opportunities for students to be recruited to a number of disciplines. However, the purposes encompassed in this reasoning are contradictory to the insights provided by practice theory approaches to students learning. As Evans et al. point out (2011 p.155), today the contexts of employment extend far beyond paid employment. The findings from this thesis are in line with previous research suggesting that although students on rotation have only a partial presence in production and employment processes, the purpose of student placements should be the learning inherent in work (Zuka and Kilminster 2007). The findings presented here of how physicians think of students learning (and beyond an internal or external focus) emphasize the disadvantages of the system of multiple, short individual rotations, since this system hampers the potential of active, autonomy-conducive learning, continuity of relationships, membership and a collaborative and multidirectional learning system (Holmboe et al. 2011 (Hirsh et al. 2012; Greenhill and Poncelet 2013).

The UCEEM and the Swedish MCT

Weighting evidence from various sources

A growing body of literature on how to approach the construct validity of scores from assessment instruments suggests the use of mixed methods in the process (Cook et al. 2014; 2016). The mixed methods used in the validation process of both the UCEEM

and the Swedish version of the MCTQ offered a possibility to merge and interpret qualitative and quantitative data to assess the construct validity of scores. For instance, Paper IV provided validity-refuting evidence that suggested changes in wordings in the UCEEM equal treatment scale. As a result of this study and discussions with other users of the UCEEM in other countries (see below), this has led to a change in the wording of these items, and some additional items of the scale will be evaluated in future studies (see below).

Whilst previous literature on learning environment and clinical teaching assessments have reported only a limited subset of validity evidence, the thesis contributes empirical evidence that supports a high degree of construct validity of interpretation of scores from the two feedback instruments based on several categories of validity evidence. However, collecting validity evidence is an ongoing process. This study provides evidence collected from small samples of students and a narrowly defined context. Future research among larger student cohorts in diverse cultural settings is necessary in order to continue examining evidence from a variety of sources. Since the UCEEM was published in 2013, I have received reports of its use in various countries. For instance, the UCEEM has been used to measure medical students' perceptions of the learning environment in different rotations in a medical school in Aberdeen (Roberts et al. 2017). It has been translated to Portuguese and Farsi and used for instance in a Portuguese medical school in Covilhã (unpublished data; oral communication Juliana Sà); in a medical school in Manipal, Karnataka, India, and in a forthcoming study in a Malaysian context (Unpublished data; oral communication Vinod Pallath).

The thesis findings illustrate the difficulties of weighting evidence from various sources to establish the degree of construct validity of scores, which have been highlighted and discussed in the literature (Cook and Beckman 2006). The thesis clearly illustrates the need for contextual information when making inferences about the construct validity of scores. More research that uses other methods and validity frameworks is needed to better understand the discourses around the feedback and the many facets of intended and adverse consequences of use of the two feedback tools (Cook et al. 2016).

Implications of the instrument studies for faculty development

In conclusion, the thesis supports the usability of both instruments in faculty development as a means to trigger a student-focused analysis of clinical learning environments and supervision at collective and individual levels. However, the thesis demonstrates the need for additional mixed method studies to gain a deeper understanding of the discourse around assessments, how stakeholders interpret and respond to the information provided in scores, and open comments which will allow inferences to be made about the consequences of use and usability (Moss 1998; Lane 2013). Furthermore, the thesis illustrates the adverse consequences of decontextualized, anonymous feedback systems. The educational literature suggests that non-anonymous,

open feedback processes are crucial for enabling positive relationships and mutual learning opportunities between teacher/supervisor and learner (Hattie & Timperley 2007; Dudek et al. 2016). This is of consequence for a faculty development approach emphasizing multidirectional learning. However, the thesis findings imply that tensions related to e.g. power differentials could act as barriers to an open feedback system. These findings are in line with previous studies that suggest how culturally-situated tensions may impede individual and collective learning from open feedback. For instance, learners want feedback but fear disconfirming information and do not want to appear incompetent; thus, sharing feedback is complex in professional cultures where professionals are expected to display competence and certainty (Mann et al. 2011; Jin et al. 2012). A conclusion based on our findings is that the feedback tools can be used as structural support to encourage a step-by-step open dialogue and feedback system among learners.

The implications of implementing the On-Site model principles

The thesis findings from Paper III add to a growing corpus of work that suggests that professional learning activities located among teachers in the setting in which they work enable a focus on thinking, working, and acting together as a means to transform teaching and learning practice in the given context. (Edwards 2005; Timperley et al. 2007; Trowler and Cooper 2002; Boud and Brew 2013; Hodkinson and Hodkinson 2007). The contribution of this thesis to this body of research is a comprehensive empirical work that suggests implications for faculty development located in the context of physician practice where the core activity is healthcare, a hitherto insufficiently studied area.

Dimensions of location in the workplace practice

A practice approach to faculty development is defined by location, among other things. What does 'moving faculty development closer to everyday clinical practice' actually mean, and what are the implications? The dimensions of location considered in the thesis included spatial, temporal, social and discipline-specific dimensions (Boud and Brew 2013; Reich and Hager 2014). For instance, activities were located among small groups of physicians or all physician staff defined by their engagement in supervising students in a specific clinical rotation over a period of time. They were not necessarily an identified group that worked together daily, but they were 'peers' in the execution of of supervising students. Those involved were managers and students, participants with different social and the workplace. The spatial and social dimensions also involved planned, formal meetings, most often in located premises nearby or in the workplace. To enhance the continuity of participation and sharing across levels of experiences, the entire physician staff or groups with a mix of residents and more senior specialists with

more stable positions in a department/work-unit participated. Virtual space was utilized to exchange ideas to some extent, but visiting statistics were low (Paper III).

The purpose encompassed by the interpretations of location is derived from the relationship between professional learning and work and from research on how learning in and through work is influenced by the learning environment, which can be enabling or constraining (Ellström 2008; 2011, Billett 2011). In contrast to Boud and Brew (2013), who propose that the purpose of a practice approach for faculty development in the academic practice context is to embrace and work with all kinds of academic work, the studied approach in this thesis was underpinned by student-focused learning principles. This meant that students' learning experiences in the specific workplace environment were the focus of practice development. At the same time, the thesis findings indicate that a focus on students' workplace learning environment promoted focus on other aspects of practice and the work environment.

The aim of this thesis was not to identify a cause-and-effect relationship between the faculty development activities and student learning experiences, or between the actions of the action researcher and educational developer and the actions of others. Instead, the action research method and theoretical lens applied enabled an analysis that triangulated the perceptions and experiences of the learning and implementation processes of multiple stakeholders, including the educational developers. While action research studies of faculty development in medical education that include the perspective of the educational developer and facilitator do exist, they are scarce (Laksov Bolander; 2008 Clapham 2008). In this thesis, attention was directed at motivations for participating and specific elements of the clinical environment that enable or constrain workplace-situated collaborative learning. As such, the research offers insights into the opportunities and limitations of the approach as a means to enhance students' learning experiences.

Factors enabling or constraining On-Site learning in the clinical environment

The analysis provides some insights into the nature of the hospital work environments as a location for the kind of learning offered by the practice-centred faculty development model. The thesis suggests that variables such as the organizational logic of hospitals, continuity of relationships, infrastructures for sharing and collaborating, and management are among those variables that define the environment as constraining or enabling (Ellström 2011).

Logic of production versus logic of development

The type of learning inherent in the learning principles (collaborative; co-regulated; student-focused,) is by and large enabled or constrained by the organizational logic of the hospital (Ellström 2011). Applying the analytic framework of Ellström (2011), an interpretation of the organizational logic of hospitals is that many hospital workplace

environments are characterized by the 'logic of production' and less of the 'logic of development'. The tension between time for production and time for exploration was salient in this thesis study. Hospital workplace environments promote effective and reliable performance, goal consensus and avoidance of uncertainty before practice as a source for new thinking and for testing alternatives, and accepting failures (ibid). Thinking and reflection are enhanced for their instrumental value, not for the value of long-term innovativeness and developmental or expansive learning (Engeström 2001; Ellström 2011). Efficient implementation of best practices (including best practices of supervision and teaching) comes before innovations based on exploration of variation and diversity (Ellström 2011).

Continuity of relationships

The thesis studies also illustrate how the organizational logic influences the nature of the hospital learning environment in terms of the divisionalised organizational structures common in Swedish hospitals, and the complexity of care processes that segment the patient pathways, activities and care providers involved in the process. The lack of continuous relationships among staff, students and patients has a significant impact on the opportunity for developmental learning (Ellström 2011see Chapter 4).

Design of infrastructures for collaborations

The On-Site model activities require time and continuity – time to observe, time to think, and time to exchange ideas and collaborate with others. The collaborative, co-regulated principle guiding the On-Site model draws on a body of research that has demonstrated that teachers' workplace learning is stronger in an environment where teachers routinely collaborate and learn from each other (Duncombe and Armour 2004; Hodkinson and Hodkinson 2007). The potential of Collaborative Professional Learning (CPL) has been emphasized in numerous studies as a means of making Continuous Professional Development (CPD) of teachers and healthcare professionals both relevant and specific. (Duncombe and Armour 2004; Edwards 2010). Building the capacity of collaborative work is a more remote organizational goal in terms of time, and less reliable than the logic of adaptive learning and the logic of production. At the same time, studies suggest that the prioritization of these requirements and the design of infrastructures to contribute to a stronger focus on developmental learning may have positive consequences for patient care (Hellström et al. 2012).

The thesis illustrates that the workplaces involved did make changes to priorities and work structures that enabled collaborations between physicians and between the educational developers and people concerned. For instance, spatial and social dimensions of location involved an emphasis on formal meetings for planning and information exchange instead of an emphasis mainly on informal arenas (lunches and coffee breaks) (Ellström 2008). Temporal dimensions were also taken into

consideration. The activities were intended to be limited in scope with regard to work hours, but sustained over time to compensate for uneven access to students, periods of participants' absence from work units, and to provide time to reflect between actions and meetings.

Affordances provided by management

The thesis suggests that the decision to allocate resources that was made by the managers (who were prepared to challenge the obstacles of managing a production system), in combination with the commitment and agency exercised by faculty members, was a significant influencing factor on the learning environment and on the implementation and learning process. The necessary design of infrastructures provided access and the opportunity to collaborate with staff with strategic influence on scheduling, access to localities, etc.

At the same time, this thesis illustrates the profound difficulties encountered when attempting to implement the principles. The complexity of changing practices was related to agency factors and sociocultural mechanisms that defined learning regardless of the removal of structural barriers and the support and engagement of management and faculty responsible for the rotation.

Collective versus individual needs

> "What workers want and what their employers want is not always the same. Good management can and does increase areas of commonality, but differences often remain" …"All workers have differing histories and preferences, so that each person's dispositions towards workplace learning are different. Those personal dispositions influence what and how they learn at work" (Hodkinson

The thesis illuminates that fact that not all individuals want the same thing, and not the same thing as the department policy. Although group learning activities and the collective participation of "everyone" were openly endorsed by physician staff in the thesis study, not everyone was literally 'on board'.

This raises questions about what the value and purposes of workplace learning are, and for whom. The thesis analysis provided insights into motivations for participating and how people elected to engage in the opportunities afforded.

Individuals' agency

In line with a body of research, the thesis suggests that an enabling workplace learning environment (and the immediate group learning environment) required that individuals take some agency and decisions about how and why they engage in their own and others' learning (Billett2002; 2006 Ellström 2011). For instance, the thesis suggests that some participants – also physicians who were not driven by self-

motivation to develop as supervisors – chose to engage in the supervision of students and faculty development when supervision was conceptualized as 'work,' or when participation was prompted, modelled, or valued by significant others to whom the participants felt, or wished to feel, connected. This type of relatedness has been found to be centrally important for bringing extrinsically motivated activities into congruence with one's other values and needs (Ryan and Deci 2000).

On the other hand, while 'ownership of the learning agenda' (Paper III) and collaborating with significant others motivates some, others associate the prospect of collaborations and co-regulated learning – where there is a stronger focus on developmental than adaptive learning – in the workplace with negative stress and feelings of anxiety and insecurity (Elllström 2011). The thesis illustrates the need among some participants for more individually challenging learning or the development of specific competencies. A limitation of the On-Site model were the difficulties of balancing individual and collective needs. Studies of workplace learning emphasize how learning with people outside of the workplace system encourages access to concepts and pedagogical content knowledge, making it possible for individuals to understand work processes in a comprehensive perspective. The value and purposes of workplace learning are also related to the professional learning that is recognised and rewarded by employers and professional foundations. More recently, faculty development and continuing professional development programs have broadened their scope to include e.g. portfolios. At the same time, these types of representations of learning may favour scholarship of teaching and learning professionals, but they do not adequately represent the actual individual and collective professional learning that occurs. How to address issues related to physicians' motivation for supervising students and how to participate in faculty development have been the objects of ongoing discussion in medical education literature (Steinert 2010a). The thesis findings suggest further study of the impetus for supervising and On-Site learning as a means to develop practice, not only among the clinical supervisors, but also among clinical department managers.

Relational agency and collective competence building

Finally, the thesis findings suggest that sociocultural mechanisms at play in different workplaces regulate "appropriate" behaviour (Jin et al. 2012). This interferes with the exercise of individual agency and cognitive responses needed to challenge social pressures, or as Billett (2011p.68) has put it,

> "the subtle, yet ubiquitous, social suggestions that are encountered almost unconsciously in the conduct of daily life".

A salient finding was that the On-Site learning principles enabled the surfacing of sociocultural influences on practice and emotions related to these influences. The principles also enabled some colleagues to develop and exercise relational agency, the

capacity of working collaboratively and thinking systematically together. The experiences of collective empowerment that accompany a feeling of togetherness or social cohesiveness were a factor that enabled members, also in smaller groups, to challenge structural barriers and resistance among colleagues rather than feeling disempowered by them, and to achieve desired changes in practice. Research on teacher education suggests that development of teacher workplace practices requires a shift in focus from individual exercise of agency to an attention to relational agency and action with others (Pantic and Florian 2015; Edwards 2010). Edwards (2005) argues that relational agency is a strong form of agency required especially for practitioners who move in and out of different settings and who need to find stability in collaborations across organisational boundaries.

The purpose of the On-Site learning principles links well with building capacity for relational agency. The central idea of collaborative, co-regulated, workplace-situated faculty development is what has been called anthropological situativity, in contrast to psychological situativity (Barab & Duffy 2000). Where psychological situativity refers to for instance the role-play or simulations providing problem-solving among teachers in an off-site course, anthropological situativity refers to solving real-life problems with colleagues in the workplace. The former approach is a widespread and useful method with a potential for great realism. However, as a method for transforming workplace practices, it has limitations compared to the learning inherent in work (and vice versa).

Moreover, the On-Site learning principles and a focus on relational agency in contrast to off-site collaborative learning are well aligned with the notion of collective learning, i.e. learning distributed among the group of co-participants (Hager 2011). According to Hager, the concept of collective learning does not replace the notion of individual learning, but rather expands it (ibid). In turn, looking beyond and above individual learning also resonates with the concept of collective competence (Boreham 2004). The theory of collective competence has been suggested to be a valuable theory to inform competency-based (mainly interprofessional) frameworks in medical education (Kitto and Grant 2014). Relational agency and collective competence theories can provide a useful framework for future research and practice on how to build capacity for collaborative work among clinical supervisors in workplace-situated faculty development, within and across professional boundaries.

Summary of discussion

In sum, in the above discussion I have contextualized my findings from the four studies in a Swedish hospital and medical education context within the frameworks of some specific workplace learning theories. Drawing on the thesis studies, I have addressed the central research question and suggested some implications of applying workplace learning practice theory as a framework for faculty development that aims to support

physicians who work and supervise in hospital settings to develop supervision practices and enhance students' learning experiences.

In the next section, I draw some conclusions from this reasoning outlined as implications for practice.

Implications for Practice

Faculty development aligned with CPD

In a recent publication, Davies et al. (2017 p. 1079) called for a "functional marriage" between continuing medical education and faculty development programmes to create a healthcare systems-aligned model for continuing professional development (CPD).

The authors, who wrote from a Canadian context, argue that systems- and outcomes-oriented models focusing on the professional learning of physicians at all stages of their development are vital for addressing both existing and future challenges of healthcare and educational practice.

> "CPD also needs to be placed within a 21st-century model of learning, which grounds the development of individuals within the learning culture of the entire organization and incorporates evidence-based and workplace-based approaches beyond traditional formal programs" (Davies et al. 2017 p.1080).

The authors moreover suggest collaboration partners designated as responsible for the activities and evaluation of day-to-day continuing professional development learning in the workplace practice and environment. They argue that this role could also promote an interprofessional learning platform for the building of teams and collaborative care in the workplace.

Based on the findings from implementing this single example of a practice-centred, On-Site faculty development model for workplace learning among physicians, I believe that the On-Site principles partly respond to the above request. Applying the On-Site learning principles entails many challenges, and the model has a number of limitations. The analysis suggests for instance that the On-Site learning principles certainly do not respond to all supervision practice needs, nor are they responsive to the needs of all individuals. However, drawing on the insights of the analysis provided here, I argue that the On-Site model provides opportunities to align the learning of several groups of learners. It enables continuity of relationships over time between the external educational developer and internal collaborating partners, contributing to an increased *mutual* understanding of outsider/insider views on students' learning. Furthermore, as

it places the notion of enabling or constraining learning environments – rather than individuals' learning – at its centre, it offers the opportunity for a holistic, relational analytical focus. This involves the mapping and surfacing of the organizational logic and readiness of the workplace practices to provide learning opportunities related to health system needs, teamwork, and the building of collective competencies. This analytical focus includes the readiness of individuals to engage in their own and others' learning. The On-Site model moreover offers the opportunity to surface sociocultural (and sociomaterial) influences on practice. The latter was not included in this human-centric thesis analysis, but drawing on other studies of physicians' learning, I suggest this to be a crucial aspect that should be added to further applications and study On-Site model principles.

A strategy suggested based on the thesis findings is an extended collaboration between the faculty development unit, medical school and the county council to enable the integration of workplace based faculty development into a system of CPD that places an enabling workplace learning environment at its core.

Below the On-Site model is illustrated in Figure 9 and Guidelines for Practice are suggested (Table 3). These are based on my experiences (as the educational developer and facilitator) of applying the principles; on learnings made through close collaborations with the participants; and the analysis made in collaboration with my colleagues and fellow researchers.

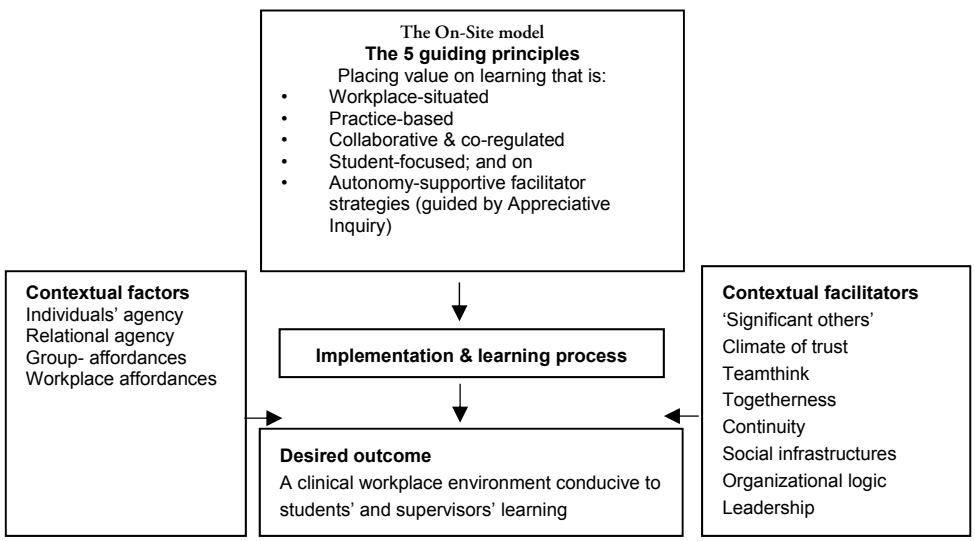


Figure 9.
The On-Site model principles and desired outcome. The different group-activities are intermediate steps on the way to achieve this outcome. Contextual factors are factors influencing the learning and implementation process. Contextual facilitators are additional contextual factors that if present have the potential to influence how well professional development experiences can advance toward the desired outcome (inspired by Hochberg and Desimone 2010).

Table 3. Guidelines for practice	
FORMING	**Address questions of reasons and needs for On-Site learning.** • "What is *in it*" for the different stakeholders, i.e. the supervisors, the organization/clinical department managers, the students? • Surface: organizational, departmental needs and objectives, • practice and supervisor needs – the activity as part of continuing professional development programs recognized by employers and professional foundations and documented in e.g. portfolios and • opportunities for residents-in-training to meet educational objectives.
	Avoid misalignment of the On-Site faculty development with practice needs and student needs. • Ensure communication between the educational developer, the medical program, the faculty member (person) responsible for the placement and clinical department managers. • Align On-Site learning requests with the medical programme curriculum.
	Collaborate/Work with others • The faculty member responsible for the student placement. • A designated 'On-Site learning officer' serving as a person who initiates and coordinates activities in a continuing professional development system with student learning activities.
	Negotiate with the workplace clinical manager in advance • Infrastructures for regular meetings, continuous info exchanges, feedback exchanges • Logistics, e.g. scheduling, protected time, how to make the supervisors engagement visible and recognized at the departments • A set time period with clear intermediate deadlines • Sustained over time
PERFORMING	**Negotiate the structure of the sessions, procedures and aspects of group climate**
	Assessment of practice and group needs / Collaborative analysis of the environment. • What factors enable or constrain student learning (and the workplace learning of participants)? • Negotiation of a desired state, intermediate steps/joint goals and methods • Actions • Evaluation of the value of the actions for students
	Use mirror material to assist the analysis • The UCEEM and the MCTQ • Encourage regular use of internal input (mirror material such as feedback tools, e.g. participants' own observations, stories, videos, summaries of interviews) as well as external input (external cases, literature, videos) to stimulate reflective practice.
	Involve students and encourage open multidirectional feedback • Use the MCTQ for self-assessment among supervisors – compare and discuss consistency with student feedback. • Use the Clinical Evaluation Exercise (MiniCEX) as a tool for multidirectional feedback (students give feedback to supervisors and vice versa).
	Encourage participants to concentrate on what is possible and feasible, rather than idealistic goals. • Start with small changes within reasonable boundaries. • Act as process leader and critical friend. Provide group process support. • Surface and discuss teamthink versus groupthink. • Listen to ideas and challenge them, encouraging exploration of alternatives. • Resist sliding into the role of expert, organizing "meaningful activities" or quick fixes. Leave participants in control of the learning agenda. • Provide a step-by-step structure, constraining rules, explanatory rationales, methods for generating and evaluating ideas, summaries of discussions, question prompts. • If applying Appreciative Inquiry techniques (inquiry into what is valued and what works in the environment), avoid being overly positive or the minimization of negative feelings, and acknowledge negative feelings as well as positive. • Negotiate the participation of clinical managers in FD activities, the advantages of "talking the talk and walking the walk" and disadvantages of asymmetrical power-relations.

Transferability

The significance of the thesis' contributions does not lie in their generalizability. These are findings from a relatively narrow work in a specific context. They are not definite in the sense that there is an identified point of closure. To help readers make their own judgements of transferability and trustworthiness, I aimed to meet the criteria related to clarification and justification, procedural rigour, representativeness, interpretation, reflexivity and transferability suggested by Kitto et al. (2008) and Sargeant (2012). I have included detailed accounts of context, selection of participants, triangulations, analytical procedures and critical reflexivity (Herr and Anderson 2005; Mann and MacLeod 2015; Kitto et al. 2008). It is up to the readers to decide whether I have succeeded in constructing and problematizing a model for faculty development that is conceptually generalizable in terms of its usefulness for further research and practice in other contexts that differ from the studied context.

Representativeness

The participants were selected based on the research questions and appropriateness for an enhanced understanding of the issue being studied (Kitto et al. 2008; Sargeant 2012). As mentioned earlier, supervisors representing the part of the population not so interested in discussing supervision or participate in faculty development activities was difficult to include. At the same time, the findings indicated that participants displayed a variety of intrinsic and extrinsic motivations for participation. Far from all participants were motivated by an interest in faculty development, students and supervision. As previously described in "Methods", the final participants were representative of the population in other respects.

Study design issues

The methodological challenges of content analysis have been described by Graneheim and Lundman (2004; 2017). For instance, there are issues to address with regard to the level of analysis applied (manifest or latent content) and which categorizing concepts to use at the various levels of abstraction (e.g. the use of concept category or theme). The conceptual framing chosen here is described in the chapter "Methods". However, there are some difficulties displayed in the thesis of "keeping levels of abstraction and degrees of interpretation logical and congruent throughout the analysis and the presentation of results" (Graneheim and Lundman 2017 p.29). While the fundamental logic and analytic process remain consistent throughout the thesis, there are some

incongruences in the use of concepts that might be confusing to the readers of the papers. I have sought to address these in "Methods".

Mixed methods designs are associated with a number of challenges. In Paper IV in particular, the complexity of the design, the differences in sizes of the data sets compared, the time points of the data collection, and the different characters of the data sets were some of the challenges encountered. Not the least weighting of different types of evidence has been discussed in Paper IV, as well as in previous sections. Transparency was the way chosen to address this, and therefore detailed information of data sets and interpretations were applied. Some of the challenges could have been addressed at an earlier stage when designing the study; this has been a valuable lesson learned as a researcher from the process.

Final insider researcher remarks

I encountered a number of methodological and ethical dilemmas with regard to my position as an insider researcher, predominantly in Paper III. Many of these are brought up in the "Methods" chapter and discussed in Paper III. In sum, two of my main dilemmas are interrelated and concern ethical and democratic validity.
Firstly, the findings indicate that far from all participants were clear about the purpose and position of their roles in the research, as illustrated in the extracts from an interview below:

> (…) this is still some kind of research project, and I do not really know in what way I am part of this research project […] It doesn't affect our project, I am very pleased with what we have accomplished so far. However, if you take a step back and think that we, ourselves, also are part of some kind of project I don't really know […] I am not so sure what Pia will gain from this […] (extract from individual interview with participant by researcher KS, Paper III Cycle 1).

My aim to inform participants and openly discuss the implications of who benefits from the research process with them was not equivalent to achieving transparency or reaching an understanding among participants for their involvement in the research.

The illustration raise the question of how the negotiations carried out with participants regarding who benefits from the research can be improved. My intention as an educational developer and researcher was to continuously open for discussion about the relevance of the participants' engagement and the research to *their own, the students' and practice needs*. However, I have learned that there is a need for a more elaborate platform – face-to-face or virtual – and structures to create a more profound dialogue around the purpose of the research, the participants' involvement in the process, and who benefits from it. At the same time, democratic validity was supported by a number of findings that indicated intended, positive consequences for the participants at a personal and community level.

Finally, practice is not only what people think, but what people actually *do*. Reflecting on the thesis findings, we must take into account the potential inconsistency between people's 'theories-in-use' – i.e., the theories that actually govern our behaviour – and people's 'espoused theories' – that is, the advocated values and strategies that we would like others to think govern our behaviour (Argyris and Schön 1995). Studies that have combined observation of pedagogical actions with investigations of physicians' views on these actions reveal a discrepancy between actual behaviour and reported behaviour (O'Neill et al. 2006; Nilsson Skyvell et al. 2010). The study of the hospital workplace as a learning environment conducted in this thesis has concentrated on social interactions and structural and human – individual and relational – agency influences on the process. The theoretical and methodological approaches do not allow for a deeper understanding of the embodied, social and material aspects of the workplace learning of students and supervisors. Nor did the analytic approach enable the investigation of daily discourse and communication patterns mirroring power relations, gender or cultural awareness – or non-awareness.

The thesis findings raise a number of suggestions for possible lines of investigation in future research to gain a deeper understanding of the practices of supervising physicians and the learning in workplace-situated faculty development.

Future Research

Several suggestions for future research are made in each of the appended papers. Below I focus mainly on two major lines of research related to the research questions addressed in this thesis.

Firstly, an interesting line of future research to reach a comprehensive understanding of the hospital as a workplace is an ethnographic approach. Ethnographic methods enable observation not only of how people interact, but also of how people interact with non-human objects (Mol 2008, Zuka and Kilminster 2014). Two recent ethnographic studies of Swedish medical and nursing students' learning in the clinical workplace provided valuable insights into the learning conditions for the different groups of students (Liljedahl 2016; Hägg-Martinell 2017). While the hospital workplace is not always accessible to outsider participant or nonparticipant observation, I believe that an ethnographic, sociomaterial approach (e.g. Actor Network Theory) to collaborative research between insiders and outsiders can provide insights into learning and work, whilst at the same time providing valuable mirror materials for collaborative analysis at local levels. An example from my own study will suffice to exemplify (a fraction of) the potential of such an approach: I was invited by a department to spend a day at one workplace to observe and learn about the activity there and to produce field notes that we later used as mirror materials and discussed in group activities. Among a number of issues, we discussed, for instance, students' position in a room

during interactions, which influenced their opportunities to see what was written on a whiteboard or produced on a screen, and in turn their opportunities to participate in information exchange. Situated studies focusing on the influence of systems and networks of interactions on learning may provide knowledge on the power dynamics of the workplace practices and the mechanisms and processes behind patterns of social relationships, and cultural influences at work (Edwards 2005; Engeström and Sannino 2010).

Secondly, the findings from this thesis indicate that future research into the construct validity of inferences of scores from the UCEEM, and consequently the use and usability of the instrument, is motivated. Based on this thesis, I am collaborating with other users to modify some of the items, and adding items to the equity scale. Studies of how these are perceived and interact with the total scale are in the planning stage. An additional direction for future use and research is to combine the existing scales with a scale focusing on how students perceive their readiness to engage in the affordances offered in the learning environment. Previous studies of the MCTQ in various contexts have supported a high degree of construct validity of scores (Stalmeijer 2010a,b; Boerboom et al. 2011). The thesis' study of a Swedish version support these findings. Gathering data among larger student cohorts in diverse cultural settings is necessary for an increased understanding of the validity and usability of both instruments. Research using other methods to study reliability is an important future step. Studies using mixed methods and other kinds of validity frameworks can provide important insights into the construct validity of the scores, the discourses around the feedback, and the many facets of intended and adverse consequences of use of the two feedback tools (Cook et al. 2016).

Concluding Remarks

In this thesis, I have addressed the aforementioned gap in the medical education literature of qualitative research that has adopted a practice frame for faculty development as a means to support physicians in developing undergraduate supervision practice. The central research question addressed in this thesis is:

> What are the implications of applying workplace learning (practice) theory as a framework for faculty development that aims to support physicians working and supervising in hospital settings to develop supervision practices and enhance students' learning experiences?

The thesis suggests a practice-centred approach, emphasizing the notion of an embedded workplace learning system where students' and supervising physicians' professional learning are aligned and embedded. The thesis contributes the construction of a model for practice and future research – the On-Site model –

underpinned by principles that place value on learning that is workplace-situated; practice-based; collaborative & co-regulated; student-focused; and on autonomy-supportive facilitator strategies. The construction of the model, with the workplace learning environment at its centre, includes the construction of an instrument – the UCEEM – that proved to produce valid and reliable information usable for mirroring and collaboratively analysing the student learning climate. A conclusion of the empirical work is that the type of learning inherent in the learning principles is enabled or constrained by interrelated variables defining the clinical learning environment. These are, on the one hand, sociocultural mechanisms and organizational, structural, variables such as the organizational logic of production of many hospital workplaces and the complexity of care processes that segment activities and care providers, influencing opportunities for continuous relationships. On the other hand, variables defining the learning environment were related to individuals' motivations and the individual and relational agency exercised by different stakeholders. For instance, clinical department managers and faculty members defied structural impediments and supported the creation of infrastructures to enable collaborations, developmental learning and innovations. Clinical supervisors developed a sense of togetherness that empowered them to challenge cultures and structural barriers and achieve desired changes in practice.

Finally, the model does not respond to individual needs for development of specific competencies. Moreover, challenging clinical learning cultures to enhance students' clinical learning experiences is a complex task and lies beyond the influence of isolated faculty development activities. The case-based analysis provided by this thesis motivates future application and research in various contexts necessary to gain a deeper understanding of the opportunities and limitations of the learning principles and the usability of the UCEEM and the MCTQ. However, a conclusion based on the synthesized findings is that the On-Site model offers a wide range of opportunities for collaborations and mutual discoveries between outsider-educational developers and insiders in the clinical workplace and for professional learning and practice development among physicians at all stages of their development.

Based on the findings I argue that conceptualizing and enacting faculty development as a social practice embedded in the workplace practices of physicians, where the core activity is patient care, has some strategic implications. I suggest further exploration of ways to integrate on-site for models for development of clinical supervision as one of many activities in a system for continuing professional development where higher education and the healthcare organizations co-operate. I argue that the On- Site model is an important supplement to continuing professional development based on individual physicians needs of competencies as it focuses on collaborative practice development and collective competence-building. In extension, this may include interprofessional collaborative learning and building of collective competence necessary to address current and future needs of health care.

8. Sammanfattning på svenska

Läkarstuderande blir allt fler och hälso- och sjukvården genomgår stora förändringar. Kvaliteten på den kliniska handledningen under den verksamhetsintegrerade delen av läkarutbildningen har länge varit en angelägen fråga för programmen, professionen och för hälso- och sjukvården såväl i Sverige och internationellt. Ökade utbildningssatsningar för kliniska handledare är åtgärder som efterlysts. Ett vanligt tillvägagångssätt är att erbjuda enskilda handledare möjlighet till fortbildning i form av centraliserade kurser.

I denna avhandling undersöker och diskuterar jag implikationerna av en handledarutbildning baserad på lärande-teorier som betonar vikten av att lärandet sker i det sammanhang läkare handleder och arbetar i dagligen. Genom intervjuer i grupp och med enskilda individer undersöks läkares förståelse av lärande och handledning i sjukhusmiljö. Baserat på resultaten och på litteraturstudier utformas en utbildningsmodell som implementeras på olika arbetsplatser i samverkan med läkare, studenter och verksamhet. Genom aktionsforskning och med olika metoder undersöks människors (handledares, studenters, kursadministratörers, placeringsansvarigas och verksamhetschefers) upplevelser av och uppfattningar om utbildningsmodellen och hur strukturella, sociokulturella och personbundna faktorer påverkar implementerings- och lärandeprocessen. Mina egna erfarenheter som extern 'handledare av handledarna' dokumenteras och analyseras.

Utvärderingsinstrument utvecklas och används för att stimulera kollektiva analyser av hur studenter upplever lärandeklimat och handledning under placeringen. Instrumentens validitet och reliabilitet undersöks genom statistisk analys av kvantitativa data och med kvalitativa metoder.

Baserat på resultaten föreslås en arbetsplatsbaserad modell för utbildning av klinsika handledare– 'In-Situ modellen' (the 'On-Site model'). Denna sätter kollaborativ utveckling av studenternas lärandemiljö i centrum snarare än enskilda handledares kompetensutveckling. Modellen innebär att man tillsammans och med hjälp av studenter analyserar förutsättningar och hinder för en optimal lärandemiljö. Man sätter upp delmål för utveckling av till exempel hur man bemöter studenter, handledningsstrategier eller placeringens struktur. Analysen av påverkansfaktorer visade att strukturella, sociokulturella och individuella faktorer växelverkar och skapar förutsättningar eller hinder för den typ av lärande som modellen erbjuder. Till exempel

så påverkar segmenterade vårdprocesser och placeringars längd och struktur möjligheter till kontinuitet i relationer och samarbeten, vilket i sin tur påverkar individers eller gruppers grad av engagemang och val av målsättning. Samtidigt visar resultaten hur verksamhetschefers och placeringsansvarigas engagemang och handlingar kan utmana produktionsfokuserade system och bidra till infrastrukturer som ger förutsättningar för kollaborativt, student-fokuserat lärande.

Andra påverkansfaktorer var individuella handledares förförståelse av hur lärande går till eller deras motiv till att delta. Dessa individuella och strukturella variabler i kombination med implicita normer och värderingar, invävda i den kulturella kontexten, samt hur man uppfattade stödet från den externa handledaren (mig) påverkade hur man upplevde den kollaborativa, självstyrda lärandeprocessen. Framträdande i analysen var att upplevelser av självbestämmande och samhörighet skapade en känsla av kollektiv ”empowerment” vilket i sin tur bidrog till att man kunde bemästra strukturella hinder och uppnå den förändring man ville åstadkomma.

Utvärderingsinstrumenten uppvisade en hög grad av validitet och reliabilitet. Samtidigt problematiserar och diskuterar avhandlingen bedömning av validitet och användning av utvärderingsresultat. Vidare föreslås åtgärder för främjande av ett öppet system för dubbelriktad återkoppling mellan studenter och handledare.

Sammantaget visar resultaten att ett fokus på studenternas lärandemiljö kan bidra till ett ökat fokus på arbetsplatsen som lärandemiljö för läkare på alla utbildningsnivåer. Detta synliggör strukturer och kulturella mönster som skapar förutsättningar för eller hindrar lärande generellt.

Avhandlingen belyser praktiska och strategiska implikationer av In-Situ modellen. Bland annat belyses betydelsen av att studenter och handledare får möjlighet till kontinuerlig kontakt vilket främjar ett system där noviser och experter tillsammans bidrar till utveckling av praktiken. Detta har strategiska implikationer med avseende på placeringars längd och struktur.

Ett förslag baserat på avhandlingsresultaten är att vidare undersöka hur In-Situ modellen för kollaborativt lärande och utveckling av klinisk handledningspraktik skulle kunna integreras som en av många aktiviteter i ett mer övergripande fortbildningssystem där universitet och hälso- och sjukvården samarbetar. In-Situ modellen utgör ett viktigt komplement till fortbildning som huvudsakligen baseras på de enskilda läkarnas kunskaps- och kompetensbehov. In-Situ modellen lägger fokus på kollaborativ praktik-utveckling och kollektiv kompetens. I förlängningen kan den också anpassas till interprofessionellt lärande relevant för sjukvårdens rådande och framtida behov.

9. References

[AERA] American Education Research Association (1999; 2014). Standards for educational and psychological testing. Washington, DC.

Amundsen, C., and Wilson, M. (2012). Are We Asking the Right Questions?: A Conceptual Review of the Educational Development Literature in Higher Education. Review of Educational Research, 82(1), 90-126.

Anell A, Glenngård AH, Merkur S. Sweden: Health system review.Health Systems in Transition, 2012, 14(5):1–159.

Angen, MJ. (2000). "Evaluating interpretive inquiry: Reviewing the validity debate and opening the dialogue." Qualitative Health Research. 10(3),378-395.

Archer M. S. Being human: the problem of agency. 2000; Cambridge: Cambridge University Press.

Argyris, C., & Schon, D. (1974). Theory in practice: Increasing professional effectiveness. San Francisco: Jossey-Bass.

Argyris, C., & Schön, D. A. (1995). Organizational learning II: Theory, method and practice. Reading, MA: Addison-Wesley.

Aslam, M. Ali, A. Taj, T. Badar, N. Mirza, W. Ammar, A. Muzaffar S. and Kauten J.R. (2011). 4:18. Specialty choices of medical students and house officers in Karachi, Pakistan. Eastern Mediterranean Health Journal.Vol. 17 No. 1.

Austin, A. E., & Sorcinelli, M. D. (2013). The Future of Faculty Development: Where Are We Going? New Directions for Teaching & Learning, 2013(133), 85-97.

Barab, S.A. & Duffy, T.M. (2000) From Practice Fields to Communities of Practice,in D.H. Jonassen & S.M. Land (Eds) Theoretical Foundations of Learning Environments. London: Lawrence Erlbaum.

Baume, D. (2016). Analysing IJAD, and some pointers to futures for academic development (and for IJAD). International Journal for Academic Development, 21(2), 96-104

Beckman, T. J., Cook, D. A., & Mandrekar, J. N. (2005). What is the Validity Evidence for Assessments of Clinical Teaching?. JGIM: Journal Of General Internal Medicine, 20(12), 1159.

Bleakley, A. (2006). Broadening conceptions of learning in medical education: The message from teamworking. Medical Education, 40, 150–157.

Bleakley, A., Bligh, J., & Browne, J. (2011). Medical education for the future: Identity, power and location. New York: Springer.

Boor, K., Scheele, F., van der Vleuten, C. P., Teunissen, P. W., den Breejen, E. M., & Scherpbier, A. J. (2008). How undergraduate clinical learning climates differ: a multi-method case study. Med Educ, 42(10), 1029-1036.

Billett, S. (1996). Developing workplaces as learning environments: Towards a learning curriculum. *Studies in Continuing Education, Vol 18 (1) pp 43-58 1996*, 33-54.

Billett, S., McCann, A. and Scott, K. (1998), WorkplaceMentoring: Organising and Managing EffectivePractice, Centre for Learning and Work Research,Griffith University, Brisbane.

Billett, S. (2001). Learning through Work: Workplace Affordances and Individual Engagement. Journal of Workplace Learning, 13(5), 209-214.

Billett, S. (2000), ``Guided learning in the workplace'',Journal of Workplace learning, Vol. 12 No. 7.

Billett, S. (2002). Workplace Pedagogic Practices: Co-Participation and Learning. British Journal of Educational Studies, 50(4), 457-481.

Billett, S. (2006). Relational Interdependence between Social and Individual Agency in Work and Working Life. Mind, Culture, and Activity, 13(1), 53-69.

Billett, S. and Newman, J. (2010), 'Learning practice: Conceptualising professional lieflong learning for the health-care sector', in Bradbury, H., Frost, N., S. Kilminster, S. and Zukas, M. (Eds), Beyond reflective practice: new approaches to professional lifelong learning Routledge, London, pp. 172-185.

Billet, S.(2011) Subjectivity, Self and Personal Agency in Learning Through and for Work. In Malloch, M., Cairns, L., Evans, K., & O'Connor, B. N. (Eds.) The SAGE Handbook of Workplace Learning: SAGE Publications

Boerboom, T., Dolmans, D., Jaarsma, A., Muijtjens, A., Van Beukelen, P., & Scherpbier, A. (2011). Exploring the validity and reliability of a questionnaire for evaluating veterinary clinical teachers' supervisory skills during clinical rotations. Med Teach, 33(2), 84-91.

Boreham, N. (2004). A Theory of Collective Competence: Challenging the Neo-Liberal Individualisation of Performance at Work. British Journal Of Educational Studies, (1), 5.

Boud, D., & Brew, A. (2013). Reconceptualising academic work as professional practice: Implications for academic development. International Journal for Academic Development, 18(3), 208-221.

Boud and Rooney (2015) What Can Higher Education Learn from the Workplace? In Dailey-Hebert,a. and Dennis, K.S.(Eds.) Transformative Perspectives and Processes in Higher Education. Advances in Business Education and Training ; volume 6 Cham. Springer 195-209.

Buchel, T. L., & Edwards, F. D. (2005). Characteristics of effective clinical teachers. Fam Med, 37(1), 30-35.

Burkitt, I. (2016). Relational agency: Relational sociology, agency and interaction. European Journal Of Social Theory, 19(3), 322-339.

Cantillon, P., D'Eath, M., Grave, W., Dornan, T., & De Grave, W. (2016). How do clinicians become teachers? A communities of practice perspective. Advances in Health Sciences Education, 21(5), 991.

Calkins, S., Johnson, N., & Light, G. (2012). Changing conceptions of teaching in medical faculty. Medical Teacher, 34(11), 902–906.

Cairns and Malloch (2011).Theories of Work, Place and Learning: New Directions. In Malloch, M., Cairns, L., Evans, K., & O'Connor, B. N. (Eds.) The SAGE Handbook of Workplace Learning: SAGE Publications. .3-16

Carr, W. (2006) Philosophy, Methodology and Action Research.Journal of Philosophy of Education, 40(4), pp. 421-435.

Chen, H. C., Wamsley, M. A., Julian, K., Azzam, A., Irby, D. M., & O'Sullivan, P. S. (2017). The Health Professions Education Pathway: Preparing Students, Residents, and Fellows to Become Future Educators. Teaching and Learning in Medicine, 29(2), 216-227. doi:10.1080/10401334.2016.1230500

Clapham, Michael. (2008). Learning to Teach in the Operating Room. Doctoral thesis, University of Birmingham, Birmingham.

Cleland, J. A., Johnston, P.W., French, F. H. & Needham, G. (2012). Associations between medical school and career preferences in Year 1 medical students in Scotland. Med Ed, 46(5), 473-484.

Cleland, J., & Johnston, P. (2012). Enculturation to medicine: power for teachers or empowering learners?. *Medical Education*, *46*(9), 835-837.

Cleland, J. A., Johnston, P.W., Anthony, M., Khan, N. & Scott, N. W. (2014). A survey of factors influencing career preference in new-entrant and exiting medical students from four UK medical schools. BMC Med Ed, 14, 151-151.

Collins, A., Brown J.S., Newman S.E. Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In: Resnick LB, ed. Knowing, Learning, and Instruction: Essays in Honor of Glaser. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.; 1989:453–494.

Cook, V. (2009). Mapping the work-based learning of novice teachers: Charting some rich terrain. Med Teach, 31(12), e608-614. doi:10.3109/01421590903193562

Cook, D. A. & Beckman, T. J. (2006). Current concepts in validity and reliability for psychometric instruments: Theory and application. *Am J Med, 119*(2), 166 e167-116.

Cook DA, Lineberry M. (2016). Consequences validity evidence: Evaluating the impact of educational assessments.Acad Med.;91:785–795.

Cook, D.)., Kuper, A.)., Ginsburg, S.)., & Hatala, R.). (2016). When assessment data are words: Validity evidence for qualitative educational assessments. Academic Medicine, 91(10), 1359-1369. doi:10.1097/ACM.0000000000001175

Creswell JW. (2008) Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research. 3rd ed. Upper Saddle River, NJ: Pearson/Merrill Prentice Hall;

Creswell JW. Research Design: Qualitative, Quantitative and Mixed Methods Approaches. 3rd ed. Thousand Oaks, CA: Sage; 2009.

Creswell, J. W. & Plano Clark, V. L. (2011). Designing and conducting mixed methods research (2nd ed.). Thousand Oaks, CA: Sage.

Daelmans, H. E., Hoogenboom, R. J., Donker, A. J., Scherpbier, A. J., Stehouwer, C. D., & van der Vleuten, C. P. (2004). Effectiveness of clinical rotations as a learning environment for achieving competences. Med Teach, 26(4), 305-312.

Daelmans HEM, Overmeer RM, van der Hem-Stokroos HH, Scherpbier AJJA, Stehouwer CDA, van der Vleuten CPM. In-training assessment: qualitative study of effects on supervision and feedback in an undergraduate clinical rotation. Med Educ. 2006;40:51–8.

Dahlgren, L, Abrandt Dahlgren, M., Hult, H., Ha°rd af Segerstad, H., Szkudarek, T., & Kamlet, M. S. (2006). Conceptions of learning and teaching among teachers and students in higher education. A Swedish– Polish comparative study. Anthology of Social and Behavioural Sciences (pp. 89–115). Linköping: Linköpings universitet.

Davis, D. A., Rayburn, W. F., & Smith, G. A. (2017). Continuing Professional Development for Faculty: An Elephant in the House of Academic Medicine or the Key to Future Success?. Academic Medicine: Journal Of The Association Of American Medical Colleges, 92(8), 1078-1081.

Debowski, S. (2014). From agents of change to partners in arms: The emerging academic developer role. International Journal for Academic Development, 19(1), 50-56.

de Feijter, J. M., de Grave, W. S., Dornan, T., Koopmans, R. P., & Scherpbier, A. J. J. A. (2011). Students' perceptions of patient safety during the transition from undergraduate to postgraduate training: An activity theory analysis. Advances in Health Sciences Education, 16(3), 347-358.

Denzin, N. K., & Lincoln, Y. S. (2011). The SAGE Handbook of Qualitative Research: SAGE Publications.

Denzin, N. (2012). Triangulation 2.0. Journal of Mixed MethodsResearch, 6, 80-88.

Dewey, John. (1938). Logic: The Theory of Inquiry. New York: Henry Holt and Company.

Dewey, John, and Kappa Delta Pi (Honor society). (1997). Experience and Education (New ed.). New York: Simon and Schuster.

Dolmans, D. H., Wolfhagen, I. H., Essed, G. G., Scherpbier, A. J., & van der Vleuten, C. P. (2002). The impacts of supervision, patient mix, and numbers of students on the effectiveness of clinical rotations. Academic Medicine, 77(4), 332–335.

Dolmans, D. H., Wolfhagen, I. H., Heineman, E., & Scherpbier, A. J. (2008). Factors adversely affecting student learning in the clinical learning environment: a student perspective. Educ Health (Abingdon), 21(3), 32. doi:32 [pii]

Dornan, T., Scherpbier, A., King, N., & Boshuizen, H. (2005). Clinical teachers and problem-based learning: A phenomenological study. Medical Education, 39(2), 163–170.

Dornan T, Boshuizen H, King N, Scherpbier A. Experience-based learning: a model linking the processes and outcomes of medical students' workplace learning. Med Educ. 2007;41:84–91.

Dornan, T., Tan, N., Boshuizen, H., Gick, R., Isba, R., Mann, K., Scherpbier, A., Spencer, J., Timmins, E. (2014). How and what do medical students learn in clerkships? Experience based learning (ExBL). Advances in Health Sciences Education, 19(5), 721.

Duncombe, R., & Armour, K. (2004). Collaborative professional learning: From theory to practice. *Journal Of In-Service Education*, *30*(1), 141-166.

Duvivier, R. J., Van Dalen, J., Van Der Vleuten, C. P. M., & Scherpbier, A. J. J. A. (2009). Teacher perceptions of desired qualities, competencies and strategies for clinical skills teachers. Medical Teacher, 31(7), 634–641.

Edwards, A. (2005). Relational agency: Learning to be a resourceful practitioner. International Journal of Educational Research 43 (2005) 168-182.

Edwards, A. (2010). Relational agency: Working with other practitioners. In: Being an Expert Professional Practitioner, Anne Edwards (ed.), 6179. Netherlands: Springer.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. Journal of Advanced Nursing, 62(1), 107–115.

Ellström, E. Ekholm, B. and Ellström, P-E. Two Types of Learning Environment: Enabling and Constraining A Study of Care Work, 2008, Journal of Workplace Learning, (20), 2, 84-97.

Ellström, P. Informal Learning at Work: Conditions, Processes and Logics. In Malloch, M., Cairns, L., Evans, K., & O'Connor, B. N. (Eds.) The SAGE Handbook of Workplace Learning: SAGE Publications

Engeström, Y., Virkkunen, J., Helle, M., Pihlaja, J., & Poikela, R. (1996). The Change laboratory as a tool for transforming work. Lifelong Learning in Europe, 1(2), 10–17

Engeström, Y. (2001). Expansive Learning at Work: Toward an activity theoretical reconceptualization. Journal of Education and Work, 14(1), 133-156. doi: 10.1080/ 1363908 0020028747

Engestrom, Y., and Sannino, A. (2010). Studies of Expansive Learning: Foundations, Findings and Future Challenges. Educational Research Review, 5(1), 1-24.

Eraut, M. (2004). Informal learning in the workplace. Studies in Continuing Education, 26(2 July 2004), 247-273.

Evans, C. (2013). Making Sense of Assessment Feedback in Higher Education. Rev Educ Res, 83(1), 70-120.

Evans, K.,Guile, D. and Harris, J. Rethinking Work-Based Learning: For Education Professionals and Professionals Who Educate. In Malloch, M,. Cairns, L., Evans, K.

and O'Connor, B. (Eds), The SAGE Handbook of workplace learning, SAGE Publications, London. 149-161.

Evans, K., Hodkinson, P., Rainbird, H. and Unwin, L. (2006) Improving Workplace Learning (London: Routledge).

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. Psychological Methods, 4(3), 272-299. doi:10.1037/1082-989X.4.3.272

Fox, R. J. 2010. Confirmatory Factor Analysis. Wiley International Encyclopedia of Marketing. 2.

Fuller A, Unwin L. 2003. Fostering Workplace Learning: Looking through the lens of apprenticeship. Eur Educ Res J 2(1):41.

Genn, J. M. (2001a). AMEE Medical Education Guide No. 23 (Part 1): Curriculum, environment, climate, quality and change in medical education – A unifying perspective. Med Teach, 23(4), 337-344.

Genn, J. M. (2001b). AMEE Medical Education Guide No. 23 (Part 2): Curriculum, environment, climate, quality and change in medical education – A unifying perspective. Med Teach, 23(5), 445-454.

Gibbs, G., & Coffey, M. (2004). The Impact Of Training Of University Teachers on their Teaching Skills, their Approach to Teaching and the Approach to Learning of their Students. Active Learning in Higher Education, 5(1), 87-100.

Gibbs, Graham. (2013). Reflections on the Changing Nature of Educational Development. International Journal for Academic Development, 18(1), 4-14.

Giddens A. The constitution of society: outline of the theory of structuration. 1984; USA: University of California Press.

Gordon, M. (2009). Toward A Pragmatic Discourse of Constructivism: Reflections on Lessons from Practice. Educational Studies, 45(1), 39-58.

Gosling, D., & D'Andrea, V.-M. (2001). Quality Development: a new concept for higher education. Quality in Higher Education, 7(1), 7.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts,procedures and measures to achieve trustworthiness. Nurse Education Today, 24(2), 105–112.

Graneheim, U. H., Lindgren, B., & Lundman, B. (2017). Methodological challenges in qualitative content analysis: A discussion paper. Nurse Education Today, 5629-34.

Greenhill, J., & Poncelet, A. N. (2013). Transformative learning through longitudinal integrated clerkships. Medical Education, 47(4), 336–339

Guile D, Griffiths T. 2001. Learning through work experience. J Educ Work 14(1):113–131.

Gutek, Gerald (2014). Philosophical, Ideological, and Theoretical Perspectives On Education. New Jersey: Pearson. pp. 76,100.

Hafler, J. P., Ownby, A. R., Thompson, B. M., Fasser, C. E., Grigsby, K., Haidet, P., Hafferty, F. W. (2011). Decoding the Learning Environment of Medical Education: A Hidden Curriculum Perspective for Faculty Development. Academic Medicine, 86(4), 440-444

Hager, P. (2004). Conceptions of learning and understanding learning at work. Studies in Continuing Education, 26(1), 3–17.

Hager, P. and Hodkinson, P. (2009). Moving beyond the metaphor of transfer of learning, British Educational Research Journal, 35, 4, 619-638.

Hager, P. (2011), 'Theories of workplace learning'. In Malloch, M,. Cairns, L., Evans, K. and O'Connor, B. (Eds), The SAGE Handbook of workplace learning, SAGE Publications, London, pp. 17-31.

Hager, P., Lee, A., & Reich, A. (2012). Practice, Learning and Change. Practice-Theory Perspectives on Professional Learning: Dordrecht: Springer Netherlands.

Hattie, J. & Timperley, H. (2007). The Power of Feedback. Rev Educ Res, 77(1), 81-112.

Heath, Joseph, "Methodological Individualism", The Stanford Encyclopedia of Philosophy (Spring 2015 Edition), Edward N. Zalta (ed.), Retrieved https://plato.stanford.edu/archives/spr2015/ entries/methodological-individualism/

Heeneman, S., Pool, A. O., Schuwirth, L. W. T., van der Vleuten, C. P. M., & Driessen, E. W. (2015). The impact of programmatic assessment on student learning: Theory versus practice. Medical Education, 49(5), 487-498.

Hellström, A., Lifvergren, S., and Huzzard, T. (2012). A physician-led and learning-driven approach to regional development of 23 cancer pathways in Sweden. International Journal of Care Pathways, 16(2), 40-40 41p.

Herr, Kathryn, and Anderson, Gary L. (2005). The Action Research Dissertation: A Guide for Students and Faculty: London, United Kingdom : Sage Publications.

Higgins, P. A. & Straub, A. J. (2006). Understanding the error of our ways: Mapping the concepts of validity and reliability. Nurs Outlook, 54(1), 23-29.

Hirsh, D., Walters, L., & Poncelet, A. N. (2012). Better learning, better doctors, better delivery system: Possibilities from a case study of longitudinal integrated clerkships. Medical Teacher, 34(7), 548-554.

Hobart, J., & Cano, S. (2009). Improving the evaluation of therapeutic interventions in multiple sclerosis:The role of new psychometric methods. *Health Techn Assessm, 13*(12), 1-200

Hodkinson, P. (2008) Improving Workplace Learning: Learning Cultures the key Thinkpiece University of Leeds, UK for TAFE NSW ICVET. Retrieved September 30 2017 from http://lrrpublic.cli.det.nsw.edu.au/ lrrSecure/Sites/Web/13289/ezine/year_ 2008/feb/thinkpiece_workplacelearning.htm

Hodkinson and Hodkinson (2007) Improving schoolteachers' workplace learning. Research Papers in Education Volume 20, (2)

Hoffman, K. G., & Donaldson, J. F. (2004). Contextual tensions of the clinical environment and their influence on teaching and learning. Med Educ, 38(4), 448-454. doi:10.1046/j.1365-2923.2004.01799.x

Holmboe, E., Ginsburg, S., & Bernabeo, E. (2011). The rotational approach to medical education: time to confront our assumptions? Medical Education, 45(1), 69-80. doi:10.1111/j.1365-2923.2010.03847.x

Hsieh, H., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. Qualitative Health Research, 15(9), 1277–1288.

Hägg-Martinell, A., Hult, H., Henriksson, P., & Kiessling, A. (2017). Medical students' opportunities to participate and learn from activities at an internal medicine ward: An ethnographic study. BMJ Open, 7, 1

Illeris, K. (2015). The Development of a Comprehensive and Coherent Theory of Learning. European Journal of Education, 50(1), 29-40. doi:10.1111/ejed.12103

Irby, D. M. (1995). Teaching and learning in ambulatory care settings: A thematic review of the literature. Acad Med, 70(10), 898-931.

Irby, D. M., & Papadakis, M. (2001). Does good clinical teaching really make a difference? The American Journal Of Medicine, 110(3), 231-232.

Irby, D. M. (2014). Excellence in clinical teaching: knowledge transformation and development required. Medical Education, 48(8), 776-784.

Jin, C. J., Martimianakis, M. A., Kitto, S., & Moulton, C. E. (2012). Pressures to "Measure Up" in Surgery Managing Your Image and Managing Your Patient. Annals Of Surgery, 256(6), 989-993.

Johnsson, M. and Boud, D. (2010). Towards an emergent view of learning work, International Journal of Lifelong Education, 29, 3, 355-368.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educ Res*, 33, 14-26.

Kaufmann. F. John Dewey's Theory of Inquiry. The Journal of Philosophy Vol. 56, No. 21 (Oct. 8, 1959), pp. 826-836

Keating, S. (2006). Learning in the workplace: A literature review. Melbourne: Postcompulsory Education Centre, Victoria University.

Kemmis, S. (2002). Exploring the relevance of critical theory for action research: Emancipatory action research in the footsteps of Jurgen Habermas. In P. Reason & H. Bradbury, Handbook of action research: Participative inquiry and practice (pp. 91–102). Thousand Oaks, CA: Sage.

Kemmis, AH, McTaggart, R, Ortrun, ZS (2002). The Concept of Action Research. Learning Organization, 9(3), 125-131.

Kernan, W. N., Hershman, W., Alper, E. J., Lee, M. Y., Viscoli, C. M., Perry, J. R., et al. (2008). Disagreement between students and preceptors regarding the value of teaching

behaviors for ambulatory care settings. Teaching and Learning in Medicine, 20(2), 143–150.

Kerosuo, H., Kajamaa, A., & Engeström, Y. (2010). Promoting innovation and learning through change laboratory: An example from Finnish health care. *Central European Journal Of Public Policy*, *4*(1), 110.

Kilminster, S. M., & Jolly, B. C. (2000). Effective supervision in clinical practice settings: a literature review. Med Educ, 34(10), 827-840. doi:med758 [pii]

Kilminster, S., Cottrell, D., Grant, J., & Jolly, B. (2007). AMEE Guide No. 27: Effective educational and clinical supervision. Medical Teacher, 29(1), 2–19.

Kilminster, S., Zukas, M.Quinton, N. and Roberts, T. (2010) Learning practice? Exploring the links between transitions and medical performance', Journal of Health Organization and Management, 24 (6),556-570.

Kilminster, S., Zukas, M, Quinton, N.and Roberts, T(2011) 'Preparedness is not enough: understanding transitions as critically intensive learning periods',Medical Education,45, 1006-1015

Kitto, S. Chesters, J. and Grbich, C. (2008). Quality in qualitative research. Criteria for authors and assessors in the submission and assessment of qualitative research articles for the Medical Journal of Australia. Medical Journal of Australia. Volume 188 (4)

Kitto, S., & Grant, R. (2014). Revisiting evidence-based checklists: interprofessionalism, safety culture and collective competence. Journal Of Interprofessional Care, 28(5), 390-392

Koshy, E., Koshy, V., and Waterman, H. (2011). Action Research in Helthcare. London: Sage Publications Ltd.

Knight, L. V., & Bligh, J. (2006). Physicians' perceptions of clinical teaching: A qualitative analysis in the context of change. Advances in Health Sciences Education: Theory and Practice, 11(3), 221–234.

Kolb, D. A. (1984). Experiential learning : experience as the source of learning and development. Englewood Cliffs, N.J.: Prentice-Hall.

Krippendorff, K. (2013). Content Analysis. An Introduction to Its Methodology (3rd ed). California, CA: Sage Publications.

Laksov Bolander K., Mann, S., and Dahlgren L-O. (2008). Developing a community of practice around teaching: A case study. Higher Education Research and Development, 27(2), 121-132.

Land, R. (2004). Educational development: Discourse, identity and practice. Maidenhead: Society for Research into Higher Education & Open University Press

Lane, S. (2014). Validity evidence based on testing consequences. Psicothema, 26(1), 127-135.

Latour, B. (2005).Reassembling the social: An introduction to actor-network-theory. Oxford university press.

Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge: Cambridge Univ. Press.

Lempp, H., Seabrook, M., Cochrane M. and Rees J. (2005) 'The transition from medical student to doctor: perceptions of final year students and preregistration house officers related to expected learning outcomes', International Journal of Clinical Practice, 59 (3) 324-9.

Leslie, K., Baker, L., Egan-Lee, E., Esdaile, M., and Reeves, S. (2013). Advancing faculty development in medical education: A systematic review. Academic Medicine.

Lefevre JH1, Roupret M, Kerneis S, Karila L. Career choices of medical students: a national survey of 1780 students.Med Educ. 2010 Jun;44(6):603-12.

Lewin, K. (1946). Action research and minority problems. Journal of Social Issues, 2(4), 34–46.

Lindberg-Sand Sonesson (2008) Compulsory Higher Education Teacher Training in Sweden: Development of a National Standards Framework Based on the Scholarship of Teaching and Learning (PDF Download Available). Available from: https://www.researchgate.net/publication/234652932_Compulsory_Higher_Education_Teacher_Training_in_Sweden_Development_of_a_National_Standards_Framework_Based_on_the_Scholarship_of_Teaching_and_Learning [accessed Sep 8, 2017].

Liljedahl,M. (2016). On learning in the clinical environment. (Doctoral thesis), Karolinska Institutet, Stockholm.

Lindgren, S., Brannstrom, T., Hanse, E., Ledin, T., Nilsson, G., Sandler, S., Donner, J. (2011). Medical education in Sweden. Medical Teacher, 33(10), 798-803. doi: 10.3109/0142159X.2011.570816

McIntyre, D., & Hagger, H. (1992). Professional development through the Oxford Internship Model. British Journal ofEducational Studies, 40(3), 264}283.

Mann, K. V. (2011). Theoretical perspectives in medical education: past experience and future possibilities. Medical Education, 45(1), 60-68. doi:10.1111/j.1365-2923.2010.03757.x

Mann and MacLeod (2015). Constructivism: learning theories and approaches to research In Cleland J, Durning S. (Eds.) Researching Medical Education Wiley. 61-66

Mason, L. (2007) 'Introduction: Bridging the cognitive and sociocultural approaches in research on conceptual change. Is it feasible?', Educational Psychologist, 42 (1), 1-7.

Mercer, J. (2007). The Challenges of Insider Research in Educational Institutions: Wielding a Double-Edged Sword and Resolving Delicate Dilemmas. Oxford Review Of Education, (1), 1.

Michael, J. (2006). Where's the evidence that active learning works? *Advan in Physiol Edu* 30:159-167.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). Qualitative data analysis: A method sourcebook. Los Angeles: Sage, cop. 2014 3. ed.

Mol, A. (2008) The logic of care: health and the problem of patient choice. Abingdon: Routledge.

More, J. (2006) Mixing methods in a qualitatively driven way Qualitative Research, Vol. 6(1) 9–25.

Morgan, D. L. (2014). Pragmatism as a Paradigm for Social Research. Qualitative Inquiry, 20(8), 1045-1053. doi:10.1177/1077800413513733

Moss, P. A. (1998). The role of consequences in validity theory. Educational Measurement: Issues and Practice, 17(2), 6-12.

McLean, M., Cilliers, F., and Van Wyk, J. M. (2008). Faculty development: Yesterday, today and tomorrow. Med Teach, 30(6), 555-584. doi: 10.1080/01421590802109834

Mubuuke, A. G., and Leibowitz, B. (2013). Participatory action research: The key to successful implementation of innovations in health professions education. African Journal of Health Professions Education, 5(1), 30-33. doi: 10.7196/AJHPE.208

Mårtensson, K. (2014). Influencing teaching and learning microcultures. Academic development in a research-intensive university. Doctoral thesis. Lund University, Lund, Sweden.

Nilsson Skyvell, M., Pennbrant, S., Pilhammar, E., & Wenestam Claes, G. (2010). Pedagogical strategies used in clinical medical education: An observational study BMC Med Educ, 10(9).

O'Neill, P. A., Owen, A. C., McArdle, P. J., & Duffy, K. A. (2006). Views, behaviours and perceived staff development needs of doctors and surgeons regarding learners in outpatient clinics. Med Educ, 40(4), 348-354.

O'Sullivan, P. S., and Irby, D. M. (2011). Reframing Research on Faculty Development. Academic Medicine, 86(4), 421-428. doi: 10.1097/ACM.0b013e31820dc058

O'Sullivan, P., & Irby, D. (2014). Identity Formation of Occasional Faculty Developers in Medical Education: A Qualitative Study. Academic Medicine, 89(11), 1467-1473.

O'Sullivan, P. S., Beard, J., Irby, D. M., & Mkony, C. (2016). Identity formation and motivation of new faculty developers: A replication study in a resource constrained university. Medical Teacher, 38(9), 879-885. doi:10.3109/0142159X.2015.1132409

Palmgren, P. (2016). It takes two to tango – An inquiry into healthcare professional education environments. Doctoral thesis, Karolinska Institutet, Stockholm.

Pantić, N., & Florian, L. (2015). Developing teachers as agents of inclusion and social justice. Education Inquiry (Co-Action Publishing), 6(3), 333. doi:10.3402/edui.v6.27311

Phillips, S. P., & Clarke, M. (2012). More than an education: The hidden curriculum, professional attitudes and career choice. Med Educ, 46(9), 887-893.

Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. International Journal Of Nursing Studies, 471451-1458.

Postareff, L., Lindblom-Ylanne, S., & Nevgi, A. (2007). The effect of pedagogical training on teaching in higher education. Teaching and Teacher Education, 23(5), 557-571.

Postareff, L., Lindblom-Ylanne, S., & Nevgi, A. (2008). A follow-up study of the effect of pedagogical training on teaching in higher education. Higher Education, 56(1), 29-43.

Pratt, D. D., Harris, P., & Collins, J. B. (2009). The power of one: looking beyond the teacher in clinical instruction. *Med Teach, 31*(2), 133-137.

Prebble, T., Hargreaves, H., Leach, L., Naidoo, K., Suddaby, G. and Zepoke, N. (2004). The impact of student support services and academic development programmes on student outcomes in undergraduate tertiary study: A synthesis of the research. New Zealand: Ministry of Education Retrieved from http://www.educationcounts.govt.nz/publications/tertiary_education/5519

Prince KJAH, Boshuizen HPA, van der Vleuten CPM, Scherpbier AJJA. Students' opinions about their preparation for clinical practice. Med Educ. 2005;39:704–12.

Richards, J. and Billett, B.(2013). Preparing medical students as agentic learners through enhancing student engagement in clinical educationAsia-Pacific Journal of Cooperative Education, 2013, 14(4), 251-263

Reich, A., & Hager, P. (2014). Problematising Practice, Learning and Change: Practice-Theory Perspectives on Professional Learning. Journal of Workplace Learning, 26(6-7), 418-431.

Reeve, J., & Halusic, M. (2009). How K-12 Teachers Can Put Self-Determination Theory Principles into Practice. *Theory and Research in Education, 7*(2), 145-154.

Roop, S. A., & Pangaro, L. (2001). Effect of clinical teaching on student performance during a medicine clerkship. The American Journal Of Medicine, 110(3), 205-209. Roff, S., & McAleer, S. (2001). What is educational climate? Medical Teacher, 23(4), 333-334.

Ryan, R. M., and Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. Contemporary Educational Psychology, 25(1), 54-67. doi: DOI 10.1006/ceps.1999.1020

Roxå, T. (2014) Microcultures in the meso level of higher education organisations – the Commons, the Club, the Market and the Square. Doctoral Thesis. Lund Universiity, Lund, Sweden.

Sahlén, K.G. (Producer). (2009). Open Code 3.6. [Software tool for coding qualitative data generated from text information such as interviews, observations or field notes]. Retrieved from http://www.phmed umu.se/english/divisions/epidemiology/research/open-code/.

Sandars, J, and Cleary, T. J. (2011). Self-regulation theory: Applications to medical education: AMEE Guide No. 58, Medical Teacher.

Sandars, J., Singh, G., and McPherson, M. (2012). Are we missing the potential of action research for transformative change in medical education? Education for Primary Care, 23(4), 239-241.

Sargeant, J. (2012) Qualitative Research Part II: Participants, Analysis, and Quality Assurance. Journal of Graduate Medical Education: March 2012, Vol. 4, No. 1, pp. 1-3.

Saroyan, A., & Trigwell, K (2015) Higher education teachers' professional learning: Process and outcome. Studies in Educational Evaluation, 46: 92-101

Schatzki, T.R. (2001), 'Practice theory', in Schatzki, T.R., Knorr-Cetina, K., and von Savigny, E., (Eds), *The practice turn in contemporary theory*, Routledge, London/ New York.

Schroeder, C. (2011). Coming in from the margins: Faculty development's emerging organizational development role in institutional change Sterling, VA: Stylus.

Schroeder, C. (2015). Unpacking and communicating the multidimensional mission of educational development. To Improve the Academy, 34(1-2), 20-62.

Schön, Donald A. (1987). Educating the reflective practitioner: [Toward a new design for teaching and learning in the professions] (1. ed.). San Francisco: Jossey-Bass.

Schönrock-Adema J, Heijne-Penninga M, Hell EA, Cohen-Schotanus J. (2009). Necessary steps in factor analysis: Enhancing validation studies of educational instruments. The PHEEM applied to clerks as an example. Med Teach 31(6):226–32.

Seyoum N, Biluts H, Bekele A, Seme A. (2014). Medical students' choice of specialty and factors determining their choice: a cross-sectional survey at the Addis Ababa University, School oF Medicine, Ethiopia. Ethiop Med J. Jul;52(3):129-35.

Sheehan, D., Wilkinson, T. J., & Billett, S. (2005). Interns' participation and learning in clinical environments in a New Zealand hospital. Acad Med, 80(3), 302-308.

Stalmeijer, R. E., Dolmans, D. H., Wolfhagen, I. H., & Scherpbier, A. J. (2009). Cognitive apprenticeship in clinical practice: Can it stimulate learning in the opinion of students? Adv Health Sci Educ Theory Pract, 14(4), 535-546.doi:80/3/302 [pii]

Stalmeijer, R. E., Dolmans, D. H., Wolfhagen, I. H., Muijtjens, A. M., & Scherpbier, A. J. (2010a). The Maastricht Clinical Teaching Questionnaire (MCTQ) as a valid and reliable instrument for the evaluation of clinical teachers. *Acad Med, 85*(11), 1732-1738.

Stalmeijer, R.E., Dolmans, D.H., Wolfhagen, I.H., Peters, W. G., van Coppenolle, L., & Scherpbier, A.J. (2010b). Combined student ratings and self-assessment provide useful feedback for clinical teachers. *Adv Health Sci Educ Theory Pract, 15*(3), 315-328.

Steinert, Y., Mann, K., Centeno, A., Dolmans, D., Spencer, J., Gelula, M., and Prideaux, D. (2006). A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. Med Teach, 28(6), 497-526.

Steinert, Y., McLeod, P. J., Boillat, M., Meterissian, S., Elizov, M., and Macdonald, M. E. (2009). Faculty development: A 'field of dreams'? Med Educ, 43(1), 42-49. doi: MED3246 [pii]10.1111/j.1365-2923.2008.03246.x

Steinert, Y., Macdonald, M. E., Boillat, M., Elizov, M., Meterissian, S., Razack, S.,McLeod, P. J. (2010a). Faculty development: If you build it, they will come. Med Educ, 44(9), 900-907.

Steinert, Y. (2010b). Faculty development: From workshops to communities of practice. Med Teach, 32(5), 425-428.

Steinert, Yvonne. (2011). Commentary: Faculty development: The road less traveled. Academic Medicine, 86(4), 409-411.

Steinert, Y. (2012). Perspectives on faculty development: Aiming for 6/6 by 2020. Perspect Med Educ, 1(1), 31-42.

Steinert, Y., Mann, K., Anderson, B., Barnett, B. M., Centeno, A., Naismith, L., and Dolmans, D. (2016). A systematic review of faculty development initiatives designed to enhance teaching effectiveness: A 10-year update: BEME Guide No. 40. Medical Teacher, 38(8), 769-786.

Stenfors-Hayes, T., Hult, H., & Dahlgren, L. O. (2011). What does it mean to be a good teacher and clinical supervisor in medical education? Adv Health Sci Educ Theory Pract, 16(2), 197-210. doi:10.1007/s10459-010-9255-2

Stern, D.G. (2003)The Practical Turn. In Turner, S. P., & Roth, P. A. (Eds.). The Blackwell guide to the philosophy of the social sciences: Oxford, U.K. : Blackwell Publishing,

Stone, S., Ellers, B., Holmes, D., Orgren, R., Qualters, D., & Thompson, J. (2002). Identifying oneself as a teacher: The perceptions of preceptors. Medical Education, 36(2), 180–185.

Streiner, D. L., & Norman, G. R. (2008). Health measurement scales. [Elektronisk resurs] : a practical guide to their development and use. Oxford : Oxford University Press, 2008.

Sutkin, G., Wagner, E., Harris, I., & Schiffer, R. (2008). What makes a good clinical teacher in medicine? A review of the literature. Acad Med, 83(5), 452-466. doi:10.1097/ACM.0b013e31816bee61

Swanwick, T. (2005). Informal learning in postgraduate medical education:From cognitivism to 'culturism'. Medical Education, 39, 859–865.

Swanwick, T., & Morris, C. (2010). Shifting conceptions of learning in the workplace. *Med Educ, 44*(6), 538-539. doi:MED3716 [pii]

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal Of Medical Education*, *2*53-55. doi:10.5116/ijme.4dfb.8dfd

Taylor, K. L., & Rege Colet, N. (2010). Making the shift from faculty development to educational development: A conceptual framework grounded in practice. In A. Saroyan & M. Frenay (Eds.), Building teaching capacities in higher education: A comprehensive international model(pp. 139-167). Sterling, VA: Stylus.

ten Cate, O., Chen, H. C., Hoff, R. G., Peters, H., Bok, H., & van der Schaaf, M. (2015). Curriculum development for the workplace using Entrustable Professional Activities (EPAs): AMEE Guide No. 99. Medical Teacher, 37(11), 983-1002. doi:10.3109/0142159X.2015.1060308

The Swedish Medical Student Association (SMSA). The SMSA National Survey of Clinical Supervision in Medical Education Programs. Retrieved 31 May, 2017, from http://www.slf.se/student/Enkater/Handledningsenkat/

The Swedish Research Council (2003). The act concerning the ethical review of research involving humans. 2003:460. Retrieved 31 May, 2017 from http://www.riksdagen.se/sv/DokumentLagar/Lagar/Svenskforfattningssamling/Lag-2003460-om-etikprovning_sfs-2003-460/.

Topping, K. J. (2005). Trends in Peer Learning. Educational Psychology, 25(6), 631-645.
Trigwell, K., & Prosser, M. (1996). Changing approaches to teaching: A relational perspective. Studies in Higher Education, 21(3), 275-284.

Trigwell, K., Prosser, M., & Waterhouse, F. (1999). Relations between Teachers' Approaches to Teaching and Students' Approaches to Learning. Higher Education, 37(1), 57-70.

Trowler, P., & Cooper, A. (2002). Teaching and Learning Regimes: Implicit theories and recurrent practices in the enhancement of teaching and learning through educational development programmes. Higher Education Research & Development, 21(3), 221-240. doi:10.1080/0729436022000020742

Trowler, P., Hopkinson, P., & Comerford Boyes, L. (2013). Institutional Change towards a Sustainability Agenda: How far can theory assist? Tertiary Education and Management, 19(3), 267-279.

Trowler, Paul (2015) Change theory and changing practices: Enhancing student engagement in universities. In: Student engagement in Europe. Council of Europe Publishing, Strasbourg, pp 160-171. ISBN 9789287179715

Teunissen P, Westerman M. Opportunity or threat; ambiguity in the consequences of transitions in medical education. Med Educ. 2011;45:51–9.

U.S. Department of Health and Human Services, National Institutes of Health. 2012. PROMIS: Instrument Development and Psychometric Evaluation Scientific Standards. Available from: http://www.nihpromis. org/measures/instrumentoverview

van Der Hem-Stokroos, H. H., Scherpbier, A. J., Van Der Vleuten, C. P., De Vries, H., & Haarman, H. J. (2001). How effective is a clerkship as a learning environment? Med Teach, 23(6), 599-604. doi:10.1080/01421590120091000

van der Hem-Stokroos HH, Daelmans HEM, van der Vleuten CPM, Haarman HJThM, Scherpbier AJJA. A qualitative study of constructive clinical learning experiences. Med Teach. 2003;25:120–6.

van der Hem-Stokroos H, Daelmans H, van der Vleuten C, Haarman H, Scherpbier A. The impact of multifaceted educational structuring on learning effectiveness in a surgical clerkship. Med Educ. 2004;38:879–86.

Van Hell, E. A., Kuks, J. B., & Cohen-Schotanus, J. (2009). Time spent on clerkship activities by students in relation to their perceptions of learning environment quality. Med Educ, 43(7), 674-679.

van der Zwet, Dornan T, Teunissen PW, de Jonge LP, Scherpbier AJ. (2014) Making sense of how physician preceptors interact with medical students: Discourses of dialogue, good medical practice, and relationship trajectories. Adv Health Sci Educ Theory Pract.;19(1):85-98.

Vygotsky L.E. (1997) Educational Psychology.CRC Press LLC.

Wenger, E. (1998). Communities of practice: Learning, meaning, and identity. Cambridge: Cambridge University Press.

Wichmann-Hansen, G. (2004). Praktik i laegeuddannelsen. (Doctoral thesis), Aarhus Universitet, Aarhus.

Williams, Reed G., & Klamen, Debra L. (2006). See one, do one, teach one-exploring the core teaching beliefs of medical school faculty. Medical Teacher, 28(5), 418–424.

Wimmers, P. F., Schmidt, H. G., & Splinter, T. A. (2006). Influence of clerkship experiences on clinical competence. Med Educ, 40(5), 450-458

Zukas, Miriam and Kilminster, S. (2014) The doctor and the blue form: learning professional responsibility. In: Fenwick, T, and Nerland, M, (eds.) *Reconceptualising Professional Learning: Sociomaterial Knowledges, Practices and Responsibilities.*

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What are the implications of situating faculty development in the clinical workplace?

In this thesis, the insights of social practice theory are applied to investigate and discuss the implications of adopting a practice-centred, workplace learning approach to faculty development among clinical supervisors in a Swedish medical education and healthcare context. A model for faculty development is explored – the On-Site Model. The model is underpinned by principles that place value on learning that is: workplace-situated; practice-based; collaborative & co-regulated; student-focused; and on autonomy-supportive facilitator strategies. It shifts focus from the learnings and actions of individual supervisors towards collaborative learning and actions aligned with others. The work includes the development of an instrument for assessing learning climate – the Undergraduate Clinical Education Environment Measure. The instrument is validated and used to trigger collective analyses of the students' learning climate. The thesis suggests that attention to students' perceptions of a clinical learning environment can contribute to an increased focus on the clinical workplace as a conducive learning environment for the physician learners at all levels.

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