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CONTEXTUAL ACTIVITY SAMPLING

– a method to develop clinical interprofessional education

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"For if we do nothing else, we should somehow give to children a respect for their own powers of thinking, for their power to generate good questions, to come up with interesting informed guesses." (Bruner, 1966. page. 96)

To my parents Benny and Brita, for always encouraging my curiosity and studies.

Institutionen för klinisk forskning och utbildning, Södersjukhuset

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ABSTRACT

Higher health care education in interprofessional settings is evaluated and developed continuously. The aim of clinical interprofessional education is to provide healthcare students opportunities to develop their professional roles, and understanding of other professions, as well as to develop their teamwork and communication skills. However, there is still a need to improve understanding of how students experience their learning. Most often, post-course questionnaires and interviews are used to investigate students' experiences of their learning activities. When using such approaches the respondents generalize about their experiences in retrospect instead of reporting on learning as it occurs. The Contextual Activity Sampling System (CASS) is a methodology inspired by ideas from the Experience Sampling Method (ESM). CASS was designed to collect frequent data from the participants' ongoing learning activities by using mobile phones, which was the main methodology used in this thesis.

The overall aim of this thesis was to investigate the potential of contextual activity sampling as an approach for studying students' experiences connected to learning activities during clinical interprofessional education.

Eighty-one students from six interprofessional training ward courses conducted during 2009 agreed to participate. For each course, students from two teams of three were randomly assigned to be included in an intervention group (using CASS, *n*=54) and from one team in a control group (not using CASS, *n*=27). The students' learning experiences in the intervention group were collected via CASS and, for both groups, via interviews after the conducted courses and also RIPLS questionnaires both before and after the conducted courses. *Study I* was a study aiming at investigating the usability of CASS as a methodology in a clinical interprofessional context. *Study II* focused on the students' experiences of clinical learning and *Study III* on the students' experiences of collaboration. *Study IV* investigated whether students using CASS experienced their learning activities in different ways compared to students not using CASS.

In *Study I* it was shown that the translated and cross-culturally adapted Swedish version of CASS was usable in a clinical learning environment and that it helped students to structure their study days and reflect on their learning activities. *Study II* demonstrated that students reported optimal experiences (flow) when they were engaged in knowledge creation activities and collaborated with their fellow students. A significant correlation was identified between positive emotions and how important the activities were considered to be. *Study III* showed that CASS provided possibilities to identify the student teams' need of support to attain the intended learning outcomes and highlighted the importance of structure, interaction and insight in clinical interprofessional collaboration. In *Study IV* differences between the intervention and control groups were noted. The students who had used CASS rated their experience of 'teamwork and collaboration' significantly higher after the course than before the course, which was not the case for the control group. On the other hand, students in the control group rated stress higher than those who had used CASS.

In conclusion, this thesis showed that the CASS methodology is suitable for collecting contextual data in clinical settings and can help students to structure their days and reflect on their learning activities. When interprofessional collaboration was working well it was associated with knowledge creation and an increased feeling of 'flow'. CASS is an innovative methodology, which can be useful for stimulating reflection on clinical learning activities and development of clinical interprofessional education.

LIST OF PUBLICATIONS

This thesis is based on the following studies, which will be referred to in the text by their Roman numbers (*Studies* I–IV)

I. **Lachmann, H**., Ponzer, S., Johansson, U-B., & Karlgren, K. (2012). Introducing and adapting a novel method for investigating learning experiences in clinical learning environments. *Informatics for Health and Social Care*, *37*(3), 125-140. doi: 10.3109/17538157.2012.678449

II. **Lachmann, H**., Ponzer, S., Johansson, U-B., Benson, L., & Karlgren, K. (2013). Capturing students' learning experiences and academic emotions at an interprofessional training ward. *Journal of Interprofessional Care, 27*(2): 137-145. doi: 10.3109/13561820.2012.724124

III. **Lachmann, H**., Ponzer, S., Johansson, U-B., Karlgren, K., & Fossum, B. (2013). Students' experiences and perceptions of collaboration during and after an interprofessional training ward course – a mixed methods study. *International Journal of Medical Education*, 4:170-179. doi: 10.5116/ijme.51fc.c412

IV. **Lachmann, H**., Fossum, B., Johansson, U-B., Karlgren, K., & Ponzer, S. Contextual activity sampling: Promoting reflection on interprofessional experiences. Submitted.

CONTENTS

LIST OF ABBREVIATIONS

CASS	Contextual Activity Sampling System
EMA	Ecological Momentary Assessment
ESM	Experience Sampling Method
EU	European Union
HE	Higher education
IPE	Interprofessional education
IPTW	Interprofessional training ward
KI	Karolinska Institutet
KP-Lab	Knowledge Practice Laboratory
OT	Occupational therapy
PANAS	Positive and Negative Affect Schedule
PT	Physiotherapy
RIPLS	Readiness for Interprofessional Learning Scale

PREFACE

During many years, first as a medical laboratory scientist and thereafter as a nurse on different hospital wards, I have had the privilege to meet many health care students from different educational programmes. They came to the hospital clinics with previous knowledge, curiosity and many questions about how to use their acquired theoretical knowledge in clinical practice. However, they sometimes also described frustration about the time spent on clinical placements without a real chance to practice their skills.

When I started working on an interprofessional training ward (IPTW) most students reported satisfaction with the two-week mandatory IPTW course. This awareness sparked an interest in deepening my understanding of why the students experienced the IPTW course in a different way from their experience of other clinical placements.

My previous experiences had helped me to realize that clinical health care education really is a complex and multifaceted challenge. For some students, the clinical context is unknown and includes a lot of different things to take into consideration. As a student in a health care setting, you are a 'visitor' in other peoples, i.e. patients' and different health care professionals' territory. It is usual for students to have expectations and emotions concerning different tasks that will be evoked during forthcoming meetings. To be able to support students during their clinical practice, several aspects of their clinical education must be taken into consideration. Thus, there is a need for a more detailed understanding of how learning occurs continuously in specific contexts, and especially during interprofessional educational activities.

There are different ways to measure and investigate students' experiences of the context and content of clinical learning. To conduct this project, a methodology that would make it possible to collect students' experiences during ongoing clinical learning activities was needed. As a partner in the Knowledge Practice Laboratory (KP-Lab) research project, the opportunity to use a novel methodology, the Contextual Activity Sampling System (CASS) methodology for data collection was provided. The KP-Lab was part of an EU-funded project included in the Sixth Framework Programme for Research and Technological Development with the aim of developing innovative teaching and learning methods in emerging technologies. During the process of developing and adapting the CASS methodology and questionnaires to the Swedish clinical ward context, we collaborated with the Department of Psychology at the University of Helsinki and the EVTEK Metropolia University of Applied Sciences, Helsinki, Finland.

My starting point for this thesis was to introduce the CASS methodology for clinical educational use and, by so doing, to contribute to a broader understanding of how students experience learning activities during clinical interprofessional education.

BACKGROUND

This thesis focuses on investigating the potential of the Contextual Activity Sampling System (CASS) methodology for studying students' learning experiences connected to ongoing activities during clinical education on an interprofessional training ward. The purpose of the Background chapter is to give a broad introduction to the different aspects that have to be taken into consideration in this thesis.

HEALTH CARE EDUCATION

Professional degrees

Students dealt with in this thesis came from four higher education programmes. Nursing is the largest of these programmes, followed by medicine, physiotherapy and occupational therapy.

The overall responsibility for higher education in Sweden rests with the Swedish Parliament and Government. Fourteen universities and 20 university colleges offer higher health care education. In 2007 the Swedish Higher Education Ordinance was adjusted in agreement with the Framework of the Bologna Process. Today educational programmes, courses and qualifications are therefore assigned in three cycles describing the categories of qualifications. Students that complete a higher educational programme of six semesters (three years) will be awarded a bachelor's degree. A Bachelor of Science degree in nursing, occupational therapy or physiotherapy corresponds to 180 credits (first-cycle professional qualification), whereof 90 credits must be in the subject area of the main area and also include an independent project equivalent to 15 credits. To receive the Master of Science degree in medicine (to become a physician), the student must complete 330 credits. This programme comprises over 11 semesters (five and a half years) and includes an independent project equivalent to 30 credits (Universitetskanslersämbetet, 2013).

The students graduate as health care professionals twice a year. Table 1 shows the number of graduated students per educational programme and gender during the years 2008–2012.

Table 1. Numbers of graduated health care professionals in nursing, medicine, physiotherapy [PT] and occupational therapy [OT] in Sweden during the academic years from 2008–09 to 2011–12.

Academic year	**2008–2009**			**2009–2010**			**2010–2011**			**2011–2012**		
Educational programme	**Total**	**Male** / **Female**		**Total**	**Male** / **Female**		**Total**	**Male** / **Female**		**Total**	**Male** / **Female**	
Nursing	4239	583	3656	4018	482	3536	4138	482	3656	3911	494	3417
Medicine	989	398	591	992	416	576	983	421	562	1047	487	560
PT	502	149	353	521	116	405	522	165	357	537	155	382
OT	362	34	328	393	33	360	359	40	319	421	30	391

(Universitets- och kanslersämbetet [Swedish Higher Education Authority] http://www.uk-ambetet.se)

The intended learning outcomes for different educational programmes in terms of knowledge, skills and attitudes have been specified by the Swedish National Agency for Higher Education (SFS 1993:100). The requirements for a professional qualification for all health care professions also include the ability to collaborate with other professions.

Work-based learning

According to Bennet (2013), it is mainly during their clinical practice that students learn about their future professional roles. Work-based learning is a significant part of professional development and life-long learning (Eraut, 2004). Work-based learning differs from traditional forms of classroom teaching as it is described as participation and engagement in a community of practice. In this thesis, the community of practice in focus is the clinical training ward setting, being involved with others during ongoing activities to structure learning, understanding and to develop a professional identity (Lave & Wenger, 1991; Wenger, 2008). According to Siebert, Mills and Tuff (2009), work-based learning is effective for helping students to learn how to participate in groups and to have a dialogue with other students. Across many health care professions, work-based learning is used throughout clinical training as a way to give the students an opportunity to integrate their theoretical knowledge and apply clinical skills in a hands-on environment. During work-based learning students are also provided with opportunities to understand and learn about the interplay between theory and practice by working together with competent professionals. The idea is that much of what is learned is associated with situations related to the context in which it is learned (psychological, social and cultural). Participating in the everyday activities of a community of practice is a crucial part of learning (Wenger, 2008).

Work-based learning might be explored on two connected levels, individual learning and collective learning from others, which will increase individual knowledge (Raelin, 1997). Individuals' association with their own profession is usually related to a professional group model as described by the social identity theory. Furthermore, the context may impact on how individuals think, feel and act (Tajfel & Turner, 1986). Collaborative team activities are thus useful for developing understanding and adopting social characteristics that will be valuable for the students' future working life. Participation in clinical learning settings contributes to the socialization process of understanding future professional work. This includes skills concerning conflict management and leadership required for effective future professional practice (Arndt et al., 2009; Billet, 2002).

In order to get a more in-depth understanding of how students learn, it is important to keep in mind that learning is related to, for example, motivation, ambition and engagement (Marton, Hounsell & Entwistle, 1984). Learning is not an uncomplicated concept and according to Marton and Booth (1997) something that can be interpreted and understood in many different ways depending on one's own logical pre-

understanding or the intended meaning of the ongoing learning situation. Furthermore, they emphasize the importance of the qualitatively different styles of conceptualizing learning among students depending on their intention to learn, namely, deep or surface approaches. Surface learning is described as having the purpose of being able to repeat what is learned, whilst the deep approach is described as striving for greater understanding (Marton & Booth, 1997).

Reflection and learning

The word reflection is derived from the Latin word *reflectere*, 'to turn back' or 'to bend.' Dewey (1896) described *the reflex arc theory*, i.e., how individuals who experience sensations via reflective interpretation relate them to the outcome and in such a way as to create an understanding of the underlying psychological process concerning reflection. The meaning of the word reflection depends on the subject area and context in which it is used, e.g., it could mean the image you see when you look in a mirror, i.e., the image created by the light waves when they bounce back off you. In this thesis the word reflection is used as defined by Sandars (2009) in the AMEE Guide No. 44: p. 685: '*Reflection is a metacognitive (described as "thinking about thinking") process that occurs before, during and after situations with the purpose of developing greater understanding of both the self and the situation so that future encounters with the situation are informed from previous encounters*.'

Reflection is not always automatic; it often requires motivation, training and time for developing a critical approach, to stimulate self-awareness and new perspectives (Kolb, 1984; Schön, 1983; Branch, 2002; Moon, 2004). Self-awareness is a prerequisite for understanding and engagement in team-directed learning (that goes beyond self-directed learning) in such things as the collective responsibilities for the team's assignments (Jacobsen & Lindeqvist, 2009; Mellor, Cottrell & Moran, 2013).

The experiential learning theory by Kolb (1984) is useful during clinical interprofessional education (Figure 1).

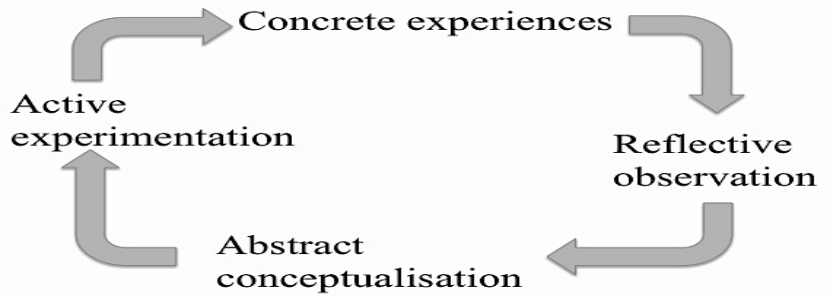

Figure 1. Theory of experiential learning, model inspired by Kolb (1984).

According to Kolb (1984) and the theory of experiential learning, learning is grounded in experience and, consequently, it is a continuous, ongoing process (Kolb, 1984). Firstly, a learning experience occurs when practicing students are given a chance to apply their acquired knowledge in a relevant situation. Secondly, students reflect about

the experienced situation and then, during the third stage, it is possible for them to interpret and understand the effects of the performance and, finally, to transfer this new knowledge to subsequent situations (Kolb, 1984). Reflection on experiences is required for developing insight concerning awareness about the 'know-how' needed to perform the assignment in the future (Schön, 1983).

The 'Reflection-in-Action' model is useful during students' clinical practice. It is based on requirements concerning the need to make professional a tacit knowledge, as well as diverse approaches to solving upcoming problems visibly (Schön, 1983). According to Moon (2004) the processes for developing appropriate learning concerning conducted activities rely on reflection (Schön, 1983; Branch, 2002; Moon, 2004).

Flexibly arranged and assigned time for reflection is important for effective learning and has been emphasized by Boud & Walker (1998). They also called attention to the impact of the social and cultural context when carrying out the reflective activity. Reflection is also a learning strategy concerning emotional aspects integrated in clinical and collaborative settings. Furthermore, reflection is useful as a way of preparing for participation in interprofessional education and for the development of professional roles as an embedded process in the experience of experts (Mann, 2009). According to Bennet et al. (2013), reflection is of central importance for making meaning of experiences and observations during work-based learning for professional development. Furthermore, they stated that students' analyses of their own reflection provide valuable perspectives on their own future and professional roles regarding, e.g., commitment, competence and behavior.

INTERPROFESSIONAL EDUCATION

According to World Health Organization (2010), the definition of interprofessional education (IPE) refers to when two or more professions learn about, from and with each other. Furthermore, the World Health Organization (2010) has acknowledged that there is sufficient evidence indicating that IPE, e.g., in clinical settings, enables effective collaborative practice and promotes patient care. The idea of IPE is widely implemented in universities in the Western world but less in other universities (World Health Organization, 2010). According to Clark (2011), IPE exerts an impact on collaborative practice by linking educational and clinical settings. In clinical IPE activities, the goal is that health care students, as a team, should learn how to transform theoretical knowledge into practical know-how and to promote innovation and improvements in patient care (Olson, Tooman & Alvarado, 2010).

Interprofessional vs multiprofessional

Not only the prefix 'inter' is used before 'professional', both 'inter' and 'multi' are used before education, study, training and learning. It is however, important to clarify the difference between interprofessional and multiprofessional. According to Gilbert

(2013), the prefix ‘inter’ is originally derived from Latin and means *among, between* and the use of the word professional in this context should be interpreted as a specified activity such as having a job and being employed. When interprofessional is attached to learning, practice, care or education, the term refers to interactional activities between different health care professionals regardless of their educational or professional status.

In 1997 the Centre for the Advancement of Interprofessional Education (CAIPE, 2002) defined IPE in the following way: *Interprofessional Education occurs when two or more professions learn with, from and about each other to improve collaboration and the quality of care*. IPE is distinguished from *multiprofessional education*, which is defined as follows: *Occasions when two or more professions learn side by side for whatever reason.* Thus, the aim and methods of interprofessional education are different compared to multiprofessional education (CAIPE, 1997; Barr, Hammick, Koppel & Reeves, 1999; CAIPE, 2002).

Work-based interprofessional education

Since the 1960s when initiatives for work-based IPE in communities and in primary health care in the United Kingdom started, they have become globally widespread and accepted across health and social care groups. Work-based IPE has been described as exchange, action, practice, simulation, observation-based and received learning (Bluteau & Jacksson, 2009). Different health care educational programmes are traditionally run mostly in parallel rather than interprofessionally (Barr, Koppel, Reeves, Hammick & Freeth, 2005; Hylin, 2010; Littlechild & Smith, 2013). The World Health Organization (2010) stated that IPE increases effective teamwork and that it is obvious that no professional group has all the necessary knowledge and skills needed. It is important to emphasize that IPE is not about taking away the boundaries between the professions (Barr et al., 2005; Littlechild & Smith, 2013). Furthermore, according to Littlechild and Smith (2013), interprofessional collaboration is based on experts working in a collegial non-hierarchical manner with several different professional members in a team to improve the care of individual patients. At the same time, it is hard to overcome such obstacles as structural, organizational and other difficulties connected with changing attitudes among health care professionals or students, and especially in clinical settings. Many have stressed the importance for health care teams with joint professional needs to work them out continuously and consistently, but it cannot be taken for granted that health professionals will work together (Parsell & Bligh, 1999; Aguilar, Stupans, Scutter & King, 2013; Littlechild & Smith, 2013).

In this thesis, the interprofessional health care team is defined as a group of different professionals who collaboratively share responsibilities for common objectives concerning the patients’ circumstances and patient care. One issue when establishing interprofessional teams is the nature and extent of each profession’s responsibility and specific role with their explicit knowledge. When creating clinical IPE settings it is necessary for facilitators to understand and set good examples as role models and also to require the students to identify their own professional roles and tasks in teams. Thus,

the interprofessional student team should be able to learn collaboratively and develop independence and autonomy (Barr et al., 2005; Bluteau & Jacksson, 2009; Hammick, Freeth, Koppel, Reeves & Barr, 2007; Pelling, Kalen, Hammar, & Wahlström, 2011). Kenaszchuk, Rykhoff, Collins, McPhail, & van Soeren (2012) stressed that IPE gives health and social care professionals the opportunity to improve support and motivate further team collaboration. Collaboration is an important concept of interprofessional education (Illeris, 2009). In this thesis, the term collaboration is used to indicate that two or more individuals are working together to provide the highest quality of care (World Health Organization, 2010).

There have been significant developments in clinical education during the latest decades as a consequence of changes required for collaborative teamwork among health care professionals (Reeves, Perrier, Goldman, Freeth & Zwarenstein, 2013). In 2010 the World Health Organization emphasized the importance of collaboration among different health care professionals in order to provide the best possible quality of patient care, and this has impacted clinical health care education. The health care education programmes therefore have an increased focus on interprofessional collaborative training. It is necessary for students to learn how to effectively communicate in teams for safe and effective patient care, including the handover of patients (Barr et al. 2005; Varpio, Hall, Lingard & Schryer, 2008; Dornan, Mann, Scherpbier & Spencer, 2011).

Communication (derived from the Latin *commūnicāre*) means 'to share', e.g., an exchange of thoughts, information or messages, expressed by speaking, writing, visual means or acting, that assumes a sender and a receiver who share a communicative area. According to Lasswell (1948), the degree of exchange between the audience and the communicators determines if it is a one- or two-way communication that occurs and depends on the preparedness of the participants when transferring and receiving information. If it is a conversation, it has to be a two-way communication; otherwise, it is a monologue, something that may depend on the participants' aim, content, power or consensual respect (Lasswell, 1948).

Interprofessional health care teams' ways of working collaboratively reflect the members' views and attitudes concerning how they experience working with different health care professionals. According to Makino et al. (2013), students' attitude towards health care teamwork is more positive than among graduated professionals. Hylin, Nyholm, Mattiasson & Ponzer (2007) reported in their study that two years after students had participated on an interprofessional training ward (IPTW) course, they said that they had a better understanding of the different professional roles and the importance of good communication for effective team-work and for good patient outcomes. According to Clark (2006), interprofessional teamwork training provides students with learning experiences concerning professional differences in the team and about dealing with communication problems and other conflicts that will occur. The need for reflection on care and actions for effective IPE has been emphasized by Bluteau & Jacksson (2009) and also by Schön (1983), who views reflection as a

prerequisite for knowing how to develop practice. When students are able to reflect interprofessionally they open up possibilities to learn from, with and about each other and thus about how to improve their practice.

In order to promote meaningful clinical IPE, it is a prerequisite to have democratic team collaboration and to focus on real-life experiences so as to enable constructive reflection. According to Reeves and Goldman (2011), IPE will be more successful when the students interact collaboratively in realistic work-based experiences to develop a holistic insight into the clinical environment. It is important that IPE relates to real practice and, furthermore, includes participants from different professions. Hylin (2010) reported that a clinical IPE team consisting of one student from each of the three professions, medicine, physiotherapy and occupational therapy, along with three nursing students has appeared to work out well.

Interprofessional training wards

The first interprofessional training ward (IPTW) was established in Sweden, Linköping, 1996 (Fallsberg & Wijma, 1999), followed by Stockholm in 1998. During the academic years 2001 – 2009, a total of ten IPTWs were established in Sweden. In 2004 the first IPTW was started in Denmark (Holstebro) and some years later also in Kolding and in Aalborg (Jakobsen, 2011). Today, there are several types of IPTWs in operation also in Australia, Canada, Japan and the United Kingdom.

Södersjukhuset, where the studies included in this thesis were conducted, was one of four teaching hospitals connected to Karolinska Institutet, Stockholm, that during 1998 participated in the collaborative project between Karolinska Institutet and the Stockholm County Council with the motto, 'Learning together to be able to work together' (Hylin, 2010, p. 11). As result of this project an IPTW was established at Södersjukhuset and has been running and continuously developed since then.

The general goals for clinical interprofessional courses are to develop students' professional roles, to enhance their understanding of other professions and of the importance of good communication for teamwork and patient care (Clark, 2009; Ponzer et al., 2004; Gilbert, 2013). During an IPTW course teams of health care students work collaboratively, apply their theoretical knowledge in real settings, practice clinical skills, develop their understanding of their own and other's specific professional roles, develop interprofessional attitudes and also provide the patients with good care (Barr et al., 2005; Littlechild & Smith, 2013).

Attitudes towards interprofessional education

The implementation of IPE assumes that one considers the dimensions of attitudinal and structural difficulties concerning preconceptions and a lack of knowledge among different professionals. Students enter educational learning contexts with their own set of expectations and attitudes about the relationship between their own role and the roles

of the other professionals involved. Their attitudes are shaped by their prior understanding based on previous experiences and may change over time with regard to new experiences (Parsell, Spalding & Bligh, 1998; Littlechild & Smith, 2013). Tajfel and Turner's (1986) social identity theory explains the process underlying how individuals behave concerning self-perception as a result of participating in a social group context.

According to globally accepted suggestions that collaboration and teamwork improve the effectiveness of patient care, a focus on 'shared learning' in health professional education has been developed (World Health Organization, 2010). Interprofessional education and thus learning is said to occur when students interact collaboratively to identify and solve problems. This enhances understanding and reduces negative attitudes between professional groups (Parsell, Spalding & Bligh, 1998; Littlechild & Smith, 2013). Furthermore, Jacobsen and Lindeqvist (2009) have shown that students' view of other professionals changed after participating in a clinical interprofessional course. These students appreciated other professionals' ways of providing care and also acquired a more positive attitude towards other professionals in the health care team after the course. However, negative attitudes towards IPE are not uncommon and studies have shown that it is important to provide interprofessional education as early as possible during the studies to affect and prevent negative attitudes and improve future interplay (Parsell & Bligh, 1998).

In practice, interprofessional collaboration barriers are usually related to a desire to protect profession-specific activities (Littlechild & Smith, 2013). Traditional responsibilities among health care professionals concerning the education of students from their own profession might be an explanation. As a rule, students are isolated from other educational programmes, which has resulted in so-called uniprofessional identities and a lack of understanding of, for example, the benefits of interprofessional collaboration. The changes required for such an improved and holistic interprofessional understanding have been described as a socialization process that would be provided during clinical IPE (Khalili, Orchard, Spence Lashinger & Farah, 2013).

Measuring readiness for interprofessional education

To promote meaningful clinical interprofessional collaboration, it is important to take into consideration the participating students' previous opinions about clinical IPE. One method is to use validated questionnaires. The Readiness for Interprofessional Learning Scale, RIPLS (Parsell & Bligh, 1999) is widely used for this purpose. The RIPLS includes 19 items formulated to measure students' readiness for interprofessional learning. The development of this scale was based on social and psychological theories concerning adult learning and group/team functioning. The RIPLS has been shown to reveal students' reflections pertaining to the underlying relationships between characteristics required for teamwork and collaboration, developed professional identities and also their readiness for shared learning (Parsell & Bligh, 1999). The scale

has been validated for a Swedish health care education context (Appendix) (Lauffs et al., 2008).

The RIPLS questions are scored from 1 to 5 on a Likert scale, where 5 indicates strong agreement and 1 strong disagreement. Thus, a high score suggests a value indicating positive attitudes towards interprofessional learning. The RIPLS scores were originally categorized into three factors, 'Team-work and collaboration' (questions 1–9), 'Professional identity' (questions 10–16) and 'Professional roles' (questions 17–19), each factor intended to be presented with a mean value (Parsell & Bligh, 1999). Based on their results, McFadyen et al. (2005) suggested a new categorization of the original 19-item RIPLS questions into four subscales. The four new subscales created were 'Teamwork and collaboration' (questions 1–9), 'Negative professional identity' (questions 10–12, reversed score), 'Positive professional identity' (questions 13–16), and 'Roles and responsibilities' (questions 17–19) chosen to be used in this thesis (McFadyen et al., 2005; McFadyen, Webster and Maclaren, 2006).

Professional and interprofessional knowledge

Students' reflections on working in an interprofessional team have been recognized as an important aspect of preparation for mutual understanding so as to enable effective collaborative practice that will improve the quality of patient care (World Health Organization, 2010). The general desire to prioritize interprofessional teamwork has had an influence on health care. For instance, the profession-specific language (terminology), tasks and responsibilities have become distinct. It is thus important to be clear, call attention to and present specific strategies and suggestions, also with regard to the influence of traditional hierarchies on the team members' work concerning belongingness, loyalty and assumed roles (Littlechild & Smith, 2013). Members in an interprofessional team are expected to represent their own profession, but also, via collaborative practice, to rely on the other professions. The importance of understanding one's own and one another's profession is not the same as doing one another's job (Hall, 2005). The specific skills and responsibilities of other professions should be appreciated for developing useful complementary approaches. It has been shown that a mutual understanding and achieved awareness of other team members' expectations can dismantle communication and collaboration barriers and thereby can also improve health care outcomes (Barr et. al, 2005; Bluteau & Jacksson, 2009; Kvarnström, 2008; Hall, Weaver & Grassau, 2013; Littlechild & Smith, 2013; World Health Organization, 2010).

THEORETICAL FRAMEWORK

In this thesis, students' learning is understood to be a process, derived from theoretical, emotional and socially acquired knowledge (Illeris, 2009). This knowledge is used in clinical interprofessional joint activities and developed into new knowledge that might be useful for the students in the future (Swanwick, 2011). According to Scardamalia and Bereiter (2006), knowledge building is knowledge developed in a joint collaboration rather than individually. This process of knowledge creation is required in clinical health care education because of the necessity for students from different educational programmes to learn outside their own individual and professional competence areas in order to enable collaboration and the progression of both individual and joint knowledge (Barr, 2005; World Health Organization, 2010; Hall et al., 2013).

Metaphors of learning

In 1998 Sfard described two metaphors of learning as two ways of understanding how learning occurs: the acquisition or 'monological' metaphor and the participation or 'dialogical' metaphor (Sfard, 1998). Thereafter, in 2005, Paavola & Hakkarainen described a third metaphor of learning, the knowledge creation or 'trialogical' metaphor (Figure 2). This metaphor emphasizes the way people engage in deliberately advancing knowledge by collaboratively developing artifacts or practices that support the progression of knowledge and innovation (Paavola and Hakkarainen, 2005).

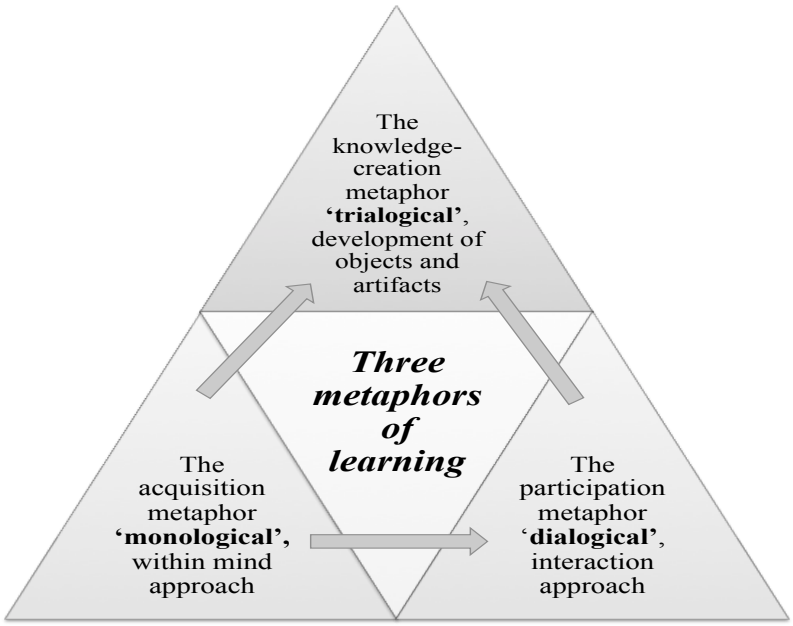

Figure 2. Three metaphors of learning including the 'trialogical approach' inspired by Paavola and Hakkarainen (2005).

The 'trialogical' approach addresses the importance of generating new ideas and conceptual knowledge (compare the 'monological metaphor) and creating social structures and collaborative processes but also the way people develop and organize work with mediating artifacts and practices as a basis for their collaborative learning.

Trialogical learning (Table 2) includes construction of knowledge with an emphasis not only on individuals or communities but it also emphasizes joint and organized work with artifacts and practices as a basis for collaborative learning (Paavola & Hakkarainen, 2005; Paavola & Hakkarainen 2009).

Table 2. The three metaphors of learning and their characteristics (Paavola & Hakkarainen, 2005).

	Main Focus	Theoretical foundation	Unit of analysis
Knowledge acquisition	A process of adopting or constructing subject-matter knowledge and mental representations.	Theories of knowledge structures and schemata, individual expertise, traditional cognitivist theories. Logically oriented epistemology.	Individuals.
Participation	A process of participating in social communities, enculturation, cognitive socialization. Norms, values and identities.	Situated and distributed cognition, communities of practice. Sociologically oriented epistemology.	Groups, communities, network and cultures.
Knowledge creation	A process of creating and developing new material and conceptual artifacts. Conscious knowledge advancement, discovery, and innovation.	Knowledge-creating organizations. Activity theory. Knowledge-building theory. Epistemology of mediation.	Individuals and groups creating mediating artifacts within cultural settings.

Students who, during their clinical IPE, take care of a patient with pain collaboratively may illustrate the trialogical approach in clinical practice. They share their knowledge and systematically develop new knowledge for this concrete objective, which will be useful for them in the future. The students share a combination of their theoretical, practical, tacit and explicit knowledge. The levels of individual and collective knowledge are bound together in a dynamic way to solve upcoming tasks. The trialogical approach was developed from knowledge building described by Scardamalia (2002) and Nonaka & Toyama (2003). It is exemplified when students, with their teachers' support, modify or create public knowledge aimed at making tacit knowledge explicit in thinking and acting.

Academic emotions

Learning is not a purely cognitive or individual matter; students also experience so-called 'academic emotions', which influence the students' learning and achievements. Academic emotions, e.g., feelings of stress anxiety, boredom, enthusiasm and joy, are a complex interaction between emotions, engagement and performance, which are tied to the students' self-appraisal. Previous studies have shown that students' academic emotions are important contributors to their study results and their learning. Emotions are probably involved and influence our ability to structure and process information and also to understand what we learn (Lonka et al., 2008; Moon, 2004; Pekrun, Goetz, Titz, & Perry, 2002).

Emotions can be regarded as feelings that are beyond our control and are complex, consisting of physiological, behavioural and cognitive reactions to situations that have to be managed and directed (Pekrun et al., 2002). Cognitively, a student can interpret an ongoing activity in different ways, e.g., as interesting, indistinct, hard to solve or enjoyable. Such a situation might be experienced as sad and may evoke tears while a situation experienced as dangerous or stressful might lead to tachycardia. According to Elo, Leppänen and Jahkola (2003) the definition of stress also used in this thesis is as follows: a situation in which a person feels tense, restless, nervous or anxious or is unable to sleep at night because his/her mind is troubled. Thus, it is important to identify the link between emotions, thoughts and actions to find ways to teach students how to regulate, manage and control their emotions to some degree. For these reasons, it is important to create learning environments that provide students with optimal learning possibilities.

Strategies for creative and flexible learning have been reported to facilitate positive academic emotions, while strict approaches and procedures may bring up negative emotions. The 'four-channel model' (Figure 3) has been used to describe academic emotions that influence learning (Csikszentmihalyi, 1990).

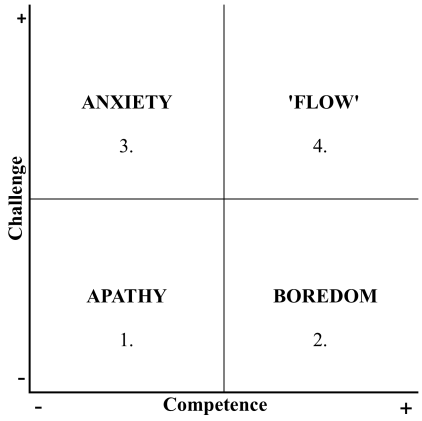

Figure 3. The four channels of 'flow' described by Csikszentmihalyi (1990).

Optimal experiences

A situation experienced as optimal *'flow'* is described as occurring when learners experience the task or situation as meaningful, challenging and they have adequate competence to manage it (Csikszentmihalyi, 1990). According to Moon (2004), a learning situation should not be too simplified or too arranged; so in order to be able to manage and make progress during learning situations, challenging tasks are needed. When people experience 'flow' they are absorbed in an activity, lose the sense of time and experience great satisfaction with doing the assignment for its own sake. It has been indicated that when learners experience the situation as optimal, a positive circle will be generated that influences emotions and individual development. On the other hand, it is also known that a high-level challenge together with low competence can lead to anxiety, while a high level of competence combined with a low-level challenge

might result in boredom, or possibly relaxation. If the experience of challenge and competence are low, it might lead to apathy with difficulties to concentrate and learn. Thus, optimal situations are important for the long-term effects on individual learning (Csikszentmihalyi, 1990; Delle Fave & Massimini, 2005).

INVESTIGATING CLINICAL LEARNING

When studying how students experience their clinical learning environments and how and what they have learned, *post-course questionnaires and interviews* are generally used. Even if these methods are valid and often used, they still have the disadvantage that students are asked in retrospect about their opinions and experiences, sometimes several months after the learning situation occurred. During recent years, novel methods have been developed to investigate learning while it occurs. One such is the *Contextual Activity Sampling System* (CASS*)* methodology (Muukkonen, Hakkarainen, Inkinen, Lonka & Salmela-Aro, 2008).

Questionnaires

The use of questionnaires for collecting data on human communities was introduced by Sir Francis Galton, born in 1822 in England, an explorer and anthropologist, who described in 1875 a process for obtaining material by sending out circulars to individuals to get their responses (Galton, 2012). Questionnaires are considered to consist of a series of predetermined questions. They can include one or two, but also more than fifty, questions with the purpose of gathering information from the respondents. Marketers, educators, physicians and others use questionnaires as a research instrument with an underlying assumption that objectives of specific interest will be investigated. They can be prepared for statistical analyses and may be administered in several different ways: hand-over, by post, asked during an interview or sent via the Internet in different forms. Considerations concerning the assumed purpose for using questionnaires and how to work out items for collecting the requested information are important for motivating the respondents. A response rate of 60–70% or higher is considered to be sufficient for a representative sample (Berdie, Anderson & Niebuhr, 1986; Murphy, 1993). A weakness of post-course questionnaires is that the students are asked to generalize about their experiences in retrospect with the risk of bias and errors (Reis & Gable, 2000). Moreover, the survey methods are often individually oriented with a focus on the respondents' beliefs, instead of their practices or learning activities (Shiffman, Stone & Hufford, 2008). An advantage of questionnaires is that they are inexpensive and constitute an easy way to gather large amounts of data compared to other methods of investigations such as, for instance, conducting interviews.

Interviews

Interviews are conducted in many different forms, e.g., journalism, media reporting and also when conducting qualitative research. An interview may be described as a conversation between individuals, an interviewer who asks questions to elicit facts or statements from one or several respondents. A semi-structured interview is, in contrast to a structured interview, open in nature and allows new ideas to be discussed during the interview. While conducting a semi-structured interview, it is permissible to tailor the questions during the interview so that they are adjusted to both the context and the situation and the people who are interviewed. Generally, the interviewer has a prepared agenda of topics, a so-called interview guide, which is an informal reference with topics and questions to be explored by the interviewer to ensure that the same basic items are discussed during all interviews (Patton, 2002; Polit & Beck, 2012).

Contextual Activity Sampling System

The Contextual Activity Sampling System (CASS) methodology was designed to provide users with means to collect frequent data from participants' ongoing learning activities by using mobile phones (Muukkonen et al., 2008; Muukkonen et al., 2009). CASS is a context and process-sensitive methodology inspired by ideas from the Experience Sampling Method (ESM) (Csikszentmihalyi & Larson, 1987).

The ESM was developed to capture repeated sampling of information about the participants' personal experiences in their everyday life regarding both content and context. Csikszentmihalyi, Larson & Prescott published the first report on the use of the ESM in 1977 (Csikszentmihalyi, Larson & Prescott, 1977). Traditionally, the ESM has focused on subjective personal experiences with random time sampling as a way to characterize experiences. At the beginning of the 1990s, Stone and Shiffman introduced the Ecological Momentary Assessment (EMA), which has a broader approach aimed at capturing momentary experiences during ongoing activities using self-reports on physiological events and actions. Both the ESM and the EMA provide opportunities to conduct research on what people do and how they feel and think in a naturally occurring context. The features of the ESM and the EMA have been mainly the same since the beginning of the 1970s but have undergone changes driven by technological developments. To achieve a degree of immediacy by asking participants to respond to questions at specific points of time, the diaries have been used to gather timely reports from participants. The two methods avoid some of the potential biases, which are prevalent when using retrospective diaries, by sampling experiences at the moment when the actual situation occurs. The ecological validity, meaning that the research is conducted in the investigated subject's natural environment, increases when using methods like the EMS and the EMA (Bolger, Davis, & Rafaeli, 2003; Csikszentmihalyi & Larson, 1987; Hektner, Schmidt & Csikszentmihalyi, 2007; Rohlfing, Rhem, & Goecke, 2003; Shiffman et al., 2008; Stone & Shiffman, 2002).

Together with the CASS methodology a technological infrastructure has been developed. The CASS-Query tool, which is a Java application, runs on 3G mobile phones and is connected to a web-based administrative server (Figure 4). The web administrative server is used for uploading, storing and viewing data and for downloading collected data for statistical analysis.

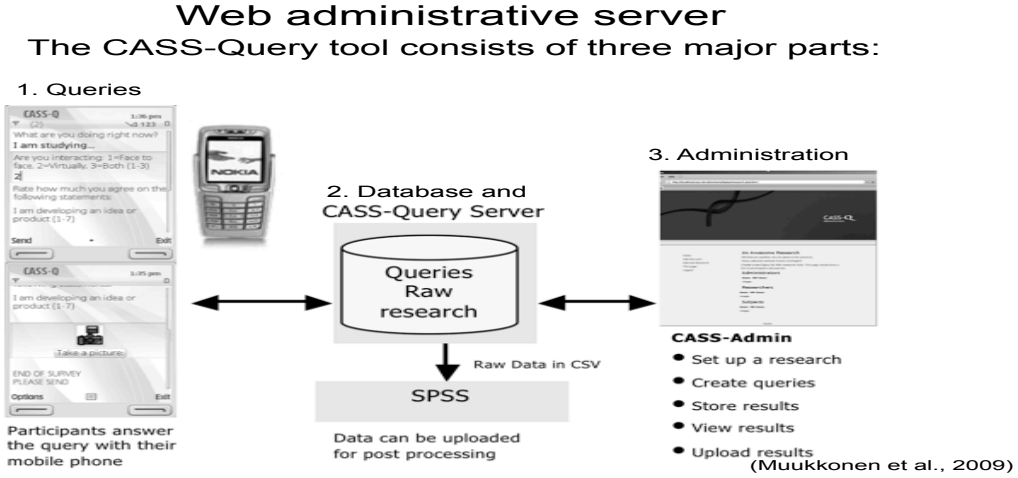

Figure 4. The web-based administrative server connected to the CASS-Query tool.

The original CASS questions were developed to investigate university students´ study practices with a focus on how socio-emotional experiences impact their studies and motivation and their possibilities to create new knowledge together with their classmates (Muukkonen et al., 2008). It was central in the development of the CASS methodology to enable collection of both qualitative and quantitative data. Therefore, the CASS questionnaire was designed to contain different types of questions and different types of responses, such as free text answers, Likert scale responses, pictures and audio and video recordings. The participants receive CASS questionnaires via their mobile phones and are asked to describe their ongoing activities and experiences, preferably within five minutes after the received inquiry. Answering the question within a short time frame is important for increasing the ecological validity. The researchers decide about the availability of the questionnaires. The CASS methodology enables the researchers to follow the participants' practices longitudinally. In contrast to other survey methods, generalizations are made by the researchers since each respondent assesses just one situation each time. Thus, the researchers are responsible for how to construct, combine and modify the observations collected over time (Muukkonen et al., 2008).

The Contextual Activity Sampling System (CASS) is related to a number of key aspects of this thesis: on the one hand CASS is a research *methodology* explored in the studies of this thesis. On the other hand, CASS is a *tool*, namely the CASS-Query mobile application, which was used for contextually following the students' learning activities during interprofessional clinical courses. Moreover, to investigate and elicit students' experiences, the CASS *queries* address theories about learning, academic emotions and knowledge creation and other issues and have been specifically designed to be suitable for the CASS methodology and tool.

Methods for data analysis

Mixed methods

When different types of datasets need to be collected within one study in order to enhance a synergistic understanding of a research question, the mixed methods approach can be used (Johnson & Onwuegbuzie, 2004). When using mixed methods, quantitative data (e.g., questionnaires) can be used to collect information on previously known aspects, and qualitative data (e.g., obtained via interviews) can be used to identify previously unknown aspects of the same issue. Thus, the mixed methods approach is aimed at combining the strengths of different types of data collection methods. To analyse these different types of datasets, adequate methods need to be used. Content analysis is a frequently used method for handling qualitative data. Different statistical methods are used for analysing quantitative data and are chosen based on the type of dataset and the research question to be answered.

Content analysis

Content analysis is a methodology used in the social sciences for analysing such communication-based data as written text, speech, interviews and visual materials. One type of content analysis was used as early as the late 17th century by churches to analyse the value of printings. Down through the years, content analysis has expanded to be used in several areas and can now be regarded as an important methodology within both qualitative and quantitative communication research (Krippendorf, 2004).

In *quantitative content analysis,* the focus is put on, for example, specific words, their distribution and frequencies throughout the text (Krippendorf, 2004).

Qualitative content analysis focuses on essential implications of the meaning of a text and can be handled in a manifest or latent manner. A manifest content analysis describes the material definitively (as categorical), while the aim of a latent analysis is to describe the researcher´s interpretation of the material's nature and construct (Krippendorff, 2004; Neuendorf, 2002; Patton, 2002). According to Hsieh and Shannon (2005), there are different approaches to how to interpret the data when performing a content analysis, e.g., via a conventional method when categories are coded directly and inductively.

The text is categorized using different techniques in a systematic and objective way with the goal of identifying characteristics that are shown to conform to the messages in the text. The texts used in qualitative content analyses might consist of transcribed responses from different sources, for example, from semi-structured interviews or systematic observations or field notes. To ensure the methodological validity, it is important that several researchers are involved during the process of coding the text to be investigated (Neuendorf, 2002; Patton, 2002; Krippendorff, 2004). When performing a qualitative content analysis the entire material is read systematically several times and open-mindely to obtain a naïve understanding of the text. The next

step is to analyse and identify important aspects of the content. The transcribed interviews are condensed into meaning units and thereafter labelled as categories. The categories should be regarded as various conceptions of the phenomenon appearing in different situations. The categories are used to organize and group the phenomena into meaningful clusters that constitute the manifest content. This is done with the aim of creating evidence by identifying patterns based on interpretation and inference and making sense of the material. By using this procedure, it is possible to describe situations without using previously existing themes or patterns as a structure (Neuendorf, 2002; Krippendorff, 2004). Another approach to performing interpretive qualitative content analyses is to use deductive analysis while the material is generating concepts based on previously presented themes, patterns or theories. *Inductive analysis* is suitable when not enough previous knowledge is available concerning the studied experience (Patton, 2002).

Statistical methods

Different statistical methods are used for analysing quantitative data and are chosen based on the type of dataset and the research question to be answered. Descriptive data are presented as the distribution of variables and the central tendency of each variable as the mean, median, range and/or standard deviation, depending on the data used. Both the Mann-Whitney U test (non-parametric) and the paired t-test (parametric) were used in this thesis to compare groups of variables. A p-value equal to or less than 0.05 was considered to be statistically significant (Pallant, 2007).

To analyse the results of questionnaires, specific aspects need to be considered. The questionnaires used include questions that ask the participants to rate their opinion regarding an issue. The Likert scale is often used for this type of rating. It specifies the level of agreement or disagreement for a given statement and is aimed at capturing the intensity of, for example, the feeling for a given subject or attitude. The Likert scale rating does not assume that the distances between two numbers are equal. This means that the scale ratings should be treated as ordinal data. However, in the published literature, they are treated as interval data, a choice that is well accepted by the scientific community (DeVellis, 2011).

To assess the internal consistency and reliability regarding questions included in questionnaires, Cronbach's alpha can be calculated. It refers to the degree to which or how well the questions included measure similar aspects. A Cronbach's alpha > 0.7 is considered to be acceptable reliability coefficient (Cronbach, 1951; Brace, Kemp, & Sneglar, 2009; DeVellis, 2012). Factor analysis is frequently used when developing instruments and to test the construct validity of established instruments before administering them to a specific population. A factor can be described as a cluster of variables with an underlying specific dimension of construct, which can be separated from other factors (Pett, Lackey & Sullivan, 2003; Raykov & Marcoulides, 2011).

RATIONALES FOR THIS THESIS

Although the field of research on interprofessional education has been approached from several angles, there is still a need for new knowledge about how learning occurs and is experienced in clinical settings. Attention has been called to the fact that there is a lack of research concerning the effects associated with attitudes to interprofessional education - IPE (Kenaszchuk et al., 2012). More focus also needs to be put on further understanding of the students' learning strategies during and after an interprofessional training ward course. Investigating how academic emotions and attitudes occur in clinical IPE settings, based on the students' own reported experiences, is valuable for a better understanding of their impact on the students' study results. It is also useful to take into consideration the students' experiences of perceived ongoing learning activities that have an impact on academic emotions concerning further development of collaborative, interprofessional health care team activities.

Furthermore, there has also been a demand for methods to assess interactional factors occurring during interprofessional education in clinical settings (Frenk et al., 2010; Thannhauser, Russell-Mayhew & Scott, 2010; Dornan et al., 2011; Gilbert, 2013; Kitto. Nordquist, Peller, Grant & Reeves, 2013). As far as we know, the state of knowledge concerning how and what is learned during clinical IPE settings has not been studied previously. The importance of reflection concerning education during ongoing learning situations is well known, but there is a lack of available and usable methods adapted to the clinical context (Clark, 2009). Thus, there is a need to develop different approaches and to use innovative teaching and learning methods with new emerging technologies to facilitate and improve routine continuous reflection. CASS as a novel method for investigating ongoing activities while they occur is one way of studying these aspects of IPE.

AIMS

The overall aim of this thesis was to investigate the potential of contextual activity sampling as an approach for studying students' experiences connected to learning activities during clinical interprofessional education.

The specific aims of the studies included in this thesis were:

***Study* I**

To cross-culturally adapt the original contextual activity sampling system (CASS) questions, the CASS methodology and Query application for use in a clinical learning environment in terms of language, content, interface interaction and logistics and to investigate whether CASS is suitable for collecting contextualized data in a clinical learning environment and how the students experienced it.

***Study* II**

To investigate students' learning experiences and academic emotions as they occur in actual context in relation to collaborative and trialogical activities during courses on interprofessional training wards (IPTWs).

***Study* III**

To obtain a deeper understanding of how students experience and perceive interprofessional collaboration connected with their learning activities during and after an interprofessional clinical course.

***Study* IV**

To investigate whether CASS had any impact on the students' readiness for interprofessional learning, their academic emotions, and their experiences of team collaboration during an interprofessional clinical training ward course.

MATERIALS AND METHODS

RESEARCH APPROACH

In medical education research one of the aims is to improve and rethink about educational approaches. The choice of methods and methodologies has to be tailored to the intended purpose of the project as in all research. This field of science often includes several perspectives and is therefore also characterized by the use of a variety of research approaches and methods. The history of science is rooted in positivism that emphasizes a way of understanding the world through objective studies and by discovering knowledge separated from the context and free from valuation. When using a positivistic perspective, knowledge is separated from the learner while a constructivist view does not see such a distinction between 'realities' and 'experience.' Constructivism can be described as a process when, e.g., students during ongoing learning activities construct understanding based on their previous knowledge, experience and perceptions of the context (Lincoln & Guba, 1985; Dornan et al., 2011). Also, different theories can be used to find explanations, to interpret and deepen understanding and to clarify and enhance the meaning of the findings obtained concerning both qualitatively and quantitatively collected data (Patton, 2002; Polit & Beck, 2012).

Although the aims of qualitative and quantitative research methods are in many ways similar, there are also several differences. Regardless of whether conducting qualitative or quantitative research, the quality and trustworthiness is important. When conducting qualitative research, traditionally, the aim is to provide insights into and understanding of different social phenomena. For this purpose, interviews are usually used. Quantitative research is often an empirical investigation with a numerical analysis aimed quantifying data and generalizing from the findings. The quality of data collected is always dependent on the authenticity and truthfulness, together with the research approaches used. This means being objective, careful and taking into account several perspectives, realities and interests when conducting a research process. Furthermore, it is necessary to provide the readers with a clear description in order to enable them to follow the research process and to make their own interpretations (Lincoln & Guba 1985; Patton, 2002; Polit & Beck, 2012).

This thesis is centred on to the field of medical education (Swanwick, 2011). The intention was to investigate the students' experiences during their ongoing clinical education in the context of communities of practice and situated learning which provided theoretical perspectives and the possibility of developing new learning approaches (Mann, 2011). The studies were conducted using a constructivist research approach aimed at enhancing understanding in an exploratory manner.

CONTEXT AND PARTICIPANTS

Context

The context in which the studies included were conducted is an interprofessional training ward (IPTW) at Södersjukhuset, Stockholm, Sweden. This IPTW is an orthopaedic ward with nine beds and is run by students and their supervisors from four different health care educational programmes: nursing, medicine, physiotherapy and occupational therapy. The interprofessional course on the IPTW is included in the core curriculum of all four educational programs and is therefore mandatory. The course lasts for two study weeks (six to eight days). During the course the students are responsible for medical care, nursing and rehabilitation care under supervision of facilitators from their own profession (Hylin, 2010).

On the first day of the course given at Södersjukhuset, all students participate in a team-building training session aimed at facilitating the process of enabling them to get to know their team members (5–6 students) and to start the team-building process before starting practice on the ward. This day includes practical exercises designed to enable the students to develop group skills and learn how to reflect and deal with constructive feedback (Hylin, 2010).

Participants

During the academic year 2009, when these studies took place, 14 IPTW courses were conducted at Södersjukhuset. A total of 254 students participated (Table 3). Nursing, physiotherapy (PT) and occupational therapy (OT) students were on their last semester (6^{th}). Medical students were on their 8^{th} semester of 11. Each IPTW course with about 18 students was devided into three student teams, each of which included one to two medical students, two to three nursing students, one or no occupational therapy student and one or no physiotherapy student, depending on the number of students in each course.

Table 3. Total number of students (nursing, medicine, physiotherapy [PT] and occupational therapy [OT]) taking an IPTW course during the academic year 2009.

	Male	**Female**	**Total**
Educational programme	***n* (%)**	***n* (%)**	***n* (%)**
Nursing	17 (37)	109 (52)	126 (50)
Medicine	23 (50)	47 (23)	70 (27)
PT	6 (13)	22 (11)	28 (11)
OT	0	30 (14)	30 (12)
Total (*n*)	**46**	**208**	**254**

Ninety-five students (aged between 22 and 51 years) from six of the 14 IPTW courses were asked to participate and 81 (85%) accepted. The most frequently reported reason for non-participation was fear of stress due to other mandatory activities.

From each course, two student teams of three were randomly assigned to be included in an intervention group (CASS used, *n*=54) and one team in a control group (not using CASS, *n*=27). After inclusion, three students did not wish to continue, which resulted in 51 students available in the intervention group. Data from the intervention group was used in all four studies and data from the control group were used only in *Study* IV, as summarized in Figure 5.

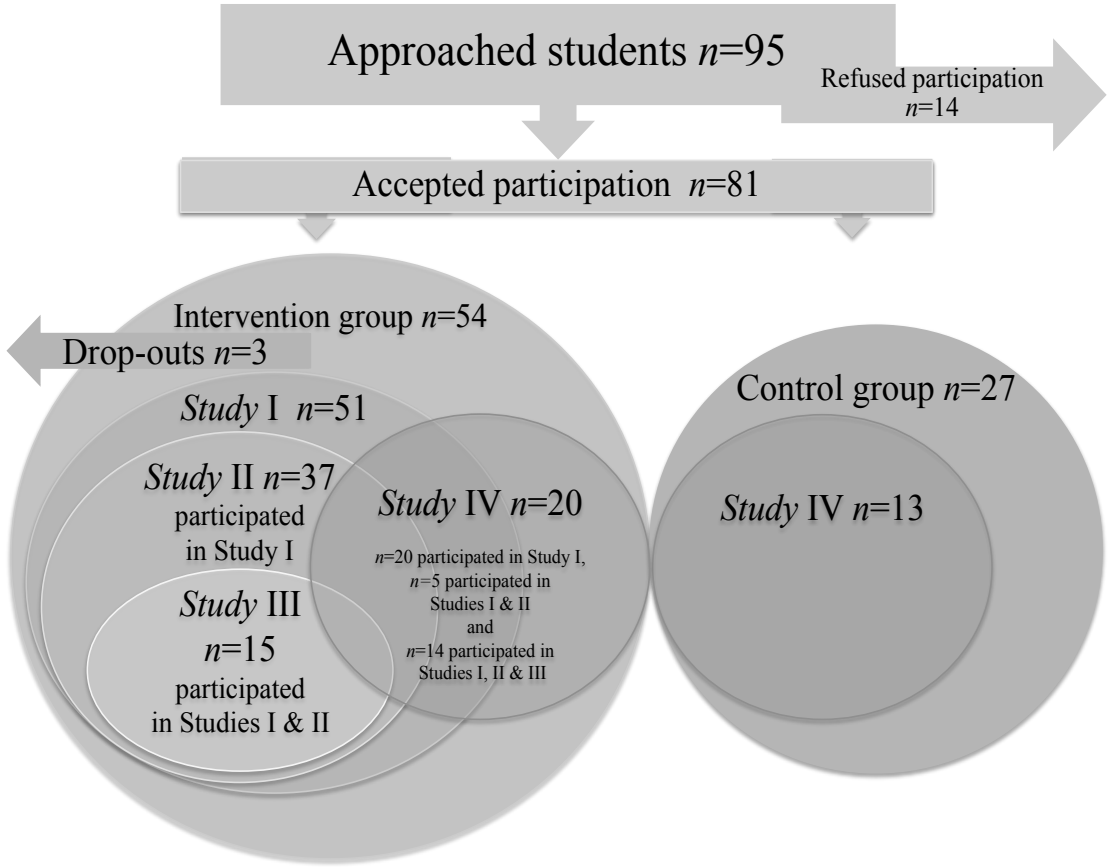

Figure 5. Overview of included students, intervention group (used CASS) and control group (not using CASS), in each of the studies.

In *Study* I parts of the collected data from all available 51 students from the intervention group were included.

The aim of *Study* II required that the students had responded to a minimum of two CASS day questionnaires (Figure 6) and also had answered the so-called trialogical questions (Muukkonen et al., 2008; Paavola & Hakkarainen, 2009) via CASS. In total, 37 students fulfilled these inclusions criteria and were included.

Data from 15 intervention group students were included in *Study* III since the criterion for inclusion was that the students had responded to a minimum of 15 CASS day questionnaires (Figure 6).

To be included in *Study* IV, it was required that the students had answered the RIPLS questionnaire both before and after the course. If the student belonged to the intervention group, the inclusion criteria also required that they had responded to more than five CASS questionnaires. The process of deciding which interviews were to be included in the analysis of *Study* IV was carried out by three researchers after reading individually the available 77 interview drafts and selecting the most informative ones. This selection procedure resulted in an agreement of 96% in the iterating process between the readers and thus ended up with 20 interviews from the intervention group and 13 from the control group being included (i.e. data from 14 of the 27 control group students was not used in any of the studies). Thus data from 33 students was included in *Study* IV.

METHODS

The students' experiences of their learning activities during the course on the interprofessional training ward were collected via the Contextual Activity Sampling System (CASS) for the intervention group and for both the intervention and the control groups via interviews and questionnaires after the course. Table 4 presents an overview of the frameworks for Studies I–IV. *Study* I was a methodological study investigating the usability of CASS in a clinical IPE context. *Study* II focused on students' experiences concerning IPE learning and *Study* III on students' experiences of collaboration. *Study* IV investigated whether there were differences between students in the intervention group (CASS used) and in the control group (not using CASS).

Table 4. Overview of the four studies included in this thesis.

Study	**I**	**II**	**III**	**IV**
Focus	Cross-cultural adaptation of CASS	Learning	Collaboration	CASS as a pedagogical tool
Research question	How can CASS methodology be used and adapted for clinical IPE learning context in Sweden?	How do students experience learning and acquire knowledge during clinical IPE?	How do students experience collaboration connected to learning activities during and after a clinical IPE-course?	Does CASS methodology affect the students' experience of learning activities and interprofessional team collaboration?
Design	Interventional, prospective Cross-cultural adaptation	Interventional, prospective	Interventional, prospective	Group randomized
Data from participants	51 students, intervention group	37 students, intervention group	15 students, intervention group	20 students, intervention group 13 students, control group
Data collection	Interviews, CASS-questionnaires	CASS-questionnaires	Interviews, CASS-questionnaires	Interviews, CASS-questionnaires, RIPLS, paper-based questionnaire

Cross-cultural adaptation of CASS

A set of the original CASS questions was first used in Finland (Muukkonen et al., 2008) in a university learning context and included many questions that were also useful in a health care context. However, a number of questions needed to be adapted to be suitable for a clinical learning setting. Thus, CASS questionnaires were translated back and forward from Finnish into Swedish according to cross-cultural adaptation guidelines described by Beaton, Bombardier, Guillemin and Ferraz (2000). Four independent bilingual individuals did the translation and the research group did the cross-cultural adaptation of CASS to Swedish and to a clinical interprofessional education setting.

Firstly, two independent bilingual translators, with Swedish as their native language, translated the original version of the questions into Swedish. One translator was a researcher trained in medical education and the other one was a health care professional, trained and informed about the aim of the questionnaire. Thereafter, two individuals discussed the forward translations, and differences were resolved by consensus. Two individuals, with Finnish as their native language, read off this version of the Swedish CASS questionnaire once again to perform a back translation into Finnish. One of these individuals was aware of the purpose of the translation and one was a health care professional, but neither one of them had used the questionnaire. Finally, the translations were reviewed during a meeting that included one of the forward translators and one of the back translators and differences were resolved by consensus. This version was tested on a small group of students for face validity. Additionally, it was also necessary to adapt CASS to a clinical learning environment. For optimal usability and in order to evaluate the reliability concerning the translated and adapted CASS questionnaires, an explorative factor analysis was carried out.

Data collection

The process of data collection was purposive and prospective. Data for *Studies* I, II, III and IV (for the intervention group) were collected via CASS. Data for *Studies* I, III and IV were also collected via individual semi-structured interviews with open-ended questions with the intention to explore the participants' experiences, emotions and opinions with the possibility of asking follow-up questions for a better understanding of specific areas of interest. In addition, during the post-course interviews, participants during the autumn semester (n=25) were also asked to rate on a Likert scale how difficult or time-consuming they had experienced the use of CASS, and these data were included in *Study* I. Furthermore, all students in *Study* IV answered the paper-based RIPLS questionnaire before and after the course. The control group students (not using CASS) answered a paper-based questionnaire with questions similar to those used in the questionnaires distributed via CASS after the completed course.

Collecting data via CASS

The students who agreed to participate and were assigned to be included in the intervention group were provided with mobile phones and given short instructions, oral and written (Appendix), on how the Contextual Activity Sampling System (CASS) functions. They were asked to answer questionnaires available for downloading to their mobile phones five times during each IPTW course study day; one before the beginning of the study day, three during the study day and finally one after the completed study day.

Schedules on an IPTW are irregular, which meant that the students were on the ward at different times of the study days, i.e. a morning shift that began at 7 a.m. and lasted to 3.30 p.m. or an afternoon shift from 1 p.m. to 9.30 p.m. Thus, two different schedules were used to make CASS questionnaires available for all students (Figure 6).

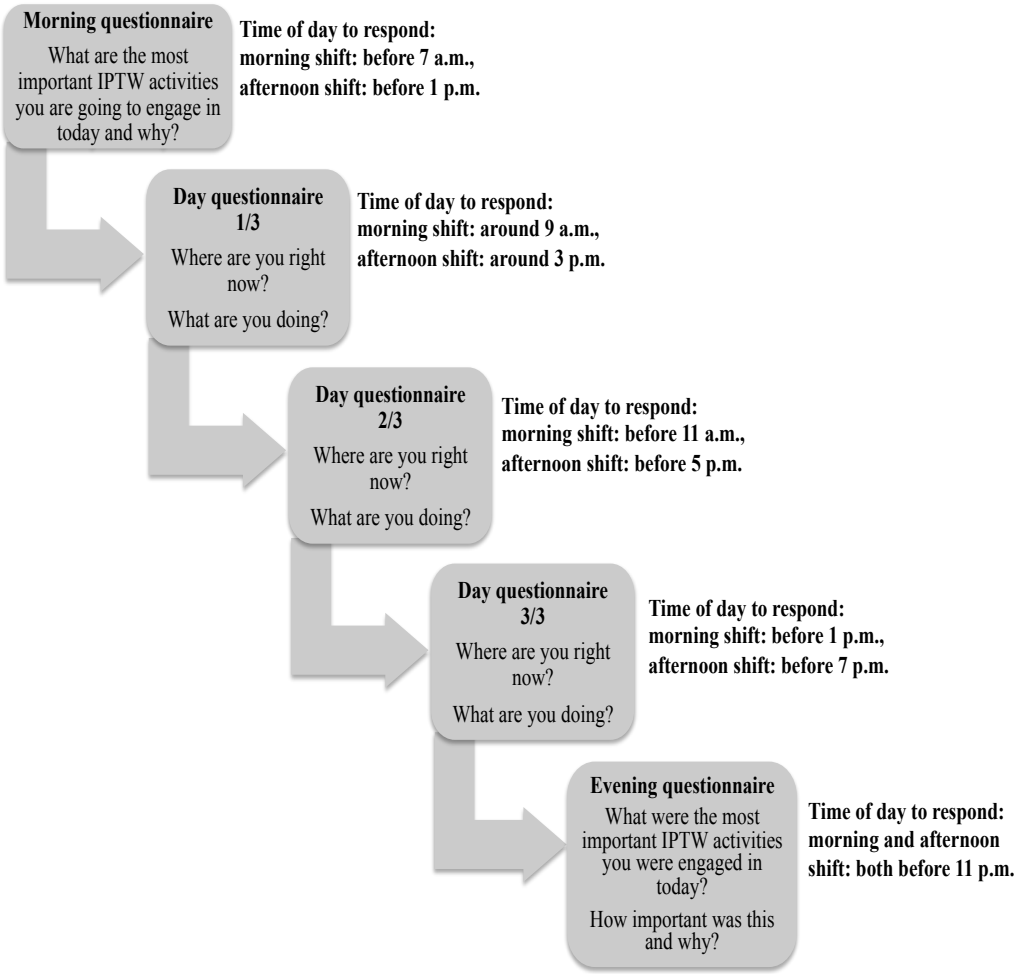

Figure 6. Schedule for daily distribution of CASS questionnaires.

The students were reminded by a signal via their mobile phone when it was time to download and respond to a questionnaire and were asked to reply as soon as possible and connect their answers to their ongoing activity.

Three types of CASS questionnaires were used daily:

1. Morning questionnaire: the first one every study day, to be answered before starting the study day; the students were asked to describe their plans for the upcoming study day on the IPTW (22 questions).
2. Day questionnaire: three questionnaires that were to be answered during the IPTW course day consisted of 30 questions intended to be connected to ongoing clinical activities that the students were engaged in at the moment.
3. Evening questionnaire: the last questionnaire of the study day to be responded to after completing the study day; the students were asked to report on how they had experienced their day on the IPTW (30 questions).

To download the available questionnaire, the students used a specially designed CASS application on their mobile phones that connected them to the Internet and made it possible to download the intended query from the web administrative server (Figure 4). After completing the questionnaire, they responded by sending it back to the web administrative server by using the CASS application on their mobile phone (Muukkonen et al., 2009).

CASS questions focused on the learning environment in connection with specific activities and academic emotions experienced by the students. CASS questions (Appendix) were piloted with ten students during academic year 2008. The students were asked to describe or report:

- Where they were, what they were doing and why (context and activity).
- If they were collaborating with someone and, if so, with whom and also how the collaboration worked out.
- If they, by reflecting on the ongoing activity, could contribute to the team to achieve a better understanding of interprofessional team collaboration and trialogical learning (Paavola & Hakkarainen, 2005; Paavola & Hakkarainen, 2009)
- Feelings of competence and challenge, connected to a specific, occurring activity, in order to determine the position in the 'four-channel model' (Csikszentmihalyi, 1990).
- Experience of importance and commitment for the current task.
- Academic emotions: positive affect (PA) and negative affect (NA) (Positive and negative affect schedule, PANAS) (Watson, Clark & Tellegen, 1988).
- Stress (Elo, Leppänen & Jahkola, 2003).

Each student was asked to respond to 30–40 questionnaires during the two-week IPTW course. The number of questionnaires depended on how many study days (six to eight) they had during the course.

The response time per questionnaire was about 3–5 minutes for the questionnaires with three different types of questions. Firstly, to make it possible to describe situations or if no alternative for answering was available, it was possible to write free text answers

with up to 1000 words. Second, the students were asked to rate on a Likert scale (1–7, with 7 indicating the maximum), for example, their feelings of competence or stress and how the collaboration worked out. And, lastly, multiple-choice questions were available to describe, for example, where they were at the reported moment. An extra function was also given, namely, the possibility to take a picture of the surrounding that they were in when responding.

Collecting data via interviews

During the students' last day on the IPTW, an individual semi-structured interview (Patton, 2002; Polit & Beck, 2012) was conducted with each of the students, regardless of whether they were included in the intervention group or the control group. An interview guide was formulated to give support during meetings with the students. The guide (Appendix) was piloted with ten students during 2008. The interviews were recorded and at the same time the interviewer made notes about significant points in the discussion, including any events of interest, such as disturbances during the interview and the interviewer's own reflections to which none of the participants had objections. The interviews were aimed at getting a more in-depth understanding of the students' experiences of CASS, learning and collaborative activities during the IPTW course. In total, 81 interviews were schedule to be conducted, but it ended up being 73 (43 intervention and 30 control group interviews), all conducted by HL. A total of 56 interviews were recorded and corresponded to 21 hours of recorded interview time for transcription. The interviews lasted 9–40 minutes: 13–40 minutes in the intervention group and 9–38 minutes in the control group. Since all students were asked to discuss their experiences and/or tell about their thoughts regarding CASS as an instrument and method and were also asked to comment on the relevance of the included questions, the control group interviews were somewhat shorter because they did not have that much to reflect on about using CASS. The interviews were then transcribed verbatim with the aim of making the narrated experiences explicit and expressed in nuanced, visible and readable descriptions. The interviews were used and treated in slightly different ways depending on the specified aims of each of the four studies. An interpretive approach was used to obtain insight and understanding. The aim was to find patterns in the students' reported experiences concerning learning, collaboration, academic emotions and the usability of CASS during an ongoing IPTW course.

Collecting data via paper-based questionnaires

All students were asked to respond to the Readiness for Interprofessional Learning Scale (RIPLS) questionnaire twice: during the first and the last day of the IPTW course. Furthermore, the control group students (not using CASS) included in *Study* IV answered the paper-based questionnaire with CASS-similar questions after the completed course.

Data analysis

Because of the specific aims of the studies included in this thesis, a mixed methods approach to analysing the data was chosen. Three different types of data collection methods generating both qualitative and quantitative data were used: the CASS methodology, interviews and questionnaires. Table 5 summarizes the different data analysis methods used in each study.

Table 5. Overview of analyses used in Studies I–IV.

	***Study* I**	***Study* II**	***Study* III**	***Study* IV**
Qualitative content analysis				
Latent content analysis	X		X	X
Manifest content analysis	X		X	X
Statistics				
Descriptive statistics	X	X	X	X
Mann-Whitney U test				X
Paired t-test			X	X
Missing data analysis		X	X	
Imputation with EM algorithm		X		
Z-score		X	X	
Cronbach's alpha		X		X
Factor analysis		X		
Mixed models		X		

Content analyses for qualitative data

A qualitative content analysis was chosen as a suitable method to analyse *interview data from semi-structured interviews and free text answers obtained via CASS* in Studies I, III and IV. To illustrate the main findings, quotations translated from Swedish to English were used.

The *interviews* were listened to several times and then transcribed completely verbatim and checked to ensure consistency. Sections of text for the studies' specified aims were identified and organized in appropriate groups. A qualitative *latent* content analysis was carried out to obtain a more in-depth understanding of the reported experiences by elucidating specified subjects in the analysed data (Patton, 2002; Neuendorf, 2002; Krippendorff, 2004).

The transcribed interview sections were first read several times to get their entirety and identify condensed meaning units, which were thereafter organized into content areas. The next step was to use the content areas as bases for obtain the latent meaning. Thus the content areas were organised into categories that were relate to the content concerning the student's reported experiences. Thereafter, each category was labelled with a code indicating belongingness. (Neuendorf, 2002; Krippendorff, 2004). The *latent* content (underlying meaning) was formulated as a theme. To ensure trustworthiness and to improve the depth and breadth of the data, the condensed meaning unit, content areas, codes and choice of a theme were discussed within the

research group until a consensus was reached (Patton, 2002; Krippendorff, 2004). To ensure the trustworthiness of the analytical process, the content areas and themes were also discussed within the research group until a consensus was reached (Patton, 2002). To facilitate the analysis process, the data were organized using the software NVivo (Bazeley, 2007) in *Study* III and the software Open Code (Dahlgren, Emmelin, & Winkvist, 2007) in *Study* IV.

The *free text answers* collected via CASS were handled in the same way as for the transcribed texts from interviews, but they were analysed using the *manifest* content analysis method. (Krippendorff, 2004; Neuendorf, 2002; Patton, 2002). Students' reports on their ongoing activities were categorized into groups of activities, i.e. team collaboration and working close to the patient (yes/no). The research group determined the construct of these categories.

Statistical methods for quantitative data

Quantitative data were collected via CASS and paper-based questionnaires and via validated questionnaires (RIPLS, PANAS) and pre-defined questions including statements and items of particular interest (e.g. stress, academic emotions). Students were asked to rate their feelings, thoughts and opinions on a Likert scale (1– 7, 7 indicating the maximum).

In Study I students' experiences and opinions about the usability of CASS were dealt with using descriptive statistics and the collected data were treated as ordinal-data.

In Study II all data were collected via CASS and the proportion of missing values for all distributed questionnaires and for each student were carefully calculated. The expectation-maximization algorithm was used to impute the missing data, which is a process for estimating missed values taking into account the information on received valid variables. This was done to avoid bias due to missing data (Hair, Black, Babin & Anderson, 2010). Since each participating student answered CASS questions more than once, a Z-score was calculated: first, the mean and standard deviation for each question and each student was calculated. The scores were then standardized for each question and for each student by setting the mean to 0 and the SD to 1 in order to reduce effects of variances related to individual answering tendencies (Raykov & Marcoulides, 2011). Cronbach's alpha was calculated to assess the internal consistency 'reliability' of the questions and scales included in CASS questionnaires. A factor analysis was performed to identify interrelationships between the questions. And a mixed model analysis was also performed to investigate the variance of components and covariance structure by taking into account possible dependencies regarding the fact that the student had answered the same questions several times during the two-weeks IPTW course.

In Study III the missing data analysis and Z-score calculations were performed in the same manner as in *Study* II.

In Study IV the intervention group (which used CASS) was compared with the control group (not using CASS) regarding the RIPLS findings before and after the course by using the Mann-Whitney test. The results of the analyses in *Study* IV were presented as means, standard deviations and internal consistency, using Cronbach's alpha (Cronbach, 1951). The Statistical Package for Social Science (SPSS versions 19 and 20), the Statistical Analysis System (SAS version 9.2) and spreadsheet application (Excel) were used for the statistical data analysis.

Trustworthiness

The qualitative and quantitative data collected and used in this thesis include responses from different questionnaires and interviews. The choice to use the mixed methods approach, instead of just one type of method, makes it harder for a researcher to be misled regarding the study results (Creswell & Clark, 2011; Polit & Beck, 2012). The volume of the frequently, continuously and repetitively collected data and the different data collection methods can be valued as strength. Furthermore, during the analysis a continuous discussion within the research group is considered to be of value for the trustworthiness.

The *concepts of credibility, dependability, transferability and reflexivity* when discussing the trustworthiness in qualitative studies are important (Lincoln & Guba 1985). For the trustworthiness of the four studies included in this thesis, specific descriptions have been presented in order to give clear explanations for methodological choices (Lincoln & Guba 1985; Patton, 2002; Polit & Beck, 2012).

Credibility

Regardless of whether qualitative or quantitative research is carried out, the importance of credibility, i.e., how well the collected data reflects the 'truth' should be considered. When data collection for this thesis was conducted one of the aims was to decrease recall bias (Reis & Gable, 2000) by using the CASS methodology. CASS has both advantages and disadvantages. The data reflect the ongoing learning activities, but the students must also answer frequently and repetitively the same questions. This fact might have been experienced as disturbing by the students and could have affected their willingness to complete all questionnaires. However, the numerous CASS data were considered to be sufficient and, together with data from other questionnaires and post-course interviews, they gave a broad view of the students´ experiences. All findings were also discussed within the research group (Patton, 2002; Polit & Beck, 2012).

Dependability

Dependability is described as the degree of stability and consistency concerning the collected data. It is also of importance to follow up whether there were any changes in the setting or the context during the research process (Polit & Beck, 2012). The data included in this thesis were collected during a limited period of time, six IPTW courses in the academic year 2009. During the data collection period the courses were run in the same manner and context and the aims of the courses were the same and the

responsibility of the responsible researcher, all of which can be regarded as a strength. The same person conducted all of the interviews and also collected the data. Thus the questions asked were presented and interpreted in the same way during the interviews. The fact that only one person conducted all interviews can be seen as strength, but also as a limitation – even if the positive value of having one interviewer, who is familiar to the participants' in the context, is known to facilitate the collection of adequate information from the participants (Lincoln & Guba, 1985). Detailed information about the data collection and analytical process is presented in this thesis and in each of the four included papers. A clear description of the process enables a better understanding of the analysis performed and is also valuable for future studies.

Transferability

Transferability raises the question of if and how the findings of qualitative research can be transferred or used in other contexts. When giving a systematic description of the research process, the context and the assumptions central to it are will be essential. However, the generalization of qualitative research findings, which are always dependent on the specific context, has to be carefully scrutinized. The appropriateness of transferring or generalizing qualitative research findings to other contexts has to be judged by the reader and depends on whether the descriptions are detailed enough (Lincoln & Guba 1985; Patton, 2002; Polit & Beck, 2012). Even so, qualitative research is seldom transferred to other populations despite the tradition of detailed descriptions of the research process that should make transferability easier. The studies conducted in this thesis might be transferable to other similar situations with sufficient similarities between the used and the intended contexts.

Reflexivity

In order to provide an essential perspective on the research project, particularly when conducting qualitative research, aimed at fair-minded interpretations, reflexivity is a necessary part of the research process. Thus, I will present my thoughts and considerations about my roll, my prior understanding and authority as a researcher.

Before, during and after the data collection I worked as a supervisor partly responsible for the students on the IPTW where these studies were conducted. According to Lincoln and Guba (1985), it is both an advantage and a disadvantage to have interactions between the researcher and the respondents. They emphasized that interaction is often needed and might be impossible to avoid for succeeding in achieving a purposeful sampling. To use the benefits of being familiar with the interprofessional ward course concept and context with the possibility of understanding different situations occurring during the course was judged to be more valuable than not to do so (Lincoln and Guba, 1985; Patton, 2002; Polit & Beck, 2012).

The structure and content of this thesis may have been influenced by the thoughts and backgrounds of the participating researchers. Also other individuals, e.g., students and supervisors connected to or outside the context of the IPTW course, may have given inspiration to and made impressions on the researchers (Lincoln and Guba, 1985).

ETHICAL CONSIDERATIONS

The Regional Ethical Review Board, Karolinska Institutet, Stockholm, Sweden, approved each of the studies included in this thesis (Dnr: 008/1769-31/2 and Dnr: 2011/1720-32). All studies were conducted according to the Helsinki Declaration (World Medical Association Declaration of Helsinki. Ethical Principles for Medical Research Involving Human Subjects, 1964). The students were informed (orally and in writing) during their first IPTW course day about the research project's design and intention and what participation would mean. They were also informed that participation was voluntary and that they could decline participation at any time without any consequences, neither for their course participation nor for their grades. All participants gave their informed consent after being provided with information about the aims and procedures, benefits and possible risks, and that the results were only intended for research purposes.

The collected data were handled anonymously, so that it was not possible to identify or connect them to any person. No ethical issues concerning patients on the IPTW were noted during the study period.

FINDINGS

STUDY I

The students who participated were positive about the CASS methodology and experienced CASS as being easy to use and not as time-consuming or disturbing as they had expected. They reported that the CASS queries provided occasions for reflection and moments to relax while responding. Five questionnaires for each study day (Figure 6) were not considered to be too many. Ninety-five per cent (*n*=974) of the available (*n*=1021) CASS questionnaires were downloaded and responded to. In addition, none of the students reported that the intense data collection led to an experience of being watched or monitored. Besides, only three of the 54 students who had accepted participation dropped out (Figure 5) owing to stress related to mandatory activities during the course. Some students experienced the questions included in each questionnaire to be too numerous and that some questions were not relevant. The morning questionnaires were experienced to be useful by providing support when making a plan for the upcoming study day on the ward. The response rate for the morning questionnaires was 100% among the 51 participating students. The evening questionnaires were not appreciated as much, even though they were reported to be useful during the interviews. This was confirmed by the low response rate: only 18% (*n*=63) of the evening questionnaires available for downloading (*n*=354) were answered.

The style, translation, and relevance of the items were discussed to find a balance between correct and usable formulations in the target language. The focus of the discussion was on nuances of words. The adaptation to a clinical context resulted in using the mobile telephones' sound and vibration signals to remind the students to reply and, at the same time, help them to connect their replies to specific activities. Translators and researchers took decisions together about words that would best reflect the intended meaning. The number of questions was also reduced and the lengths of texts in the questionnaires were shortened for speedier reading and responding.

CASS data provided a range of rich and detailed information on both qualitative and quantitative characteristics. Charts to visualize the collected CASS data were developed to illustrate the students' reported experiences related to time and activities. Figure 7 exemplifies one student's activities and ratings reported during a two-week course on the interprofessional training ward.

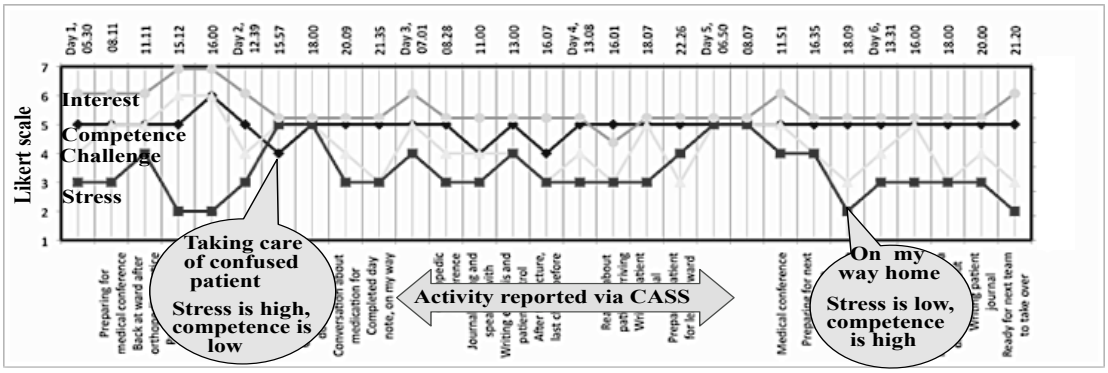

Figure 7. CASS data reported by one student shows experiences related to different activities during a period of six days.

STUDY II

The findings, all reported via CASS, showed that the students experienced being engaged in knowledge creation activities with their fellow students during the course. Furthermore, activities that were rated via the Likert scale as optimal (high challenge in combination with high competence, i.e., 'flow') occurred mainly when students from different educational programmes collaborated in patient care and when they participated in patient rounds. A significant correlation was identified between positive emotions and how important the activities were considered to be. Also, a significant correlation was identified between positive emotions and how trialogical activities were valued. On the other hand, there were no significant correlations between the level of how trialogical an activity was experienced to be and negative emotions or stress.

Another finding was that when the students reported an activity to be highly trialogical, they experienced optimal experiences, i.e., 'flow', in 42% cases. When the activities were given a low trialogical score, they experienced 'flow' in only 16% of the cases (Figure 8). There were significant correlations between the rated trialogical level of the ongoing activity and the position in the four-channel model (Figure 3). As visualized in Figure 8, experiences of apathy only occurred in 7% of the cases when the activities were experienced as highly trialogical, compared to 26% in the cases where the activities were experienced as being trialogical only to a low degree.

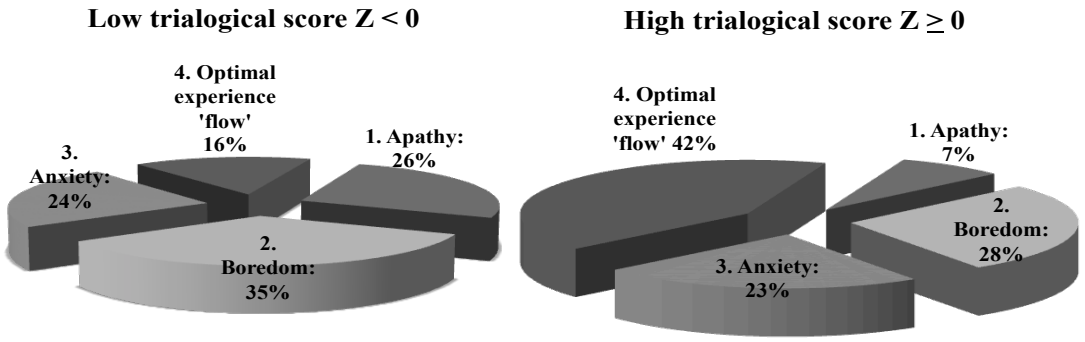

Figure 8. Activities rated as being trialogical to a low vs. high degree, and, different experiences according to the four-channel model (Figure 3).

There was a significant correlation between the experienced importance of an ongoing activity and the day of the interprofessional training ward course (p=0.034). Also the experienced level of the extent to which the ongoing activity was trialogical and the day on the course were significantly correlated (Figure 9). Moreover, a discrepancy between the students' educational programmes concerning how trialogical the activity was experienced to be and the day on the IPTW was identified (Figure 9).

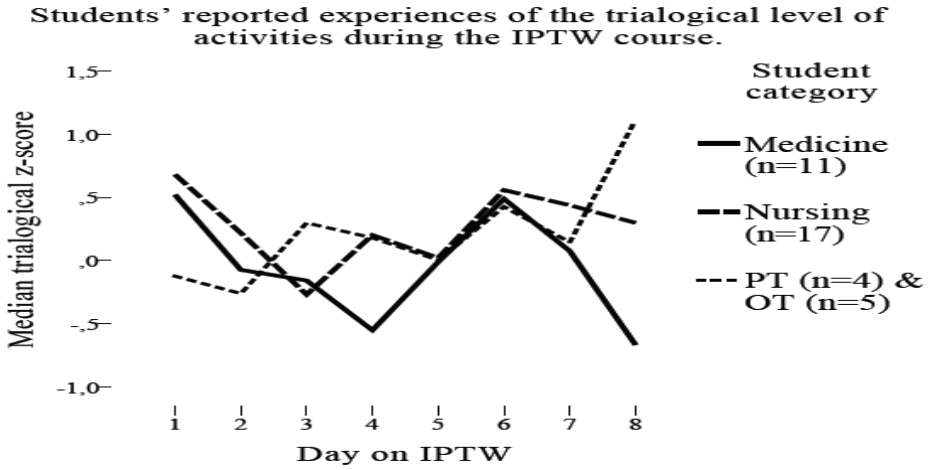

Figure 9. How trialogical the activities were experienced to be by the students (n=37) in relation to the day on the interprofessional training ward by the educational programmes: medicine, nursing, occupational therapy [OT] and physiotherapy [PT].

Medical and nursing students rated the ongoing activities to be most trialogical on days one and six while the physiotherapy and occupational therapy students (total *n*=9, unitized in one group) experienced a slightly increasing trialogical level of activities continuously during the course on the IPTW. There were no significant differences (p=0.44) between the rated level of how trialogical the activities were experienced to be, the educational programme and the day on the IPTW.

In total, 779 day questionnaires were available for downloading, whereof 65% (*n*=507) were downloaded, answered and returned. Fifty-four of these questionnaires were excluded owing to discontinued student participation (*n*=3), lacking specifications of activities (*n*=9) and large numbers of missing answers in the questionnaires (*n*=42). In the end, 58% (*n*=453) of the questionnaires were included in *Study* II. Table 6 presents an overview of the CASS day questionnaires that were made available and responded to in relation to the educational programme and gender.

Table 6. Overview of available and answered CASS day questionnaires presented as the number (*n*) and percentage (%) of answered questionnaires concerning educational programmes (medicine, nursing, physiotherapy [PT] and occupational therapy [OT]) included in *Study* II.

Educational programme	Total number of participants	Available day questionnaires (*n*)	Answered day questionnaires (*n*)	Answered percentage
Medicine	11	222	123	55
Nursing	17	356	213	60
PT	4	90	60	66
OT	5	111	57	51
Total	37	779	453	58

Categories identified concerning ongoing activities reported by the students resulted in five labelled ones, as follows: 'Working on one's own close to the patient,' 'Working on one's own with tasks associated with (but not close) to the patient,' 'Collaborating in a team, close to the patient,' 'Collaborating in a team, with tasks that are associated with, but not close to, the patient' and 'Activities at the hospital not immediately relevant to the course on the interprofessional training ward'. Activities reported as collaborative 49% (n=223) were experienced as being most trialogical regardless of which educational programme the students belonged to. The findings also showed that optimal experiences were reported most frequently where students were working close to the patient. In 54% of the reports when the students were working close to the patient they also reported an ongoing collaboration with other students.

Positive and significant correlations ($p < 0.001$) were identified between collaboration and the level of how trialogical the activity was experienced to be. Moreover, a significant correlation ($p < 0.001$) between the position in the four-channel model (Figure 3) and the experience of positive emotion was identified.

Additionally, a factor analysis was performed on the data collected via CASS to identify interrelationships. The analysis confirmed three factors, namely:

- Trialogical experience, with six aspects loaded strongly, except the question 'What I have previously learned is useful in this situation,' which had a weaker loading. However, this question, in combination with the observation that it did not influence the internal consistency, led to the decision to include it.
- Positive emotions (PANAS), questions asking about experiences regarding positive emotions, challenge and importance loaded strongly.
- Negative emotions (PANAS), questions about experiences regarding negative emotions together with the single-item question about stress loaded strongly in this group.

The internal consistency was subsequently evaluated by calculating Cronbach's alpha. This calculation revealed a trialogical sum score of 0.86. Considering the weak loading regarding question number 4, we also calculated Cronbach's alpha with question 4 excluded and it turned out to be 0.84. The factors for positive and negative emotions (PANAS) were 0.78 and 0.79, respectively. Furthermore, for the two questions about the importance of the task, Cronbach's alpha was 0.67. The internal consistency and the reliability indicated that the translation and cross-cultural adaptation of the CASS questionnaire were successful. The validity and reliability were therefore judged to be satisfactory for further use in clinical IPE educational settings.

STUDY III

The findings of *Study* III showed that students often reported via CASS on things not working out the way they wanted to or the way they had imagined. For example, they described how team members could disappear from the interprofessional training ward without informing others, which was experienced to be annoying. These difficulties reported via CASS were not mentioned in the post-course interviews.

Furthermore, team collaboration between fellow students from different educational programmes was reported to be highly valued both via CASS and during the interviews.

The data from the interviews regarding students' experiences of collaboration during and after participating in the course on the IPTW resulted in one overarching theme: 'Structure, interaction and insights facilitate students' clinical interprofessional collaboration.' This theme emerged from six categories:

'Allocation of tasks,' described as experiences concerning how activities were allocated and carried out and also how this impacted on collaboration. This category requests the team to find solutions for solving upcoming problems, sometimes concerning their need of support by supervisors. This category also explains an experience of enhanced understanding among the students' concerning their own and the other professions' roles and responsibilities in a health care team on an IPTW.

'Communication' describes how the students reported via CASS aspects related to lack of communication and that communication sometimes had more of the nature of one-way information than a dialogue. In the post-course interviews the students reported that they had experienced that the communication had developed over time. They also emphasized the importance of structure for well-functioning communication in order to improve collaboration.

'Team resources for interprofessional learning' describes the students' experiences of belonging to a clinical ward setting and possibilities for development. Furthermore, the students described how belonging to an interprofessional student team in a clinical ward context included learning how to deal with different levels and types of available knowledge, sometimes beneficial and sometimes difficult to manage.

'Participating' is the category that describes the students' experience of being part of a health care team, which contributed to their understanding of the importance of team collaboration and leadership. The medical students were described as informal leaders.

'Patient safety' describes experience of the importance of professionals with different profession-specific knowledge who contribute different perspectives on how to take care of a patient.

'Professional role' highlighted the students' awareness of how one's own and other team members' professional roles were clarified during the course on the IPTW. They experienced that their own credibility was enhanced, which provided the opportunity to both contribute and acquire knowledge and to interact during collaborative activities.

Regarding how the collaboration was reported via CASS during the courses, no significant differences were identified between the consecutive study days of the course (Figure 10).

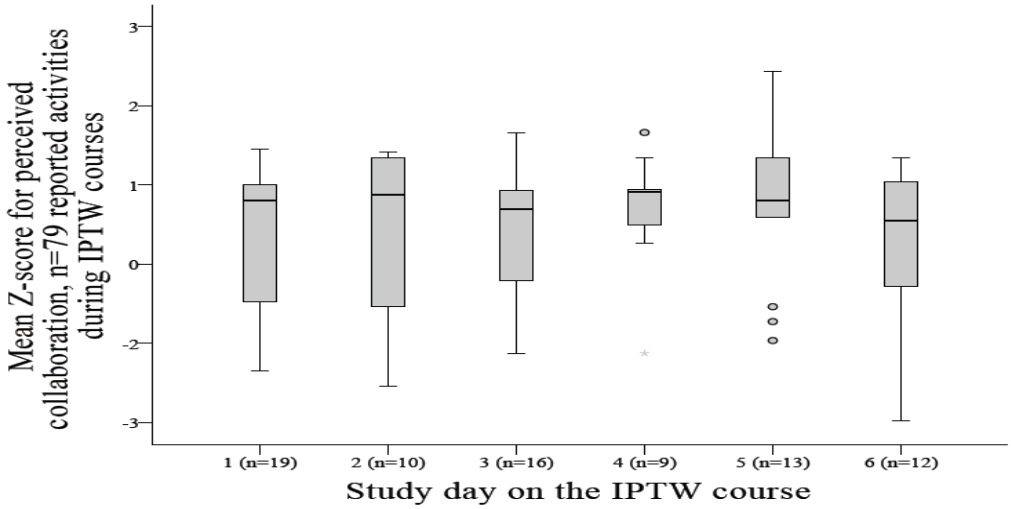

Figure 10. Mean level (Z-score) of reported experience about how well the team collaboration worked out and day during the IPTW course.

STUDY IV

Study IV showed differences between the intervention and the control group both via interviews and via data obtained from the RIPLS. Firstly, the students that used CASS rated their experience concerning their attitudes to 'teamwork and collaboration' via RIPLS significantly higher (p=0.02) after the conducted IPTW course than before the course, which was not the case for the control group (Figure 11).

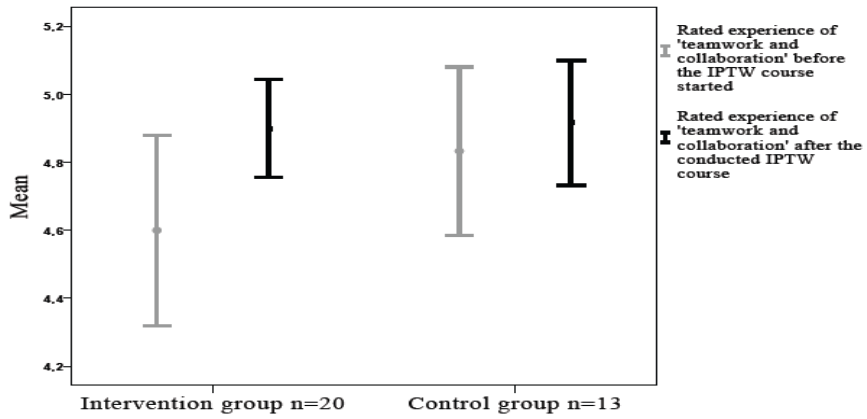

Figure 11. Mean level of reported experience concerning attitudes to 'teamwork and collaboration' before compared to after the IPTW course.

There was a significant (p=0.003) difference in the experience of stress among the students concerning the answers in the CASS questionnaires during the IPTW course compared to CASS-similar queries answered after the course by the control group. The students who were not using CASS rated stress higher compared to those who used CASS. The mean level of experienced stress reported by the intervention group was 2.55 (SD=1.02) compared to the control group, which reported a mean level of experienced stress of 4.40 (SD=2.27) (Figure 12).

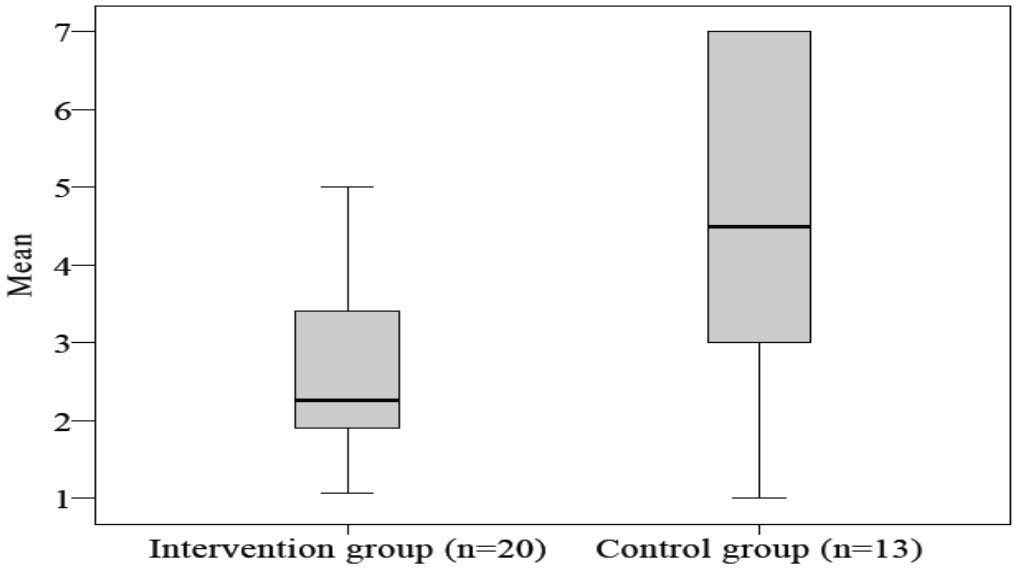

Figure 12. Mean level of reported stress.

Furthermore, during the interviews all the students stated that at the beginning of the course on the IPTW they did not know what was important or not concerning clinical study day activities. The possibility of discussing and sharing profession-specific knowledge within the team seemed to clarify these matters in the group that used CASS. The students in the group not using CASS did not state that this occurred. Instead, they stated that it was valuable for the team to listen, show respect and give time to one another to do their profession-specific tasks.

Replying to CASS queries several times a day and reflecting on for example, their academic emotions appeared to help the students to become aware of why and how they were engaged in various tasks. This seemed to help them to think about their own competences and professional development. They stated that reflecting while responding to CASS queries was more effective than reflecting during the allocated time for reflection at the end of the study day. Both the intervention and the control group students reported during the interviews that they experienced the daily reflection as a moment of retreat.

DISCUSSION

General Discussion

Despite continuous evaluation, research and development of higher healthcare education, there still is room for improvement. Therefore, it is important to deepen the understanding how students experience their learning during ongoing clinical education. This thesis focused on students from four health care educational programs who participated in two-week courses on an interprofessional training ward. The main methodology for studying their learning experiences was the Contextual Activity Sampling System – CASS. The cross-cultural adaptation process showed that CASS was usable in clinical learning environments. CASS supported the students to acquire insights about how, why, where and with whom they conducted different activities and to how to plan and improve collaboration within their team. Moreover, CASS provided researchers with rich amount of contextual information about how the students experienced different clinical learning activities and gave also insights in how collaboration within a team can result in creation of new knowledge for the team members. Based on the finding of this thesis the use of CASS in clinical learning environments is promising.

In total, 95% of the available CASS questionnaires were downloaded and responded to despite concerns that responding to the CASS queries several times each study day would be time-consuming and disturbing. Technical difficulties in downloading the CASS questionnaires due to weak mobile signals in the hospital can be regarded as a problem related to the introduction of new technologies but should be avoidable in the future.

Challenges that were brought up during the cross-cultural adaptation of CASS mainly concerned language-related nuances and ambiguities. The choice of words was however, not just as a formal issue since unclear wordings may have consequences for the users' behavior since misunderstandings may lead to the questionnaires being left unanswered. Furthermore, the adaptation of CASS for use in a clinical learning environment required other strategies to ensure that the students would respond. For example, the use of reminder signals helped the students to connect their replies to specific activities. Thus, the reminder signals ensured the 'situatedness' (Rohlfing et al., 2003) of the responses and thereby increased the ecological validity, an important advantage of using CASS. The use of reminder signals could also be part of the explanation for high response rates in the quite demanding clinical context in which these studies were carried out. It was, for example, understandable that when the students were participating on a ward round, taking a blood pressure or blood sample or taking care of a patient in severe pain, they were unable to stop the activity promptly to respond to a questionnaire. Furthermore, the possibility of taking photos of the actual context with the CASS mobile phone was not used at all. Compared to learning environments in other areas such as theoretical university studies (Muukkonen, 2009), the situation was very different for our students. They reported that they had not felt

comfortable taking photos when taking care of the patients owing to ethical considerations.

CASS provided information about the students' emotions, such as displeasure concerning the ongoing collaboration. The use of graphs was an advantage that enabled illustration of the students' learning experiences during a particular period of time, in this case, during a two-week course. These graphs might be useful in clinical feedback situations to enhance the students' learning and to support the development of their professional roles (Swanwick, 2011). Thus, an advantage of using CASS is that it provides the possibility of noting and following experiences when they occur instead of asking the learners to rate and report their thoughts in retrospect after a conducted course or other activity (Reis & Gable, 2000).

The findings showed that when students used CASS during clinical practice they learned how to independently and continuously reflect on their learning activities. As described by Kolb (1984), being able to reflect is a prerequisite for developing insights into how to use experienced learning activities for future needs. Schön (1983) has emphasized the importance of 'reflection in action' to enhance understanding. Schön's theory is well in line with the finding that students reported that CASS provided structure to their reflection and a chance to think about why and how they collaborated or performed different activities instead of just carrying them out as a routine. However, when frequently asking students to respond to queries there is always a risk that reflection might become a routinized procedure, but this misgiving was not confirmed in our findings. None of the students reported such an experience during the interviews.

According to Myin-Germeys et al. (2009), it is important to be careful when constructing questionnaires for experience-sampling purposes, in order to avoid reactivity to the investigation due to the frequent sampling needed. The research group thoroughly discussed the number of questionnaires to be used per day. There were doubts concerning whether five might to be too many and experienced as too burdensome to reply to during clinical practice and would therefore lead to drop-outs. However, a pilot study with ten students who participated in an IPTW course during the academic year 2008 showed that CASS was easy to use and quick to learn and that the questions were relevant but needed to be scrutinized. The number of questions and also the length of texts in the questionnaires were therefore somewhat reduced. The question of how long a time period would be suitable for data collection via CASS was also discussed in the research group. It was concluded that a two-week data-collection period appeared to work well. During the study only three students discontinued after accepting and starting participation. These three students reported that their decision to drop out was due to a fear of stress related to other mandatory activities during the course. In fact, the group using CASS interestingly reported less stress than the group not using CASS.

Kitto et al. (2013) have indicated that methods to capture how learning contexts as such affect the students' learning are lacking. Contextual activity sampling is a method that provides the possibility of obtaining both qualitative and quantitative information on, e.g., clinical learning connected to the context in which these activities are carried out. In a study by Scheja (2006) engineering students reported difficulties in understanding how and what to learn, i.e. they experienced '*delayed understanding*' of the purpose of specific studies. This type of experience is considered to be dependent on how students perceive their learning settings and also on a lack of time to reflect during their education. Thus, CASS can be a helpful method for the purposes of understanding what and how students learn in a specific context.

By using CASS, in contrast to post-course questionnaires or interviews, the ecological validity (Polit & Beck, 2012) can be ascertained. Still, it is also important to collect data after a conducted course to get a more all-embracing picture. One limitation when using CASS might be the preconceptions among the respondents concerning the expectations placed on them to answer the questionnaires. This might have affected the students' replies also in the present studies since they were participants in a clinical course and thus were dependent on their supervisors. On the other hand, the students were thoroughly informed that responding to the CASS queries was voluntary and would not in any way affect their study results.

The interesting fact that there were discrepancies in the findings obtained via CASS and those via interviews speaks for further studies. Post-course interviews and questionnaires are simpler to administer than CASS, but they are considered to obtain generalizations of what happened and thereby give a more frozen picture. It is also problematic to report in detail experiences viewed in retrospect. Students may report different views after a conducted course compared to what they had reported during the ongoing activities and they might also choose to or neglect things they wish not to explore anymore. It was also noted in this thesis that some of the concerns reported via CASS were not mentioned during the post-course interviews even when specifically asked about.

To extend the understanding of the students' experiences, specific questions in the CASS questionnaires and interviews concerning collaboration were compiled for investigation. According to Steptoe and Wardle (2011) 'real-time' collection of emotions via PANAS questions (Watson, Clark, Tellegen, 1988) is a valid method when using the Ecological Momentary Assessment (EMA). The findings concerning the PANAS questions, e.g. emotions connected to ongoing learning activities in a clinical education context, are interesting. The students who used CASS experienced knowledge creation in collaboration with other students as an optimal experience, i.e. 'flow' (Figure 3). As far as we know, the flow phenomenon has not been described previously in a clinical interprofessional education context although flow is generally considered to be valuable for life-long learning (Csikszentmihalyi, 1987; Delle Fave & Massimini, 2005).

In connection with knowledge creation during collaboration, it appeared that there were discrepancies between the opinions concerning what type of activities should be regarded as collaborative. For example, some of the students did not consider a ward round as a collaborative activity in contrast to the general opinion of most health care professionals. When the students regarded an activity as being collaborative it seemed to be based on their own individual interpretation. This was a lesson to be learned concerning how different activities might be understood and interpreted. This finding is important for further planning concerning how to optimize collaboration that leads to the creation of new knowledge within a group of learners.

Differences in the level of experienced trialogical activities were noted between study days and students and also between educational programmes. There are several possible explanations for these differences. For example, the students might have been more self-sufficient after some days on the ward when they had learned the routines. They might have felt more comfortable in the student team after starting to take collaborative responsibility for the care of the patients. Also their previous knowledge, experiences, expectations and personal goals might have had an impact. Moreover, the engagement of the supervisors should also be taken into consideration since the students in the teams surely compared their own profession-specific supervisor with the other students' supervisors. To allow students to be independent, but still always supported by supervisors who give them continuous feedback, is important and enhances their learning and development in their professional roles (Löfmark & Wikblad, 2001; Jakobsen, Hansen & Eika, 2011).

The students highlighted the value of using a structured plan for improved interprofessional team collaboration, as well as the importance of good communication among the team members. For example, disappearance of team members from the ward without telling anyone was experienced as a lack of engagement in the team. This type of behaviour might be related to preconceptions and incomprehension about how health care team collaborate – or *should* collaborate (Kitto et al., 2011; Wilhelmsson et al., 2012). When using CASS these types of issues are easy to highlight and it might be helpful for the team members to focus on them when in the process of finding solutions for upcoming problems.

Aspects that affect the quality of collaborative practice have been described previously by several authors, e.g., Freshman, Rubino & and Chassiakos (2010), Pollard, Thomas & Miers (2010) and Littlechild & Smith (2013). Firstly, the quality of collaboration can involve skepticism, primarily relying on intrapersonal concerns, preconceptions and previous experiences. Secondly, organizational factors can influence collaboration. Just bringing stakeholders together to perform a stated undertaking does not automatically guarantee that the group will function. To construct a team in an effective way requires planning and support. A well-functioning team will establish mutual trust and respect to realize practice and shared commitments. These aspects are of great importance for students on an IPTW. To start an interprofessional course with a team-building day (Hylin, 2010) is a way to help student team members learn to know one another and

clarify the purpose of their activities. In this thesis the team-building day was not focussed on but most likely had an impact on the students' collaboration during the course.

The IPTW course itself might be regarded as an IPE intervention. This course has been running for many years, but it is still the only mandatory clinical IPE activity for the students. This might be one explanation for why all students included reported that their professional identity in relation to other professions had become clearer after participating in the course regardless of whether they used CASS or not. As Hylin (2010) and Jacobsen (2011) have previously pointed out students in an IPTW course are exposed to activities and situations that require them to use their profession-specific knowledge to solve team-related issues. This fact might have a positive impact on their awareness of their own competence and professional identity (Hylin, 2010; Jacobsen et al., 2011).

The finding that the students who used CASS reported less experience of stress than those not using CASS was interesting, particularly since concerns about CASS being disturbing and leading to stress were expressed before the study started. A possible explanation of why CASS seemed to reduce stress could be that when the students frequently answered CASS questionnaires they were undertaking a reflective approach about ongoing or recently performed activities in a way they otherwise would not have done. The theory of 'reflection in action' (Schön, 1983) and also the experiential learning theory (Kolb, 1984) support this assumption.

There is still much to be learned about students' experiences of clinical learning. The findings concerning the usability of CASS in this thesis might be useful for researchers and course designers when designing future educational programmes.

Methodological considerations

The phenomena that were investigated in this thesis were grounded in previously presented theories that were important during the analytical process when interpreting the findings. To catch the emotions of students' connected to joint collaborative activities around the patient is challenging. Therefore, it is important to be aware of the possible impact of, e.g., the choice of questions to be included with regard to their strengths and shortcomings. Many questions require the respondent to interpret, compare, judge and perhaps also evaluate or reconstruct, depending on how much information is given. If questions are asked in a simple or too complicated way it may be difficult for the respondent to reply to them truthfully (Berdie et al., 1986; Murphy, 1993; DeVellis, 2012).

Using a mixed methods approach provided the possibility of capturing dissimilar aspects of the same phenomena. Use of the mixed methods approach is considered to be advantageous when collecting different types of data to obtain a more in-depth understanding of multidimensional issues (Johnson & Onwuegbuzie, 2004; Reeves, Kuper & Hodges, 2008). Thus, the strength of this thesis was the use of several types of datasets. The choice to use the mixed methods approach was directed by the use of CASS as the main method for data collection and also by the aims of this thesis. Mixed methods enable possibilities to identify and study several perspectives of learning by providing the possibility of combining data. Furthermore, a control group provided opportunities to investigate whether there were any differences concerning the impact of CASS on the students' experiences. The interviews after the course also gave useful information, but fever details about the students' activities during the course.

An important issue to consider was that I, as an interviewer, worked on the IPTW as one of the supervisors while these studies were being conducted. This might have had an impact on the student's decision about what to say or not to say during the interviews. On the other hand, it provided a possibility for me as an interviewer to better understand the IPTW context and what the students described – something that has been regarded as important (Lincoln & Guba, 1985).

During the interviews all students described different aspects of their learning experiences and also their opinions about using CASS in a useful way as perceived by the research group. However, the lengths of the interviews varied. They were longer in the intervention group than in the control group, most likely due to the fact that students in the control group had less to say about the usability of CASS.

The choice to use the RIPLS, an instrument for identifying changes in students' readiness for IPE, was based on the fact that it had previously been used in the same type of context and that it was available in Swedish (Parsell & Bligh, 1999; McFadyen et al., 2005; McFadyen et al., 2006; Lauffs et al. 2008; Hylin, 2010; King et al. 2012). The five-point Likert scale used in RIPLS should be regarded as an ordinal scale, but the results were treated as interval data as in previously published studies so as enable comparisons with other similar studies. Furthermore, we used the same subscales as in previously published studies (McFadyen et al., 2005; King et al., 2012). When performing the calculations of Cronbach's alpha on subscale 'roles and responsibilities,' the alpha value was lower than recommended (DeVellis, 2012) and needs to be further investigated.

CONCLUSIONS

The main findings of this thesis are as follows:

- The students reported that the translated and cross-culturally adapted CASS questions as well as the CASS methodology and application worked well, were easy to use and, helped them structure their study days and reflect on their learning activities.

- Contextual activity sampling helped to identify and connect the students' experiences of their academic emotions in response to learning activities and also how they created new knowledge collaboratively. These findings emphasize the importance of collaboration among students during IPTW courses.

- The use of contextual activity sampling enabled capturing detailed and contextualized data, which would not have been possible to collect using retrospective methods. The data also uncovered discrepancies between experiences reported during courses compared to after the courses. Moreover, the CASS data revealed that some activities that might in general be viewed as typical team activities were not considered as collaborative activities by the students.

- Contextual activity sampling provided possibilities to identify students' and student teams' needs for support to reach the intended learning outcomes of a specific course. The participants reported that structure, interaction and insights facilitated clinical interprofessional collaboration.

- Using Contextual activity sampling enhanced students' readiness for interprofessional teamwork and collaboration. The opportunities for reflection provided by CASS may have a positive effect on academic emotions such as stress.

IMPLICATIONS AND FUTURE PERSPECTIVES

Sometimes it takes several years before an educational intervention generates awareness among students and educators. When considering the rapid emergence of new information technologies in the field of health care and education, the use of CASS and similar techniques does not seem to be that far in the future. When this project started nearly five years ago almost all students already had a mobile phone. Today it is quite usual that students and others have advanced mobile devices and other resources such as tablet computers for personal use. Moving forward, it is of obvious importance to take advantage of the fact that these new technologies are already being used on a daily basis.

CASS provides a rather simple way to highlight learning experiences. As a methodology, it has been shown to be useful among university students studying theoretical subjects (Muukkonen et al., 2008; Muukkonen et al., 2009) and now, as shown in this thesis, also in clinical educational settings. By collecting a rich amount of information about students' learning experiences, both the strengths and shortcomings of ongoing clinical courses can be highlighted. Thus, I believe that the CASS methodology can be used to enhance the development of educational interventions and might also be regarded as a pedagogical instrument for helping students to reflect on, and to highlight, important learning moments and strategies, but these aspects require further studies.

CASS supported interactions among students, helped teams to deal with their academic emotions and exchange and create new knowledge. These aspects might be beneficial and applicable even for professionals, especially when dealing with working environmental issues. CASS could be valuable for finding out how collaboration and organization at a workplace work and perhaps also for tracking down the kinds of activities that evoke 'flow' or anxiety among different health care professionals.

The usability of CASS for following students' professional development longitudinally over a longer period of time is another aspect of interest. Traditionally, students are asked to evaluate each course in retrospect by using questionnaires. However, it is difficult to follow their professional development over time since they seldom meet the same teachers and tutors. Mentoring programmes that cover all years of education are a way to overcome this obstacle (Kalen, 2013). CASS and similar approaches for collecting data might be complementary to these efforts.

SAMMANFATTNING

Den verksamhetsförlagda utbildningen inom hälso- och sjukvården syftar till att ge studenter möjlighet att utvecklas i sina yrkesroller. Dagens högspecialiserade vård ställer ökade krav på samverkan mellan olika yrkesgrupper inom hälso- och sjukvården. För att kunna tillvarata olika kompetenser, använda dessa effektivt och öka möjligheten till förbättrad vård, rehabilitering och patientsäkerhet är klinisk interprofessionell utbildning angelägen. The Centre for the Advancement of Interprofessional Education (CAIPE) definierar interprofessionell utbildning på följande vis: *tillfälle då två eller flera professioner lär med, av och om varandra för att förbättra samarbetet och kvaliteten i vården*. På kliniska utbildningsavdelningar (KUA) får studenter från sjuksköterske-, läkar-, sjukgymnast- och arbetsterapeututbildningarna möjlighet att arbeta tillsammans i team under en två veckor lång kurs. Syftet med KUA-kursen är att ge studenterna möjlighet till kunskap och förståelse för de olika vårdprofessionernas kompetenser och ansvarsområden, träna sin egen yrkesroll och att utveckla teamarbete och kommunikationsförmåga.

Det finns ett behov av att öka förståelsen för hur studenter upplever sina kliniska lärandeaktiviteter. Att tillvarata studenternas uppfattningar om hur och när lärande sker under pågående klinisk utbildning är svårt. Ofta används frågeformulär och intervjuer efter avslutad kurs, nackdelen med dessa metoder är att det inte är lätt för studenter efter avslutad kurs att minnas detaljer och retrospektivt redogöra för hur det faktiskt fungerade. En ny metodologi Contextual Activity Sampling System (CASS), möjliggör insamling av information om hur studenter upplever lärande i sitt sammanhang, över tid, genom självrapportering via mobiltelefoner.

Det övergripande syftet med denna avhandling var att undersöka möjligheterna att använda CASS-metodologin till att studera studenters erfarenheter av lärandeaktiviteter under pågående klinisk interprofessionell utbildning.

Studenterna rapporterade via CASS-systemet om sina upplevelser genom att besvara fem frågeformulär per studiedag under en två veckors KUA-kurs. Studenterna fick låna mobiltelefoner som användes för att samla in informationen. Frågorna fokuserade på studenternas upplevelse av pågående lärandeaktiviteter, samarbete, känsla av kompetens, utmaning och akademiska känslor. Frågeformulärens svar kopplades till pågående lärandeaktiviteter. CASS-frågorna bygger specifikt på teorier om lärande, akademiska känslor och kunskapsbyggnad och anpassades för att användas till självrapportering via en mobiltelefonbaserad applikation. Dessutom intervjuades alla studenter efter avslutad KUA-kurs då de fick beskriva hur de uppfattat CASS-metodologin, lärandet, och hur team-samarbetet fungerat under kursen.

I denna avhandling utforskades CASS dels som forskningsmetodologi för att möjliggöra insamling av materialet till ingående studier och dels, som ett redskap i form av en mobil-applikation, CASS-Query tool.

I *Studie I* var syftet att översätta, utveckla och anpassa CASS-metodologin, applikationen och dess frågeformulär gällande innehåll, gränssnitt och logistik för att kunna användas i en klinisk interprofessionell utbildningskontext. Resultatet beskriver 51 studenters erfarenheter av att använda CASS. Analysen visade att studenterna upplevde den översatta, och anpassade versionen av CASS lätt att använda och frågorna som relevanta för klinisk interprofessionell utbildning. Dessutom hjälpte CASS dem att strukturera sina studiedagar och lära sig att reflektera kring pågående lärandeaktiviteter.

Syftet med *Studie II* var att undersöka studenternas upplevelser av akademiska känslor i relation till samarbete och kunskapsskapande aktiviteter (så kallat trialogiskt lärande) under KUA-kursen. Resultatet beskriver 37 studenters upplevelser av om, hur och när de tillsammans i studentteamet skapade ny kunskap. Dessutom hjälpte CASS dem att identifiera, belysa och koppla sina egna akademiska känslor till pågående lärandeaktiviteter. De kunskapsskapande aktiviteterna rapporterades förekomma framför allt när studentteamet tillsammans arbetade nära patienten och förknippades med en optimal känsla – flow. Dessa fynd tyder på att använda CASS-metodologin ger möjlighet till att förbättra det interprofessionella samarbetet i studentteamet under KUA-kurser.

Studie III syftade till att ge en djupare förståelse för hur studenterna upplevde/ uppfattade det interprofessionella samarbetet under pågående och efter avslutad KUA-kurs. Resultatet beskriver 15 studenters upplevelser om hur det interprofessionella teamsamarbetet fungerade och påverkade lärandet under KUA-kursen. Studenterna rapporterade via CASS under KUA-kursen och intervjuades efter avslutad KUA-kurs. Analysen visade att CASS hjälpte studenterna att identifiera det egna och teamets behov av stöd för att kunna uppnå kursens mål. Det framkom en diskrepans mellan CASS insamlad data och data insamlad via intervjuer och frågeformulär. Studenternas rapporter via CASS under pågående kurs var mer kritiska jämfört med intervjuerna efter avslutad kurs. Resultaten visade också att studenter behöver ges möjlighet till interaktion och struktur för att kunna samarbeta interprofessionellt.

Studie IV fokuserade på att utforska om CASS påverkade studenternas upplevelse av det interprofessionella lärandet, deras akademiska känslor och erfarenheter av det interprofessionella teamets samarbete under KUA-kursen. Resultatet beskriver rapporterade upplevelser för 20 studenter som använde CASS och för 13 studenter som inte använde CASS. Att använda CASS utvecklade studenternas beredskap för interprofessionellt samarbete. CASS möjliggjorde kontinuerlig reflektion vilket kan ha haft en positiv effekt på studenternas akademiska känslor, exempelvis stress.

SLUTSATS

Sammanfattningsvis visar denna avhandling att den innovativa CASS-metodologin ger möjlighet till insamling av detaljerade kontextuella data om hur studenter upplever lärande under pågående verksamhetsförlagd utbildning. När studenterna använde CASS lärde de sig att planera sina kliniska studiedagar samt reflektera över pågående lärandeaktiviteter. Dessutom framkom det att när det interprofessionella samarbetet fungerade bra skapades ny kunskap vilket var förknippat med optimala upplevelser – flow. CASS-metodologin kan även vara användbar för att utveckla den kliniska interprofessionella utbildningen.

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APPENDIX

USER GUIDE FOR CASS QUESTIONNAIRE INTRODUCTION

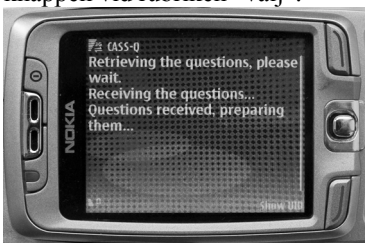
Detta är en kort instruktion för hur användaren besvarar en enkät med enkätprogrammet CassQ på en Nokia E-70. Du skall besvara fem enkäter per dag. En före du går till avdelningen – morgonenkäten. Därpå följer tre (3) stycken dag enkäter. De besvaras vid första rasten, matpausen och vid andra rasten. På vägen hem, eller senare på kvällen, besvarar du kvällsenkäten.
Detta gör du varje dag du är på avdelningen. Du skall alltså inte besvara enkäten de dagar du har ledigt.
Telefonen kommer att påminna dig om att du skall besvara en enkät genom sin kalenderfunktion. Ta alltså för vana att titta till telefonen under dagen så att du inte missar några enkäter.
Viktigt! Enkäterna skickas ut efter varandra. Du kan alltså inte besvara samma enkät en gång till samma dag. Har du besvarat morgonenkäten kan du alltså inte besvara den igen. På samma sätt kan du inte besvara kvällsenkäten före du har besvarat morgonenkäten och alla tre dag-enkäter.
En kvällsenkät kan besvaras fram till 23:00, sen byts det till ny dag eftersom servern där enkäterna lagras står i Finland.
Kontrollera alltså vilken enkät du just nu besvarar (det står i början av varje enkät).
Viktigt! Systemet har vissa egenheter för sig. Det är därför viktigt att du läser igenom denna instruktion så att du vet vad du kan förvänta dig. Nedan är två viktiga saker att tänka på, även om det finns fler i detta dokument.

- Fäll ihop telefonen när du skall ta en bild. Se under rubriken Ta en bild.
- Tryck inte på lägg-på knappen. Detta avslutar CassQ utan att spara. Se under rubriken Lägg-på knappen.

Starta CassQ Börja med att fälla upp telefonen.

CassQ startas genom att trycka på knappen vid skärmrubriken ”CassQ”. Telefonen är en aning långsam, men ett bestämt tryck på knappen skall räcka.
Välj uppkoppling

Telefonen kan koppla upp sig mot internet på flera sätt. Du skall välja att koppla upp dig via 3G-nätet, alltså Tele2 Comviq Internet, vilket troligen är första alternativet. Du väljer det antingen genom att trycka på joysticken, då du får vara försiktig så att du inte samtidigt väljer en annan kopplingspunkt, eller via knappen vid rubriken ”välj”.



CassQ meddelar att den hämtar de frågor som du skall besvara. Här behöver du inte göra något, utan bara vänta några sekunder.

Besvara enkäten

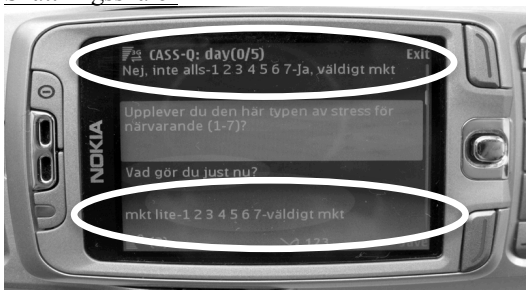
Du går upp och ner i enkäten genom att röra på joysticken.

Frågorna besvaras genom att du använder tangentbordet. Det finns olika typer av frågor:

- Öppna frågor – dessa besvaras genom att du skriver ett svar med tangentbordet.
- Förgreningsfrågor – dessa besvaras typiskt med Ja/Nej. Beroende på ditt svar får du besvara ett antal frågor eller inte. Systemet hoppar automatiskt förbi de frågor du eventuellt inte skall besvara.
- Skattningsfrågor – dessa besvaras med en siffra. Se nästa avsnitt om en kommentar kring skattningsskalorna.
- Flervalsfrågor – du väljer ett av alternativ av flera fördefinierade alternativ.
- Ta en bild – du tar en bild med hjälp av joysticken och den inbyggda kameran i telefonen.

På grund av systemet måste du tyvärr vara försiktig när du besvarar flervalsfrågor. Du väljer det alternativ du vill svara med joysticken genom att trycka upp eller ner och trycka in den när den står på ”ditt” alternativ. Om du, när du valt ett alternativ (eller om du ställer markören på ett alternativ som är valt) trycker på joysticken, kommer systemet att vilja spara enkäten (systemet frågar om du är färdig med att besvara enkäten). I dessa fall, välj No (alltså att du inte vill spara enkäten) och du får fortsätta besvara enkäten.

Skattningsskalor



När du besvarar skattningsfrågor finns det några olika skalor. Skalorna står alltid precis före den fråga de berör. Läs skalan så att du är säker på vad du besvarar.

Ta en bild

Det finns ett problem med den telefonmodell som du använder, vilket gör att den ibland inte vill ta en bild när telefonen är uppfälld. Det kan hända att enkätprogrammet stänger av sig själv utan att skicka iväg enkäten. Fäll därför ihop telefonen när du skall ta en bild.

Vill du skriva en egen kommentar, fäll upp telefonen igen, skriv den och skicka. Annars går det bra att skicka enkäten från det hopfällda läget.

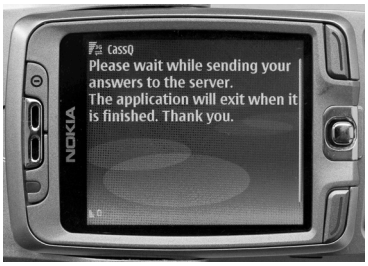
Lägg-på knappen

Det kan hända att du trycker på lägg-på knappen, kanske mest av gammal vana, när du vill avsluta CassQ. **Gör inte det.** Då avslutar telefonen enkätprogrammet och inga data skickas. Det är väldigt lätt att trycka fel, särskilt när telefonen är hopfälld. Var aktsam då du skall skicka så att du trycker på rätt knapp. I bilden ovan visas alltså knappen som du inte skall trycka på.

Spara enkäten

När du besvarat sista frågan i en enkät trycker du på ”Save”.

Systemet frågar då dig om du vill spara. Är du färdig klickar du Yes och enkäten skickas iväg. Är du inte klar trycker du No och du kan ändra i enkäten.



Systemet ger dig återkoppling på att det sparar enkäten. Du är färdig med den enkäten.

CASS QUESTIONNAIRE USED (1/5)

Välkommen till morgonfrågorna en gång per studiedag (sid. 1/1)

Vilken är den viktigaste KUA-relaterade aktiviteten du kommer att ägna dig åt idag.
Besvara nedanstående frågor ***Varför gör du detta*** *på en skala från 1 till 7:*
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Det är roligt

Det är viktigt för mig

Det intresserar mig

Jag skulle känna oro annars

Någon annan säger att jag ska

Situationen kräver det

Mycket lite-1 2 3 4 5 6 7-Väldigt mycket

Hur utmanande är denna aktivitet för dig

Hur kompetent känner du dig

Skatta hur väl du tycker följande påstående stämmer
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Genom att reflektera över vad jag gör just nu bidrar jag till att teamet utvecklar sin förståelse för interprofessionellt samarbete

Resultatet av detta kan användas senare

Jag är beredd att satsa på att teamet ska utveckla sin förståelse för interprofessionellt samarbete

Det jag tidigare lärt mig kommer till nytta i den här situationen

Jag kan bidra till att andra i teamet utvecklar förståelse för interprofessionellt samarbete

De andra i teamet kan hjälpa mig med detta

Jag tar ett stort ansvar för detta

Med stress menas situationer i vilka människor känner sig spända, oroliga, nervösa eller trängda eller då de har svårt att sova för att de ständigt grubblar över saker och ting.
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Upplever du den här typen av stress för närvarande

Nedan finns några ord som beskriver olika sorters sinnesstämningar och känslor.
Skatta orden efter hur du för tillfället känner dig:
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Beslutsam

Entusiastisk

Intresserad

Irriterad

Nervös

Orolig

Egna kommentarer, frivillig, (fritextsvar):

Tack för dina svar. Skicka enkäten genom att klicka på send.

CASS-frågeformulär översatt och psykometriskt testat;
Lachmann et al., (2012). Introducing and adapting a novel method for investigating learning experiences in clinical learning environments. *Informatics for Health and Social Care*. 2012; 37(3): 125-140. Lachmann et al., (2013) Capturing students' learning experiences and academic emotions at an interprofessional training ward. *Journal of Interprofessional Care.* 2013; 27(2): 137-145.

(2/5; 3/5; 4/5)

Välkommen till Dagfrågor Tre gånger per studiedag (sid. 1/2)

Var är du just nu (flervalsfrågor; markera det alternativ som stämmer för dig just nu)

1: Akuten *2: Avd. exp.* *3: Duschrum* *4: Konferensrum*

5: Patientsal. *6: Personalrum* *7: Röntgenrond* *8: Annan plats*

Om annan plats, skriv var (fritextsvar):

Vad gör du just nu (fritextsvar):

*Besvara nedanstående frågor **Varför gör du detta** på en skala från 1 till 7:*
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Det är roligt

Det är viktigt för mig

Det intresserar mig

Jag skulle känna oro annars

Någon annan säger att jag ska

Situationen kräver det

Mycket lite-1 2 3 4 5 6 7-Väldigt mycket

Hur engagerad är du i det du gör

Hur utmanad känner du dig

Hur kompetent känner du dig

Skatta hur väl du tycker följande påstående stämmer
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Genom att reflektera över vad jag gör just nu bidrar jag till att teamet utvecklar sin förståelse för interprofessionellt samarbete

Resultatet av detta kan användas senare

Jag är beredd att satsa på att teamet ska utveckla sin förståelse för interprofessionellt samarbete

Det jag tidigare lärt mig kommer till nytta i den här situationen

Jag kan bidra till att andra i teamet utvecklar förståelse för interprofessionellt samarbete

De andra i teamet kan hjälpa mig med detta

Jag tar ett stort ansvar för detta

Samarbetar du med någon just nu (flervalsfrågor; markera det alternativ som stämmer för dig just nu)

option 1: Ja *option 2: Nej*

Svarade du nej hoppa över de frågor som är relaterade till samarbete

Med vem samarbetar du

1: Ingen 2: Annan student 3: Patient

4: Teamhandledare 5: Yrkesspecifik handledare 6: Någon annan

Om någon annan med vem (fritextsvar):

CASS-frågeformulär översatt och psykometriskt testat;
Lachmann et al., (2012). Introducing and adapting a novel method for investigating learning experiences in clinical learning environments. *Informatics for Health and Social Care*. 2012; 37(3): 125-140. Lachmann et al., (2013) Capturing students' learning experiences and academic emotions at an interprofessional training ward. *Journal of Interprofessional Care.* 2013; 27(2): 137-145.

Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis
Samarbetet fungerar väldigt bra

Om ovanstående skattas till < 5 besvaras också kommande två frågor
Vilket/Vad är problemet med samarbetet (fritextsvar)

Hur kan samarbetet förbättras (fritextsvar)

Med stress menas situationer i vilka människor känner sig spända, oroliga, nervösa eller trängda eller då de har svårt att sova för att de ständigt grubblar över saker och ting.

Nej, inte alls-1 2 3 4 5 6 7-Ja, väldigt mycket
Upplever du den här typen av stress för närvarande

Nedan finns några ord som beskriver olika sorters sinnesstämningar och känslor. Skatta orden efter hur du för tillfället känner dig:

Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis
Beslutsam
Entusiastisk
Intresserad
Irriterad
Nervös
Orolig

Slå ihop telefonen och ta en bild, frivilligt

Tack för dina svar. Skicka enkäten genom att klicka på send.

CASS-frågeformulär översatt och psykometriskt testat;
Lachmann et al., (2012). Introducing and adapting a novel method for investigating learning experiences in clinical learning environments. *Informatics for Health and Social Care*. 2012; 37(3): 125-140. Lachmann et al., (2013) Capturing students' learning experiences and academic emotions at an interprofessional training ward. *Journal of Interprofessional Care.* 2013; 27(2): 137-145.

Välkommen till Kvällsfrågorna en gång per studiedag (sid. 1/2)

Vad gör du just nu (fritextsvar)

Mycket lite-1 2 3 4 5 6 7-Väldigt mycket

Hur viktigt är detta för dig

Hur utmanad känner du dig

Hur kompetent känner du dig

Reflektera över din dag och besvara följande frågor:

Vilken var den viktigaste saken du gjorde idag (fritextsvar):

Mycket lite-1 2 3 4 5 6 7-Väldigt mycket

Hur viktigt var detta för dig

Hur utmanande var detta för dig

Hur kompetent kände du dig

Skatta hur väl du tycker följande påstående stämmer:
Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Genom att reflektera över vad jag gör just nu bidrar jag till att teamet utvecklar sin förståelse för interprofessionellt samarbete

Resultatet av detta kan användas senare

Jag är beredd att satsa på att teamet ska utveckla sin förståelse för interprofessionellt samarbete

Det jag tidigare lärt mig kommer till nytta i den här situationen

Jag kan bidra till att andra i teamet utvecklar förståelse för interprofessionellt samarbete

De andra i teamet kan hjälpa mig med detta

Jag tar ett stort ansvar för detta

Gör en övergripande sammanfattning av din dag med egna kommentarer (fritextsvar):

Hur hjälpte någon/något dig i ditt arbete (fritextsvar):

Vem/vad störde ditt arbete (fritextsvar):

Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis

Hade du glädje av övriga i teamet i rondsituationen

Hade du glädje av de övriga i teamet i samband med planeringstillfället

CASS-frågeformulär översatt och psykometriskt testat;
Lachmann et al., (2012). Introducing and adapting a novel method for investigating learning experiences in clinical learning environments. *Informatics for Health and Social Care*. 2012; 37(3): 125-140. Lachmann et al., (2013) Capturing students' learning experiences and academic emotions at an interprofessional training ward. *Journal of Interprofessional Care.* 2013; 27(2): 137-145.

Jag har fått hjälp av de övriga i teamet när jag skulle utföra mitt yrkesspecifika patientarbete
Jag fick inte den hjälp som jag behövde av de övriga i teamet när jag skulle utföra mitt yrkesspecifika patientarbete
Kommentera gärna ditt svar, (fritextsvar):

I vilken situation tycker du att du haft mest glädje av teamets sammansatta kunskap

1: Annat tillfälle	2: Akut situation	3: Mobiliseringstillfälle
7: Teamplanering	5: Rond	6: Röntgenbildsgenomgång

Annat tillfälle fritextsvar

Med stress menas situationer i vilka människor känner sig spända, oroliga, nervösa eller trängda eller då de har svårt att sova för att de ständigt grubblar över saker och ting.

Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis
Upplever du den här typen av stress för närvarande

Nedan finns några ord som beskriver olika sorters sinnesstämningar och känslor. Skatta orden efter hur du för tillfället känner dig:

Stämmer inte alls-1 2 3 4 5 6 7-Stämmer precis
Beslutsam
Entusiastisk
Intresserad
Irriterad
Nervös
Orolig
Egna kommentarer frivilligt (fritextsvar):

Tack för dina svar. Skicka enkäten genom att klicka på send.

CASS-frågeformulär översatt och psykometriskt testat;
Lachmann et al., (2012). Introducing and adapting a novel method for investigating learning experiences in clinical learning environments. *Informatics for Health and Social Care*. 2012; 37(3): 125-140. Lachmann et al., (2013) Capturing students' learning experiences and academic emotions at an interprofessional training ward. *Journal of Interprofessional Care.* 2013; 27(2): 137-145.

CASS-LIKA FRÅGOR BESVARADE AV KONTROLLGRUPPEN

Besvarade efter avslutad KUA-kurs

KG…T…S…

Datum……Namn ……Profession…….…… ☐ **Kvinna** ☐ **Man**

Ålder:

Ringa in den siffran som passar: stämmer inte alls 1 – 2 – 3 – 4 – 5 – 6 – 7 stämmer precis

A. Vad var det som fick dig att engagera dig i olika moment under KUA-kursen?

* det varit roligt 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

* det intresserade mig 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

* det var viktigt 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

* jag skulle ha känt oro annars 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

*någon annan sa att jag skulle 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

* situationerna krävde det 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

B. KUA aktiviteterna har varit utmanande 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

C. Genom att reflektera över vad jag gör i olika situationer bidrar jag 1 – 2 – 3 – 4 – 5 – 6 – 7
till att teamet utvecklar sin förståelse för Interprofessionellt samarbete
kommentera gärna ditt svar med beskrivning/exempel_____

D. Jag har haft användning av tidigare kunskaper under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

E. Det jag tidigare lärt mig kom till nytta under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

F. Jag kan bidra till att de andra i teamet utvecklar förståelse för Interprofessionellt samarbete
1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

G. De andra i teamet kan hjälpa mig med detta 1 - 2 - 3 - 4 - 5 - 6 - 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

H. Jag har känt mig kompetent under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

I. Jag har känt mig engagerad under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

J. Jag har känt mig stressad under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

K. Hur samarbetade du med andra under KUA-kursen?_____
_____
_____

L. Samarbetet med de andra professionerna fungerade väl under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____

M. De övriga i teamet har haft betydelse för att jag skall kunna utföra mitt yrkesspecifika patientarbete
1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

N. Jag har fått hjälp av de andra i teamet med mitt arbete under KUA-kursen 1 – 2 – 3 –4 –5 –6 –7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

O. Beskriv hur och av vem du fick hjälp i ditt arbete under KUA-kursen _____
_____

P. Jag fick inte den hjälp som jag behövde av de andra i teamet med mitt arbete under KUA-kursen
1 - 2 - 3 - 4 - 5 - 6 - 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

Q. Beskriv när/vad och av vem du behövde hjälp i ditt arbete under KUA-kursen men inte fick det _____
_____

R. Någon eller något störde dig i ditt arbete under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

S. Beskriv vad som stört dig i ditt arbete _____
_____

T. Något oväntat hände under KUA-kursen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

U. Jag har haft glädje av de övriga i teamet i rondsituationen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

V. Jag har haft glädje av övriga i teamet i samband med planeringen 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

X. Skatta för olika situationer om du haft glädje av teamets sammansatta kunskap

* akuten 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

*mobiliseringssituation 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

*operation 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

*röntgenrond 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

*teamplanering 1 – 2 – 3 – 4 – 5 – 6 – 7
kommentera gärna ditt svar med beskrivning/exempel_____
_____

* vid något annat tillfälle ange här i vilken annan situation_____
kommentera gärna ditt svar med beskrivning/exempel_____

Tack för att du tagit dig tid att besvara våra frågor

RIPLS

Datum…….. **Före KUA-kursstart** **Efter avslutad KUA-kurs**

Namn…….…….Profession……..… **Kvinna** **Man**

Här följer ett antal påståenden om att arbeta i team. Markera på skalan (1-5)
i hur hög grad du håller med eller inte håller med*:*
håller inte alls med 1 – 2 – 3 – 4 – 5 – 6 – 7 håller absolut med

	1	2	3	4	5
1. Att lära tillsammans med andra studenter hjälper mig att bli en effektiv medarbetare i ett vårdteam					
2. Patienter skulle i slutändan tjäna på att studenter samarbetade för att lösa patientproblem.					
3. Gemensamma studier med andra student- kategorier kommer att öka min förmåga att förstå kliniska problem.					
4. Att studera med andra studenter under utbildning skulle kunna förbättra arbetsrelationerna (efter examen).					
5. Kommunikations-färdigheter borde man lära sig tillsammans med andra högskolestudenter inom hälso- och sjukvård.					
6. Gemensamma studier kommer att hjälpa mig att tänka mer positivt om andra yrkeskategorier					
7. För att studier i mindre grupper ska fungera måste studenterna lita på och respektera varandra.					
8. Att lära sig att arbeta i team är grundläggande alla studenter inom hälso- och sjukvårdsutbildningar					
9. Gemensamma studier med andra kommer att hjälpa mig att förstå mina egna begränsningar					
10. Jag vill inte slösa bort min tid på att studera tillsammans med andra studentkategorier inom hälso- och sjukvård.					
11. Det är inte nödvändigt för studenter i grund-utbildningar inom hälso- och sjukvård att studera tillsammans i utbildningen.					
12. Kliniska färdigheter kan man endast lära sig tillsammans med studenter från sitt eget område					
13. Gemensamma studier med andra grund-utbildningsstudenter inom hälso- och sjukvård kommer att bidra till att jag kommunicerar bättre med patienter och medarbetare från andra yrkesgrupper.					
14. Jag skulle välkomna möjligheten att göra mindre projektarbeten tillsammans med studenter från andra vårdutbildningar.					
15. Gemensamma studier kommer att hjälpa mig att bättre förstå vilken typ av problem patienterna har.					
16. Gemensamma studier före examen kommer att hjälpa mig att bättre kunna arbeta i team.					
17. Sjuksköterskors och rehab personalens funktion är att stödja läkare					
18. Jag är inte säker på vad min kommer att innebära.					
19. Jag måste förvärva mer kunskaper och färdigheter än andra grundutbildnings-studenter inom hälso- och sjukvård					

(Parsell & Bligh, 1999; Lauffs, Ponzer, Saboonchi, Lonka, Hylin, & Mattiasson, 2008)

The four subscales used in this thesis, *Study* IV, were: 'Teamwork and collaboration' (RIPLS question 1–9), 'Negative professional identity' (RIPLS question 10–12, reversed score), 'Positive professional identity' (RIPLS question 13–16), and 'Roles and responsibilities' (RIPLS question 17–19), according to suggestions by McFadyen et al., (2005) and McFadyen, Webster and Maclaren, (2006).

INTERVJUGUIDE; CASS-grupp

Intervjudatum:…….Studentkategori:…… KOD: CG…T…S..

Ålder:…….. Kön: □ **Kvinna** □ **Man**

1. Hur var det att CASSa?
   Ringa in den siffran som passar: stämmer inte alls 1 – 2 – 3 – 4 – 5 – 6 – 7 stämmer precis
2. Tidskrävande? 1 - 2 – 3 – 4 – 5 – 6 – 7
3. Svårt? 1 – 2 – 3 – 4 – 5 – 6 – 7
4. Bidrog CASS till funderingar kring samarbetet/lärandet? Rapporterade du någon om detta?
5. Visa grafer insamlade via CASS från KUA-kursen 1/Stress/Intresse, 2/ utmaning/kompetens
6. Hur var samarbetet med andra och särskilt andra professioner?
7. Några svårigheter/utmaningar?
8. Hur fungerade yrkesrollerna? Tydligt? Ev. oklarheter?
9. Hur var ledarskapet? En person? (om så vem?) Skiftade ledarskapet?
10. Oklarheter i hur och vem som skulle bestämma? Oklarheter rörande ansvar?
11. Hur gick planeringen av arbetet? ev. problem?
12. Hur fungerade kommunikationen (och särskilt mellan de olika professionerna)?
13. Gjordes utvärderingar av arbetet? Hur? Fungerade det?
14. Hur fungerade fördelningen av resurser (personal) för arbetsinsatserna?
15. Vad lärde du dig? (särskilt kring det interprofessionella samarbetet under KUA-kursen)?
16. Vad hände över tid? Ändrades samarbetet på något vis?
17. Bidrog CASS´andet på något vis till samarbetet/lärandet? Hur? Rapporterade du om vad du lärde dig?
18. Hur tror du att skulle CASS'andet kunna bidra än mer? (till reflektion kring arbetet, till lärandet, till insamling av data om era upplevelser...)
19. Uppmärksammade du något särskilt för att du CASSade (fick CASSandet dig att öppna ögonen för något särskilt)? Särskilt i samarbetet med annan personalkategori? Lärde du dig något av att besvara CASS-frågor?
20. Inträffade några särskilda incidenter under din KUA-tid? Hade du velat berätta annat än vad CASS-frågorna handlade om? (vad?) (speglade frågorna det viktiga...?)
21. Skulle du ha velat rapportera iakttagelser/händelser vid andra/fler tillfällen än då du fick sms-påminnelser?
22. Jag har känt mig övervakad under KUA-kursen?
    stämmer inte alls 1 – 2 – 3 – 4 – 5 – 6 – 7 stämmer precis

INTERVJUGUIDE; Kontrollgrupp
Intervjudatum:…….. Studentkategori:…… KOD: KG…T…S..

Ålder:……... Kön: □ **Kvinna** □ **Man**

23. Hur var samarbetet med andra och särskilt andra professioner?
24. Några svårigheter/utmaningar?
25. Hur fungerade yrkesrollerna? Tydligt? Ev. oklarheter?
26. Hur var ledarskapet? En person? (om så vem?) Skiftade ledarskapet?
27. Oklarheter i hur och vem som skulle bestämma? Oklarheter rörande ansvar?
28. Hur gick planeringen av arbetet? ev. problem?
29. Hur fungerade kommunikationen (och särskilt mellan de olika professionerna)?
30. Gjordes utvärderingar av arbetet? Hur? Fungerade de?
31. Hur gick fördelandet av resurser (personal) för arbetsinsatserna?
32. Vad lärde du dig? (särskilt kring det interprofessionella samarbetet under KUA kursen)?
33. Vad hände över tid? Ändrades samarbetet över tid på något vis?
34. Tror du att CASS skulle kunna bidra till funderingar kring samarbetet/lärandet? Hur?
35. Tror du att CASS på något vis skulle kunna bidra till reflektion kring arbetet, samarbetet och eller lärandet? Hur?
36. Inträffade några särskilda incidenter under din KUA-tid? Om så skulle du ha velat rapportera iakttagelser/händelser? I så fall hur?
37. Jag har känt mig övervakad under KUA-kursen?

    Ringa in den siffran som passar:

stämmer inte alls 1 – 2 – 3 – 4 – 5 – 6 – 7 stämmer precis

STUDIES I – IV