How to Improve Learning at Work?
A Case Study of an Interactive Learning Activity with Virtual Knowledge Sharing

Sofie Borck Janeheim
Hur förbättrar man lärande i arbetslivet?
En fallstudie om en interaktiv lärandeaktivitet med virtuell kunskapsdelning
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EXAMENSARBETE INOM TEKNIK OCH LÄRANDE PÅ PROGRAMMET CIVILINGENJÖR OCH LÄRARE

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A Case Study of an Interactive Learning Activity with Virtual Knowledge Sharing
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**Abstract**

This project is a case study conducted at Ericsson where a new type of learning activity has been tested. The reason for conducting this study is that Ericsson together with other companies within the technology field faces a significant challenge to acquire knowledge fast enough to keep up with new trends and technological developments.

The main research questions in this study are how the participants experience these learning activities and what the most important factors are for successful learning within this context. Further, it is investigated how these learning activities are affected when they are scaled from one to many locations with interactive video conferencing rooms.

Data were collected in a four-month period, and the data consisted of qualitative interviews, observations, questionnaires and impressions perceived during the time spent in Ericsson’s office.

Given this collected data, the direction of the study changed during the study’s duration, since new questions arose that needed to be answered.

The results indicate that the interaction changes when video conferencing tools are used, the number of interaction decreases; however, there are indications that the quality of content increases. The participants believe that interaction is an essential part of learning, and to create a safe environment for having discussions and for asking questions. Further, motivation and expectations seem to be crucial factors for successful learning activities.

The analysis of these results implies that clear information, planning and a high level of structure in the implementation is required for a truly interactive learning environment to exist, in particular, if more than one location is participating. To make it possible for the participants to prior their personal development, it seems to help them to set the right expectations in prior is important. Furthermore, the social aspect regarding relations and the possibility to build personal networks seems to become the ground for motivation and attitude when it comes to participating.

In conclusion, the studied activity of interactive learning seems to be a way forward for Ericsson to face technical development and new trends in the market since this is a way of creating awareness and giving a broader perspective. This activity can, with support from the theoretical perspectives, be seen as a starting point for learning, where the process for each continues afterwards.

For Ericsson to continue to develop this interactive learning activity, recommendations are given at the end of this report for further improvements.

**Keywords:** Workplace Learning, Interactive Learning, Interactive Videoconferencing, Knowledge sharing.
Sammanfattning

Detta är en fallstudie genomförd på Ericsson där en ny typ av lärandeaktivitet har undersöjts. Anledningen till att dessa tester görs är att Ericsson och andra teknikföretag står inför en stor utmaning att kunna lära sig nya områden i samma takt som nya trender kommer och tekniken utvecklas.

Huvudfrågorna i denna studie är hur deltagarna upplever det lärande koncept som testats, samt vilka framgångsfaktorerna är och vad som händer med interaktionen när konceptet skalas upp med hjälp utav interaktiva videokonferensrum.

Datainsamling gjordes löpande under fyra månaders tid och bestod utav kvalitativa intervjuer, observationer, frågeformulär och allmänna observationer och intryck under tiden gång på Ericsson. Utifrån insamlade data ändrades studiens riktning under arbetets gång för att besvara nya frågor som dykt upp.

Resultaten visar på att interaktionen förändras när videokonferensverktyg används, och att mängden interaktion minskar men att kvalitén på innehållet i interaktionen kan öka. Deltagarna anser att interaktionen är en viktig del i lärandet, samt att det är ett tryggt klimat för att diskutera och ställa frågor. Motivation och förväntningar anses också vara viktiga faktorer.


Sammanfattningsvis verkar denna typ av interaktiva lärandeaktiviteter vara ett sätt för Ericsson att möta den tekniska utvecklingen och de nya trender som de har framför sig, då det bidrar till förståelse och ett bredare perspektiv. Dessa aktiviteter kan, med stöd från de teoretiska perspektiven, ses som en startpunkt för lärande där processen hos varje individ fortsätter även efteråt. För att i framtiden fortsätta arbetet med att förbättra dessa lärandeaktiviteter avslutas denna rapport med ett antal rekommendationer för fortsatt utveckling.

Preface

I would like to give my special thanks to Ericsson for allowing me to choose a topic of my own interest; and to Peter Linderoth, my external supervisor and head of competence readiness within cloud at Ericsson for his invaluable time and support throughout this project. I would also like to thank all employees at Ericsson, who took their time to participate in our Learning Sessions, and to those whom with enthusiasm accepted to be interviewed, and to share their experiences and thoughts with me.

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1 Introduction

The introductory section gives a brief explanation of why the topic is important and the background theory. The section covers the problem formulation, purpose and aim, research questions, delimitations of this study, and disposition.

Today, more than ever, large distributed organisations are under pressure to acquire new knowledge at the same pace as technology develops. However, it is not only the need for new knowledge; it is the need of knowing how to use the technology in a proper and efficient way.

A lifelong learning practice is key for companies to become leaders in the development of new technologies. Not everyone can be an expert, although it is important that everyone have adequate competence. Competence, in general, is described as a requirement that a person has enough knowledge to be able to manage the situations the person is involved with (Illeris, 2013).

Often the fastest way to obtain knowledge is to ask someone who already knows. However, it is difficult to learn without knowing which questions to ask. Experts might have a foundation consisting of years of experience to build new knowledge on; however, at the same time, new technology sometimes entails the need to build a new foundation. According to Vygotsky (1978), knowledge can be obtained faster if a group of people within the same Zone of Proximal Development (ZPD) learn together. This zone is defined as the difference between what a person can learn on their own and what a person cannot learn, and the difference is what the person can learn with help from a more knowledgeable peer.

It seems to be in the interest of large technology organisations to develop a practice of lifelong learning so that their employees do not fall behind.

Employees might consider coursework or other formal teaching methods demanding and time-consuming. They may have the impression that what they have learned from formal coursework is harder to retain and use in daily work. On the other hand, they may prefer what they learn from discussing over a cup of coffee, and that knowledge may seem easier to apply to their daily work. If it were possible to achieve this spontaneous knowledge sharing between employees from different departments, continuous learning across an entire organisation could be improved. Also, if collaborating across long distances is a concern, it would help if that continuous learning process could scale. The challenge is to formalise the easy and spontaneous informal learning into a scalable formal learning activity, without losing the advantages of the informal learning.

1.1 Problem Formulation

Ericsson has recognised that one of their problems is that it is difficult for employees with technical- or commercial-selling roles to acquire new knowledge in a fast way within the area of Cloud Technology. This knowledge is crucial for understanding the needs of customers and being able to ask the right questions and find the most effective solutions for their customers’ problems. The knowledge that needs to be acquired is advanced and changes faster than former knowledge areas within Information Technology (IT). The purpose of wanting to find a new learning activity is to improve the understanding of IT. It has been discovered that to be able to sell cloud solutions all technical- or commercial sellers need to understand IT, what enterprise IT work with and what they will work with, in the future, and today that knowledge and understanding is limited.
A common way of acquiring knowledge today in organisations is to attend courses, seminars and web-based learning (Linderoth, personal communication 22th January 2018). The problems with this way of learning are that it is challenging to keep the content updated and that it takes both time and effort for the employees to learn. At Ericsson, employees sometimes experience that it is more effective to ask colleagues for help with technical expertise instead of using the technical content on their internal web pages.

This study will mainly focus on participants’ experiences; therefore, the perspective of those who organise or lead the Learning Sessions will not be analysed more deeply.

1.2 Purpose and Objective
The purpose of this study is to identify how an organisation can arrange learning possibilities in a faster way. A faster way refers to both developing the content since it takes a lot of time to create courses and course objectives, and the acquisition of knowledge. To achieve this, the objective is to formalise an informal way of learning, without losing its advantages.

At Ericsson, a learning activity called Learning Sessions will be observed during two separate occasions, where the result from the first observation will be used for improvements in the second Learning Session. The reason for choosing Learning Sessions as the study object is that the structure of this activity has many components in common with informal learning; i.e., meeting with colleagues and having discussions.

The first objective is to identify, from observations and interviews with employees, the factors that promote and prevent interactive learning. These factors will be used for recommendations for how the learning situation can be scaled up with Interactive video conferencing (IVC) tools. The second objective is to investigate whether Learning Sessions are an effective learning tool for Ericsson and whether they can be scaled for use across the entire company with interactive video conferencing tools (IVC).

1.3 Research Question
This study aims to investigate:

RQ1: How participants experience Learning Sessions
RQ2: What important aspects are identified for successful Learning Sessions
RQ3: How does the interaction change in a Learning Session when scaling up the activity by connecting two remote locations with Interactive Videoconferencing tools

1.4 Disposition
A brief overview of the following sections is described here. The purpose is to introduce the reader to the content of this report and where it is to be found.

Background at Ericsson: Gives background information about the company where this study is performed.

Theoretical Background: Gives a deeper understanding of the theoretical background and explains what has so far been discovered in these areas.

Method: Explains the choices of methodological approaches and the research design. This section also discusses the validity and reliability of the project. Ethical aspects are also included here.
Results: Presents the results from observations, interviews and questionnaires and additional data gathering. There is also a summary of the results included in this section.

Analysis and Discussion: This section connects results with theoretical background.

Conclusion: Research question is answered in this section. Additionally, limitations will be discussed, and future research questions will be suggested. Recommendations will be given for further improvements to the concept Learning Sessions.
2 Background at Ericsson

The background at Ericsson section will cover how the organisation is structured and what Ericsson’s perspective on learning is. The background of the concept Learning Session will also be presented.

Ericsson is a large distributed organisation with a global reach of 180 countries within the Telecommunication industry. Their customer base consists of telecom operators across the world. Its cloud technology organisation focuses on cloud orchestration, network functions virtualisation, internet of things, and digitalisation of services.

2.1 Structure of Organisation

Ericsson is organised around four business areas, each with its products and solutions, and five market areas, responsible for selling and implementing the solutions. The competence development focus in this degree project has been the capability of the business and market areas to sell the cloud portfolio.

The cloud solutions are under the responsibility of Business Area Digital Services (BDGS), currently one of four business areas. BDGS develops solutions for the telecom core network, operations support systems, and business support systems (Linderoth, personal communication, 20th of April 2018).

To support learning in the organisation, Ericsson has a central organisation (part of human resources), responsible for tools, methods, and special efforts in selected, and often new, domains. There is also a department responsible for developing professional training courses and training material based on requirements from the product and solution owners. Further, it should be mentioned that customer training is separated from internal training (Linderoth, personal communication, 4th of May 2018).

2.2 Ericsson’s perspective of Learning

Ericsson has, over several years, put considerable effort into competence development. Among the efforts are 100 hours of mandated organised training per year for each employee, and they have also introduced specific curricula for different job roles. In the annual development talks between an employee and the manager, competence development is one of the three main areas to address. The support from managers is good, while the responsibility to find proper training and to take it is the responsibility of the employee (Linderoth, personal communication, 4th of May 2018). To find proper training, Sheppard (2018) at Ericsson declares that the content employees should learn from having an exponential growth, and this includes internal content, content libraries and external content.

Training at Ericsson is generally organised as product oriented, job role oriented, and Ericsson wide oriented. One of the challenges for each employee is to find proper training suited to their needs. To make it easier for employees to find proper training, there are a number of training paths specified for different job roles.

In 2018, employees estimate that they have one per cent of their time to focus on training and personal development, and that is 24 minutes a week (Sheppard, 2018). However, it is not specified what employees count as training and personal development since knowledge sharing among colleagues seems to happen more often than 24 minutes a week (Linderoth, personal communication, 3rd of May 2018).
According to the same report by Sheppard, 57 per cent of the employees at Ericsson believe that they develop new skills through their colleagues.

Ericsson has communicated a learning and development strategy for the upcoming four years, which builds on their four main concepts; focus, cost, simplicity and digital, which are all meant to support the business direction (Sheppard, 2018). This strategy includes targeting future critical competence gaps, maximising the impact of learning while at the same time reduce cost and effort. The strategy also focuses on making it easier to find and consume learning offers. Lastly the concept digital refers to integrating learning, knowledge sharing and collaboration with intelligent tools, plus help employees to build their digital skills.

2.3 Background of Learning Sessions

The challenge was to find a solution to the problem that employees with technical or commercial selling roles were having acquiring knowledge about cloud technologies. One approach was the concept of Learning Sessions. Before this study began, four Learning Sessions had already been held.

This study observed two more Learning Sessions, bringing the total held since November 2017 to six.

The motivation for these Learning Sessions was an internal investigation which conducted 23 in-depth interviews with people such as Johan Torstensson, the head of IT, to find out what Ericsson could do to sell its cloud portfolio more successfully. This shows that there is a systematic work behind the idea of Learning Sessions (Linderoth, personal communication, 20th of April 2018); however, it is still experimental how the sessions should be structured.

The purpose of Learning Sessions is to improve understanding of IT and cloud. To be able to sell cloud solutions all people working with sales, both technically and commercially needs to understand IT and what enterprise IT work with, and today that knowledge and understanding are limited. Context is important, and a way to understand the context is to learn about trends, strategies and solutions that all IT Enterprises goes through. In the near future, Ericsson’s operators will go the same path within the network area where they offer solutions. The goal is to learn from their own Enterprise IT and to improve how their technical and commercial sellers handle discussions with customers.

2.3.1 How a Learning Session is conducted

Learning Session is a concept where a small group of people gather for an interactive session with presentations and group discussions. There is no limit set for the number of participants; however, the group must remain small enough for everyone to have a chance to participate in the discussions. The session is divided into up to five sub-sessions where an expert or stakeholder introduce different topics within the specific area. The aim is to encourage participants to be active and interact with the expert and the other participants by asking questions and contributing with their view and experience. Ericsson wants the sessions to focus on strategies and trends so that participants get to know the industry trends and to understand the bigger picture and eventually develop own thinking about IT and cloud. How the Learning Sessions in this case study are structured and designed is described further in the method section.
3 Theoretical Background

The section about Theoretical Background covers both the theoretical framework and previous research within the field of this study.

3.1 Perspectives on Learning

The framework that will be used is a combination of a socio-cultural and constructivist perspective, and this framework will be used through the whole study. Both perspectives agree on the idea that the individual constructs his/her understanding in interaction with the surrounding world. The main difference between them is that in a socio-cultural perspective knowledge is constructed from the interaction with the surroundings, while in a constructivist perspective knowledge is constructed when an interaction between experiences and their ideas takes place. In a socio-cultural perspective learning and development cannot be detached from the social context.

Traditionally, education has focused on “mechanical” knowledge; however, today this kind of knowledge without understanding is insufficient for the fast-developing world we live in (Illeris, 2015)

3.1.1 Socio-Cultural Perspective

One of the most important tools when it comes to learning is communication through speech (Vygotsky, 1978). It is through communication that humans can share their experience and knowledge so that a collective memory can be built. This collective memory is larger and more complex than what an individual can build by itself (Säljö, 2015). Säljö mentions further that other tools have been developed, like writing, to spread knowledge and information in ways that were not possible before this technique.

Tools are a central concept within the socio-cultural theory, and according to Säljö (2015), they are derived from the skills of humans; their intellectual, physical and social skills. Their ability to use tools is not only determined by their natural preconditions, but it is also determined by how well they can use given tools and if they can develop new tools. Today, technical tools are being developed at a faster pace than ever before, so our challenge is how to learn to connect humans through mediating technical communication tools in a natural way.

“Mediation is a living dimension of all human interaction, we talk, interfere and interact” [Author’s translation] (Säljö, 2015, p.99)

Individuals appropriate information through communication and Vygotsky views learning as an interplay between humans where one of them is more knowledgeable about the area that is supposed to be taught, and the rest, one or many, knows less than the expert (Illeris, 2015). However, it can also be the person who is more knowledgeable who learns from this interaction, since the understanding can get deeper and broader when explaining to someone else. Therefore, more competent peers are important when learning groups are structured, for everyone participating in the group. Säljö (2015) describes the appropriation as the process by which individuals on different levels takes in and processes concepts. From the beginning of the process it might just be to hear a more competent peer tell about a concept, and at the end of the process the individual can independently master the concept and utilise it in new situations. For this to be possible the ones who are learning needs to be in the same zone of proximal development, a central concept within Vygotsky’s theory, illustrated in Figure 1.
“It is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers” (Vygotsky, 1978, p.86).

![Diagram of Vygotsky's Zone of Proximal Development]

**Figure 1: Vygotsky’s Zone of Proximal Development**

However, this perspective does not cover motivation and does not include an understanding of conflicts of interest (Illeris, 2015). Although Vygotsky’s theories are closely bound to the political environment of his time, many of his theories about learning are still applicable today.

3.1.2 Constructivism

A constructivist view of learning is that humans create their own understanding of concepts and their surroundings (Illeris, 2015). Knowledge, understanding, or insight is not something that can be transmitted from one person to another. Jean Piaget is one of the best-known constructivist theorists, and he compares the learning process to a process of finding balance, of humans trying to find balance by continuously adapting to their surroundings. Adaption is made by assimilation (i.e. additive learning) and accommodation (i.e. re-structuring learning) trying to fit new information into existing cognitive schemes (Illeris, 2015). When the individual has reached a cognitive balance, when the inner conception is consistent with what is experienced from the surroundings, then the individual has reached equilibrium (Säljö, 2015).

Accommodation is a more difficult and more demanding process than assimilation and appears when there is a cognitive conflict (Säljö, 2015). Adding new content to what is already known is easy, while reconstruction is a more complicated and demanding process. Additionally, to leave a theory or to discard an insight or understanding can be hard (Illeris, 2015).

“Accommodative processes mean that the individual has access to action opportunities that can be used in widely different situations, regardless of context.
It creates a foundation for openness, sensitivity, creativity, flexibility, etc.” [Author’s translation] (Bjerg in Illeris, 2015, p.66)

To be able to perform an accommodative learning process there are some important factors according to Illeris (2015). First is that the person needs to have already relevant schemes built up so that there is something to reconstruct. Second, the person needs motivation for reconstruction like this. The third and last factor is that the person needs to feel safe so that the person dares to abandon old insights and what is already established knowledge.

Säljö (2015) claims that in order to gain understanding and insight, the individual needs to be involved in activities where it is possible to explore how the surrounding world is functioning.

Criticism of Piaget’s work is that he does not investigate feelings, the social part, or the development of personality/self-hood in a deeper way. According to Illeris (2015), it is therefore important to be aware of these limitations within the cognitive area when analysing learning from a constructivist perspective.

### 3.2 Previous Research

#### 3.2.1 Learning in work life

More than ever before, lifelong learning is necessary since work functions will change with certainty due to the technical development. Illeris (2011) says that everyone must be prepared for his or her work functions to change constantly and rapidly throughout his or her whole careers.

Many theoretical perspectives focus on children because children have an un-critical way of learning, where they assume that most of the things that they face are relevant to learn. Learning in working life is more of a selection of what to learn (Illeris, 2011). According to earlier research by Leithäuser (in Illeris 2011) adults tend to be even more selective as they grow older, and this is a part of identity, where an older adult probably has a clearer view of who they are and what they want in their working life. This is important to be aware of since most of the participants in this study has been working within this field for many years.

According to research by Kock (2010), formal learning is characterised by a high level of planning and organising, while informal learning is characterised by a lower level of planning and organising.

In agreement with a socio-cultural perspective, learning might occur when interaction between employees has been made possible, which is an informal way of learning.

> “Learning takes place as a social process when the employees have discussions or reflect on or exchange experience, ideas and assessments with each other” (Illeris, 2011, p.34)

To create an environment where this is possible, conditions (see Figure 2) that benefit or impede must be taken into consideration. One of these conditions is stress, which is a factor that impedes learning. In an environment like Ericsson, research has found that it is not only the need for more possibilities at work that motivates learning and personal development; there is also the need to help employees reduce stress in order to provide time for workplace learning.
When employees have possibilities for social interaction, Illeris (2011) states that it is through contradictions in the meeting and communication between different professional groups that a favourable learning environment might be created. Therefore, it is important to supply opportunities to collaborate and share knowledge between different parts of the organisation, particularly in a big distributed organisation where a lot of competence and knowledge exists.

**Figure 2: Illeris' Categories for Workplace Learning**

The necessity of an integration between formal and informal learning is described by Ellström (1992), who claims that observations demonstrate that what is “taught” is not always what is “learned”, and that it is hard to transfer knowledge from a formal learning situation into a continuous learning situation in daily work life. However, informal learning in daily work life cannot lead to a systematic, established development of competence if it is not combined with a structured formal learning effort (Ellström, 1992). When having a combined strategy of formal and informal/integrated learning, there is no effect if it is not combined with an enabling type of learning environment within the organisation (Kock & Ellström, 2011). Svensson, Ellström & Åberg (2004) further explain in their research how combining formal and informal learning, in the end, might lead to competence, which is visualised in figure 3.
By combining formal and informal learning, learning by reflection emerges, which might lead to developed competence (Svensson et al. 2004). In big companies like Ericsson, there is a need for building a sustainable development of competence, and therefore this combining could be a solution, to make a formal action of the positive components in informal learning that employees experience as effective.

3.2.1.1 Learning in global collaborations

A previous study that included a Danish and an Indian office discusses the cultural and linguistic differences discovered when analysing their communication and collaboration (Klitmøller & Lauring, 2013). The differences included how much information was expected in order to perform tasks. For example, the Danish team wanted the other team to own decisions and initiatives, whereas the Indian team wanted the scope of the task to be clear from the beginning.

Klitmøller et al. (2013) explain further in their research that the decision of which mediating tool to use depended on how advanced the collaboration was. When sharing equivocal knowledge in collaborations with significant cultural differences, a richer media like video conferencing was preferable. This was the case even though there were problems with understanding local accents, complicated vocabulary and body language; nevertheless, the gain was bigger since misunderstandings and misinterpretations could be solved by asking for clarification directly.

If the level of mutual trust is high, earlier research states that this has a positive effect on knowledge sharing in virtual teams (Pinjani & Palvia, 2013). The researchers claim that these findings have support by earlier theoretical findings that trust is essential for the effectiveness of the teams but also for relationship building. Furthermore, Pinjani et al. (2013) state in their study that it is important that the managers or organisers understand the diversity so that they can help bridge the gap between the different teams. A responsible person also needs to understand how this diversity affects interactivity to manage discussions more effectively.
3.2.2 Competence and competence development

Today, the competence of individuals is in constant development because the new technology and trends require it; however, for an individual to develop competence, there is a need of pre-knowledge, a basis for competence development.

New situations demand that an individual’s competence is updated, developed, reorganised and reconstructed to be adapted to meet new needs (Illeris, 2011). A reason for that is that the competence needs to be flexible so that the individual can fit his or her competence into situations that are not yet known.

A typical and generally accepted definition of competence which focuses more on subjects being able to use their competences in a future situation is:

“The concept of competence refers [...] to a person’s being qualified in a broader sense. It is not merely that a person masters a professional area, but also that the person can apply this professional knowledge – and more than that, apply it in relation to the requirements inherent in a situation which, in addition, may be uncertain and unpredictable. Thus, competence also includes the person’s assessments and attitudes, and ability to draw on a considerable part of his/her personal qualifications” (Jorgensen in Illeris, 2011, p.50)

Ellström (1992) has defined competence as the individuals’ potential action space related to a certain task, situation or context. Further, it means their capability to successfully perform a work task where they utilise and if possible, expand their action space.

Competence development can be seen as (Kock, 2010, Ellström 1992) different actions, alone or combined in a system with other actions, which are performed to increase the competence in the company’s internal labour market.

It is not only strategy and methods that affect the outcomes of competence development; indeed, other essential factors according to earlier research (Kock, 2010) that have an important impact are the following structured under four subcategories. First are the conditions for participants. Second is the planning, content, design and implementation of competence development. This category contains factors like how participants are invited, if the content is based on the employee’s needs, if it is during work hours, if employees felt targeted and activated during activities and if the focus is to build a more in-depth or broader competence. The third category is about the inner structure of the company, if there is enough time or support, and if any enthusiasts are driving the competence development. Lastly, the fourth category is about the outer context, in which competence development is affected by the pace of technical development within the business area, but also by the needs and expectations of their customers.

3.2.3 Interactive Videoconferencing

Today, markets have become more global, and large distributed organisations need to manage knowledge sharing over distance. Physical attendance cannot limit learning strategies and travel on a regular basis is not, in either an economic or environmental perspective, sustainable. Earlier research demonstrates that virtual communication has been seen as a substitute for travel, at a lower cost (Storck & Sproul, 1995) for many years now.

Many studies regarding video conferencing were performed when the technology for interactive video conferencing tools was still not yet well-developed (e.g. Storck et al. 1995, O’Conaill, Whittaker & Wilbur, 1993). Today it is also more common to use consumer video conferencing tools such as Skype in daily life. Also, companies nowadays have better networks
and connectivity, screens and cameras. As a result, if the studies were performed today, the results might differ.

3.2.3.1 Interactivity when using technical communication tools

As stated above, a structure is necessary when organising interactive sessions using technical communication tools. However, the outcome is impacted not only by the rules governing how the teacher or expert should interact but also by the rules of engagement for the rest of the participants (Hu et al. in Lawson, Comber, Gage & Cullum-Hanshaw, 2010). These rules of engagement and interaction were discovered to be particularly important when global groups with different cultural background were supposed to discuss and share knowledge with each other (Abbott et al. in Lawson et al., 2010).

Saw et al. (2008) discovered in their study that when using technical communication tools, the interactions where often more likely to be initiated by the teacher than initiated by the students. The researcher does not mention if they believe that this differs from communication face-to-face; therefore, it might be the case even for all types of learning interactions. According to Carville & Mitchell (in Lawson et al., 2010), it is harder for participants attending from the remote site to join into a discussion when questions asked by the local site participants was not repeated clearly by the teacher. This finding together with the one earlier states that the teacher has an important role to include both local and remote site participants in the discussions. A reason for waiting until the teacher invites to a discussion could be the perceived delay.

"/…/ the slight delays in transmission because of compression and decompression of audio and video signals make it difficult to briefly interrupt an ongoing stream of speech" – (Storck et al., 1995, p.199)

This delay could also be a reason why O’Conaill et al. (1993) in their research discovered that even though interactions were taking place, participants did not use backchanneling in the same way as they did in face-to-face communication, and the experts were more likely to use questions to hand over the discussion formally. Furthermore, O’Conaill et al. state that participants experience IVC more tiring and demanding because of a higher workload in focusing and contributing to the social interaction.

According to Stephens & Mottet (2007), the approach taken by participants in IVC depends on what their expectations on interactivity were. If the expectations were low, then they would approach the activity as it were an autonomous and passive activity.

One of the discoveries by Anastasiades et al. (2010) is that satisfaction by the participants’ increases if they are getting involved in interactive activities. These interactive activities in combination with a good structure that centres the content around the participants are according to Anastasiades et al. (2010) a key factor for successful video conferencing. Other discoveries were linked to relationships and how IVC creates both unity between participants at the local site, but also a motivation for communicating and sharing knowledge with the remote site.

As mentioned earlier, for a selective learner there are factors assessed before the content is accepted, and one of these factors is who delivers the content.

"Impressions of others are formed through both passive observation and direct interaction. Thus both visual and aural information are important in impression formation” (Storck et al., 1995, p.198)

The willingness of participants to collaborate can be affected by the use of technical communication tools. This is because of the lack of or differences in impressions that
participants need to build relationships and trust between each other. According to Storck et al. (1995), the effectiveness of using communication technology can decrease if the technology affects participants impressions of each other in a negative way. However, Schweizer et al. (in Lawson et al. 2010) claim in their research that if correctly used, technical communication tools do not negatively impact the learning outcome.

3.2.3.2 Technologies for Interactive Videoconferencing

Lawson et al. (2010) suggest that the simplest categorisation between different types of technologies for distance communication is using a desktop or using a studio-based conferencing room. When choosing which technology to use, Lawson et al. (2010) continue by arguing that the quality is often lower on desktop web cameras and therefore it is not effective to use this kind of technology when discussing with many participants in the room. That is because in this case clearer sound and picture quality are important to motivate participation in discussions. Therefore, before deciding which technology to use, it must be decided whether it will be deployed as one-to-many or group-to-group.

Karpova, Correia & Baran (2009) investigates in their study which technology that it is preferable when collaborating with different tasks in global teams. The result of their study is that when brainstorming and having real-time discussions, all groups preferred audio/video conferencing. When using video conferencing, the participants stated that they still had a hard time establishing and maintaining a reciprocal relationship, due to a lack of eye contact even though the cameras where.

Other research points out the importance of focusing on collaborative aspects of the chosen technology for communicating. The chosen technology should promote parallelism, transparency and sociality. Furthermore, after the technology is chosen, it is important that training in these tools is provided so that all features are utilised (Pinjani et al. 2013).

3.2.4 Summary of previous research

In summary, this review demonstrates that with the chosen theoretical framework it is important that learning is carried out within a social context where learners are motivated and have the time and preconditions to participate.

To have a sustainable competence development, learning needs to be a combination of formal and informal learning which might lead to building competence.

Same principles for learning, when the learning is conducted face-to-face, holds when using IVC tools; however, since the interactivity changes because of the additional mediating tool, everyone must be aware of the things that differ to keep up a high level of interactivity. Furthermore, it is not only the use of technical tools that affect the learning outcome when connecting globally distributed teams. Diversity in these collaborations needs to be taken into consideration; for example, differences in culture, language, and body language.
4 Method

The Method section covers the research design which includes the selection of participants, chronological description of how the study was conducted and how Learning Sessions were organised. Data collection and analysis are described, and finally, validity and reliability are discussed together with ethical considerations.

4.1 Research design

This study aims to observe Learning Sessions to investigate the learning experienced and discover how different factors impact the outcomes of the Learning Sessions. Furthermore, it will be investigated how interaction changes when scaling the concept of Learning Sessions by connecting two remote locations during a Learning Session. Therefore, a qualitative case study has been chosen as a research approach. A case study is an investigation of a case in a specific context, where there are many important variables involved and because of that, there is a need of multiple tools for data collection (Cohen, Manion & Morrison, 2011).

In this study, the case is the Learning Sessions as a part of formal learning at Ericsson, and the focus is on individual learning through learning in groups. The learning investigated is individual since the theoretical framework chosen is of the view that individuals construct their own knowledge. Additionally, the knowledge acquired will be used while working individually and not together with the same participants as from the Learning Session.

Observations, interviews and questionnaires were used for data collection. Using different methods for collecting data to understand and describe a phenomenon is a type of data triangulation (Mathison, 1988). Using data triangulation will result in data that is convergent, inconsistent or contradictory; however, all different types has the value of making the understanding of the social phenomena richer.

A quantitative analysis of observation data, i.e. differences in measured interaction frequency between different Learning Sessions has been conducted. Then, by a qualitative analysis approach on interviews, it has been investigated why the differences occur in order to gain a deeper understanding of the issue in accordance with the recommendation from Murray & Beglar (2009).

According to Cohen et al. (2011) case studies are “a step to action”, the results can often be generalised, and the insights can be “put to use” directly. However, patterns recognised from the results and conclusions of a case study can be seen as rich knowledge about a particular case in a specific context, but it is up to the reader to then interpret it. To be able to generalise and use this study in other situations, the patterns found must be interpreted in how they can be used in other contexts. One of the goals of this study is to improve Learning Sessions and give recommendations about how to attain their goals with this initiative at Ericsson.
4.1.1 Chronological description of the realisation of the study
The study was centred around two Learning Sessions that took place two months apart. The data gathering and additional work, are visualised in Figure 4.

Before the first Learning Session the reason for data collection, through interviews, was to gain an understanding of what employees were thinking about learning in general and what their expectations of the concept Learning Session were.

A Learning Session consists of three sub-sessions with different topics. During the first Learning Session, all sub-sessions during the day were observed, without interacting with the participants, only taking notes about what and when things happened.

From the first Learning Session it was discovered that the use of video conferencing tools changed the interactivity in the Learning Session, and therefore the interview template was rewritten in order to gain a deeper understanding of what had been observed.

Interviews were chosen over questionnaires in the first observation round because questionnaires are suitable for reaching many participants or when there is not enough time to conduct interviews; however, in this part of the study, it was relevant to investigate the thoughts and experiences of those who attended the first Learning Session. It is also more likely that interviews lead to a deeper understanding of the participants’ experience since it is possible to ask further questions for an explanation during an interview.

The second round of observation was performed with two connected locations participating in the Learning Session, and a template with pre-defined interactivity categories was used to collect data about the interactivity of each session during Learning Session two.

After the second observation, the time was limited, and participants were spread over two locations; therefore, questionnaires with a mixture of closed and open-ended questions were used. The focus of the questionnaire was how the participants had experienced the interactivity, both how much they felt that they interacted and how they experienced the quality of the interaction, as well as what the experienced learning outcome was.

4.1.2 Selection of participants
The total number of participants in the first Learning Session were eight employees and three experts, and all of them had accepted the invitation to participate in the sessions. In total there were 120 invitations sent out to employees within business management at Ericsson before the session, and 12 employees showed their interest in participating. From the eight participants three were chosen by the supervisor at Ericsson to be interviewed in the first round of interviews, and this limited number of interviewees was because of time limits before the first Learning Session took place.

During the second round of interviews, after the first Learning Session, all eight participants were interviewed individually.
In the second Learning Session two locations attended, after sending out invitations to offices in Europe and India, these two locations were one room in Sweden and one room in India. In Sweden four employees and two organisers attended, and in India six employees and one organiser attended, resulting in a total of 13 participants during the second round of Learning Session. There were no particular reasons for choosing an Indian office; it was the office that accepted the invitation and had time to participate.

4.1.3 Structure and Design of Learning Session

Learning Session 1:
The first Learning Session observed in this study was taking place during work hours in a Swedish office. During the day, three sessions with different topics were held, and each session lasted for approximately two hours.

Physical setting for the Learning Sessions consisted of a conference room (see Figure 5), and this room had seats for 14 participants. Equipment in the room was a screen, used for showing pictures and content from the connected computer. The computer was also used for connecting the experts who called into the meeting, being placed in one of the corners of the table. Its exact positioning is illustrated in the figure below.

![Figure 5: Snapshot of physical setting from Learning Session one](image)

The human setting consisted of participants, experts, the organisers, and the observer. Eight employees were accepted as participants, and every one of them had some connection to working with Cloud. The number of subjects in the room varied since the first session was held by the expert himself, the second with the expert calling into the meeting and the last session with two experts present. Additionally, two organisers and the observer also were present during all sessions, and the observer was sitting in the back of the room.

The interactional setting was conducted in the same way as earlier sessions. All experts were told to give a brief introduction to the topics and add interesting content and discussion material, then answer questions that arose during the discussions. No one was appointed to lead the discussion.
**Learning Session 2:**
The second Learning Session was arranged with a different setup, where two offices were invited to participate. The Learning Session was held during work hours for the Swedish office, but partially outside work hours in the evening for the Indian office. During the day, three sessions were held, and each session lasted for approximately one hour with fifteen-minute breaks between each session.

The physical setting for the Learning Session consisted of two connected conference rooms, one in Sweden with 13 seats and one in India with approximately ten seats. Both rooms had a camera installed on the top of two screens so that everyone in the room was visible on one of the screens for the other location's participants. The other screen was used for showing pictures and content from one of the computers from the Swedish conference room.

The human setting consisted of four employees from Sweden and seven employees from India that were participating in the sessions. In India, the number of subjects in the room was constant, although in Sweden it varied due to different experts attending some of each other’s sessions. In the first session, the expert called into the meeting since he was sick, although he had a colleague who was present during the session. Additionally, two organisers and the observer attended at the Swedish office (see Figure 6).

**FIGURE 6: SNAPSHOT FROM LEARNING SESSION TWO**

In the second session, the interactional setting had been structured in a new way. From the interviews with the subjects, the experts had received feedback on how they could improve their contributions to the discussions. Also, the two organisers had been given new roles, one of them was responsible for keeping to the agreed schedule and the other one for structuring the questions and engaging participants in discussions.

The technical setup used during the second Learning Session was a video conferencing system installed in both conference rooms. The system consisted of one camera on top of two screens (see figure 7), a touchpad for handling the video conference settings, for example, to zoom or pan the picture. The moderator in each room was monitoring the local camera and could choose which view to transmitting. Microphones were placed in the middle of the room over the table, and the speakers were integrated into the video conferencing system. From the touchpad, it was possible to adjust volume and mute microphones. There were two ways of calling into the meeting: from another video conference room with the same technology or via Skype for business.
4.2 Data Collection

4.2.1 Interviews

All interviews were performed by the same interviewer in meeting rooms located in the office building and had the duration of 15 to 20 minutes. All interviews were recorded and performed either in Swedish or English and then transcribed by the interviewer in the original language in order to not miss any nuances when analysing the data.

In the first round of interviews [face-to-face], a standard open-ended approach was taken, and all participants got the same questions in the same order. All questions were tested twice with other employees within the same business area at Ericsson and then summarised into an interview sheet, which can be seen in Appendix A. Tested means in this case that the employees answered whether they understood the question and what they would have answered.

During the second round of interviews [face-to-face], the participants were interviewed from three different themes with open-ended questions, depending on their quantitative result from the first observation; i.e. how much they interacted. This approach is closer to an interview guide approach (Cohen et al., 2011) with a more conversational style.

4.2.2 Questionnaires

The third round of collecting data was conducted directly after the observation of the second Learning Session. The data collection was done using questionnaires and had the purpose of being a complement to the observation. That questionnaire can be seen in Appendix B.

Answers are already in written form, and therefore it reduces the time it takes for handling the data (Bjørndal, 2002). It also guarantees anonymity for the participants. Additional reasons for conducting the questions with questionnaires is that more than half of the participants were not physically present in Sweden.

The questionnaires contained a combination of multiple-choice questions, matrix questions and open-ended questions. Three themes were covered: interactivity, learning outcome, and
other (things that could impact the outcome before, during and after the Learning Session). Before distributing the questionnaire, it was pilot-tested twice, both with Swedish employees at Ericsson and with engineers from India (not working at Ericsson). The reason for testing the questionnaire together with informants from different countries is to try to ensure that the question wording is done in a way that no words or questions could be misunderstood.

At the end of the second Learning Session all participants were informed that a questionnaire would soon be sent to their email, and before the session ended everyone was asked if they had received the email. Before the first reminder was sent to the participants 82 per cent had answered, and after the reminder, there was a total of 91 per cent who had answered the questionnaire.

4.2.3 Observations
Observations in natural settings have been performed during the two Learning Sessions. Observation can be of facts, like the number of participants in a Learning Session, or of events as they happen during a Learning Session (Cohen et al., 2011). Observational data can reveal phenomena that participants might not talk about in interviews; for example, how they interact in a learning situation. According to Gold (in Cohen et al. 2011) the observer’s role in these observations can be classified as an observer-as-participant, and that means that the observer is not a member of the group and their role as an observer is clear to all participants attending. The observer was seated in the back of the room during both sessions, and the only task was observing which means it was a first-order-observation (Bjørndal, 2002).

From the theoretical framework of how learning occurs, the interaction between participants is what enables active learning, therefore interaction was observed during the Learning Session. In the first observation questions were counted since it can be observed that when participants ask questions, they are interacting with the rest of the group and are being active in their own learning process.

The first observation performed was both quantitative and qualitative, where frequency of questions and how many questions each participant asked were noted in a pre-defined collection matrix. When noting the question, the time when they were asked was written down, and when summarising the results, the questions were summarised into ten minutes intervals.

The relevance of questions was noted, and also whether the question led to an answer, discussion or follow-up question. To assess the relevance of a question when it was not completely clear, the answer from the expert and the reaction of the other participants were taken into consideration.

The second observation was more structured than the first, where the categories were pre-defined based on the results of the first observation. The questions were categorised into four different types depending on who the receiver of the question was: whether, the question was asked to the presenter, participants in the same room, participants in the other room, or to everyone. Additional categories were created for answers and adding new content to the discussion.

Additionally, to the data gathering described above, impressions and other events taking place during the sessions were noted by the observer; i.e., participants leaving the room or participants having discussions in smaller groups.
4.2.4 Additional Data Collection
Internal reports at Ericsson about global collaboration and knowledge management have been used as well as internal guidelines about virtual collaboration. This data gives a brief background of where Ericsson is today when it comes to global and virtual collaboration.

After the second Learning Sessions there were information gaps in the collected data, and therefore an additional data collection was made by sending follow up questions to the organiser in India.

Additionally, during the study which lasted for four months, the author was located in the office together with many of the participants, organisers and experts. During this time the author attended meetings and talked to employees from different parts of the organisation, collecting impressions to gain a deeper understanding of the situations studied.

4.3 Data Analysis
According to Cohen et al. (2011) analysing qualitative data is about making sense of the collected data by identifying patterns, themes, and categories. Qualitative data can be derived from many different sources, and the analytical approach is described for each source of data below.

4.3.1 Interviews
The author audio-recorded every interview in the same way and transcribed it into written Swedish or English. In total there were three hours of recorded interviews and even though transcribing is considerably time-consuming (Cohen et al., 2011) the benefits of analysing the transcribed interviews made up for the time. The reason for transcribing every interview was to make the data more accessible for further analysis.

In the transcription, every informant was given a letter and a number, for example, A1.

An inductive approach was chosen for analysing the content of the interviews. The first step in an inductive analysis is to organise the data by open coding, then creating categories or themes, and finally abstracting the data (Elo & Kyngäs, 2007).

Open coding was performed by reading through the transcriptions at least twice while writing notes to describe the content in the margins (Elo et al., 2007). After writing notes, these were transferred into a matrix of coding, which includes both a manifest content, what is actually being said, and latent content, what the manifest content means (Graneheim & Lundman, 2003). Here the meaning unit was condensed into shorter meaning unit descriptions that were still close to the original transcribed text. This text was then interpreted in order to try to find the underlying meaning. From this interpretation sub-themes and themes were specified. An example of this process is attached in Appendix C.

4.3.2 Questionnaires
The number of informants answering the questionnaire was in total 11 employees, and because of this small number of subjects the processing and analysing of the data was made by hand. The questionnaire was sent to those who participated in the second Learning Session.

Multiple choice questions and matrix questions were already coded in advance, but open-ended questions needed to be post-coded (Cohen et al., 2011). This was done with the same approach as with the data from interviews, with an inductive approach to analysing qualitative data. No statistical conclusions can be drawn from this questionnaire since the number of
informants was small, but it can still be used for alternative interpretations of the other data. The analysis of the collected questionnaire data has been made together with support from the data observed during the second observation, trying to recognise and understand discovered patterns.

4.3.3 Observations
Empirical evaluation is to evaluate what occurred during an observation, and in this study, the interaction has been observed (Bjørndal, 2002). The analysis consists of trying to understand how the groups are interacting and nomothetic features like frequencies, patterns and norms. Together with the other sources of data the observation tested and examined the Learning Session and how the interaction was experienced by the participants and what the experienced learning outcome was.

The frequency of interaction was measured, by noting interaction and time and written in a matrix, where different types of interactions like questions and answers were separated, and then compared to the experienced level of interaction of the participants.

4.4 Validity and Reliability
The validity of the method increases if different sources for data collection results in the same kind of data. In that case, the probability of correctness in result increases (Jick in Bjørndal, 2002). If the collected data differ, then this can stimulate new interpretations of an event. In total this can lead to a more nuanced and holistic view of the event that occurred.

Cohen et al. (2011) list some of the weaknesses of Case Studies which are difficult to avoid. Results from case studies are typically difficult to generalise, and it is up to the reader of the report to find similarities or applications for the results. Further, observer bias and selectiveness can affect the results, despite attempts to avoid it.

However, Cohen et al. (2011) declare that the strengths with case studies are that they are keen on reality, and they can provide insights and give an understanding of a certain situation, even though all variables are not controlled. Further, it is possible to conduct a case study with only one researcher, and the results are often easy to understand because it describes an existing situation.

4.4.1.1 Interview
An interview template was used, and this template was also pilot-tested. A strength of interviews is that it is possible to follow up and clarify meanings of the participants’ answers, and this can guarantee a higher quality of data (Cohen et al., 2011).

However, at the same time, Cohen et al. (2011) describe some unavoidable features of the interview; for example, the impact that the interviewer has on the interview situation by making encouraging comments. Another factor is the balance between the interviewer and the interviewee; for example, social distance and the interviewer’s control over the discussion, and therefore it is not possible to conduct every interview in precisely the same way.

According to Cohen et al. (2011, p.426) “transcriptions are decontextualized, abstracted from time and space, from the dynamics of the situation, from the live form, and from the social, interactive, dynamic and fluid dimensions of their source: they are frozen”. Also, the transcriptions from audiotape exclude factors like body language and facial expressions but recording only audio was chosen over video recording because of the reason that the later can be perceived as more intrusive.
Open coding was performed by using an inductive coding matrix for making it easy for others to control the performed coding. Categories and themes were then controlled by the supervisors of this study before finishing the analysis.

4.4.1.2 Observation
Askland in Bjørndal (2002) mentions that we can see what subjects do, but not why they do it. Further, he says that it is not a value in what participants do, the value of actions is the perceived value by the observer, and finally, we cannot see what subjects think and experience. As an observer, it is hard not to have selective attention and memory, since there are expectancy effects which build on the observer’s previous experiences (Cohen et al., 2011).

“Humans tends to complete incomplete information.”
(Kolivosky& Taylor in Bjørndal, 2002, p.34)

Therefore, it is important that the observer not add information after the observation and only report events that occurred. If the information is incomplete, it should be followed up with further data gathering instead of guesswork.

4.4.1.3 Questionnaires
It is important to see the respondents as subjects and not objects, so respondents cannot be coerced into completing a questionnaire (Cohen et al., 2011). In a questionnaire where the participants are anonymous answers cannot be followed up, and it is not possible to explain questions if they are difficult to understand.

Therefore, both decisions about question wording and formulations have been made after pilot testing questions both with Swedish and Indian engineers. Some questions had to be reformulated, including which type of answers were possible, such as a scale with numbers or click-in boxes.

The inductive content analysis on both data from the interviews and questionnaire has been conducted by using a matrix over all steps from meaning unit to themes, and this matrix has been reviewed by two supervisors. The reason for using a matrix is to make the process transparent so that it is possible to review the coding and therefore increase the reliability. To enhance the validity, since inductive qualitative data analysis is an interpretation of the author’s subjective perspective of the data (Elo et al., 2017), it is important to not only use one source of data but to use multiple sources to compare the results (Mathison, 1988). When using triangulation, the most common case is to assume that it will lead to convergence, but when it does not, it is also of value for the validity since it leads to a rich and complex picture of the studied case.

4.5 Ethical considerations
When a study entails subjects, some ethical considerations must be made. During both observations, interviews and questionnaires it has been ensured that all participants were informed of the purpose of the study and gave their consent to participate in this study.

To ensure the participants that they will be guaranteed confidentiality, no names have been written down, and recordings were stored on external hard drives in a way that could not endanger the guarantee of confidentiality. The study aimed to improve the learning outcome for employees at the company, and therefore the goal was that the employees would benefit from their participation.
“A good pedagogical observation does not mean that you as an educator should observe and judge "everything" in a particular situation, it means trying to observe factors and conditions that are relevant to the learning that is going to take place” [Author’s translation] (Bjørndal, 2002, p.141)

When observing a phenomenon or a situation the observer notices more than what is written down. It is an ethical question not to include everything observed, but to only include what is necessary for the study and necessary to answer the research questions.

Only the author and supervisors will have access to the collected data and the whole analysis; however, the results and conclusions of the data will be shared with both the company and in the study.

Further, it must also be taken into consideration how the observer’s presence during observations often disturbs the natural setting (Cohen et al., 2011). By observing learning, there is always a risk that it disturbs the learning process of the participants. Therefore, when considering improvements that this study might lead to, the impact that the observer’s presence has on the participants should be weighed.
5 Results

The Results session covers results from interviews, two iterations of observations and questionnaire. Furthermore, results from additional data gathering are described at the end of this section.

5.1 First iteration of interviews and observations

5.1.1 Observations

Both sessions observed had three sub-sessions with three different topics and presenters.

The sessions during Learning Session one lasted between 70 and 130 minutes, with one break after 60 minutes during the first and second session, and no break during the third session. Everyone who attended the first and third sub-session was physically in the room, and all sessions were performed on the same day.

In the first session there were in total 26 questions, in the second session there were in total eight questions and the third session there were in total 36 questions, and the frequency is illustrated in Figure 8.

The time interval chosen for the graph visualising number of questions during the time is ten minutes, so each point in the graph in Figure 8 represents questions asked under the duration of ten minutes. For example, the first interval in the graph represents questions asked between minute zero and ten.

![Figure 8: Trend lines for how many questions that were asked and when during all sessions in Learning Session one.](image)

In the first and second session, questions were asked mostly in the beginning and end of the sessions, as opposed to the frequency of questions during the third session when questions were asked continuously during the whole session and particularly in the middle of the session.
During the second session, not everyone who attended was physically in the room, the expert calling in was on a meeting abroad, and therefore Skype was used for calling one of the laptops in the room. This laptop’s camera was activated, and two participants in the corner were visible to the camera. After 70 minutes there were no more questions, so the session ended earlier, and that is the reason why the line for the second session ends before the other lines.

In figure 9, a comparison between the total number of questions asked during each session and the total number of questions assessed as relevant to the topic, according to the observer, was made.

![Relevance of questions](image)

**Figure 9:** Total number of questions and number of relevant questions asked by participants during all sessions in Learning Session one.

All questions asked during the second session seemed to be relevant to the topic when assessed by the observer.

From the first observation it can be concluded that fewer questions were asked when not everyone was in the same room; however, the quality of the interaction might have been higher because all questions were relevant to the topic.

These impacted decisions later made later on in this study since it was noticed that the use of Skype as an IVC tool seemed to have an impact on the amount of interaction in a negative way, i.e. the interaction level was lower when not everyone was physically attending in the room. The reason for that might have been that participants were not able to see the expert who was speaking. At the same time the expert could only see two of the participants because
of the limited width in the laptops camera angle, and therefore the expert was not able to see body language and facial expressions by the other participants.

However, during the session mentioned above all interaction between participants and the expert were assessed as relevant, and therefore it is interesting to observe additional Learning Sessions where IVC tools are used.

5.1.2 Interviews

5.1.2.1 First round of interviews, before the first Learning Session

To gain an understanding of how employees reason about learning and this type of learning activity three interviews were conducted with participants who had not yet participated in a Learning Session.

From the inductive analysis of the interviews, the following two categories were discovered as important for their participation in the first Learning Session:

Learning as an interaction:

All informants argued for the belief that learning is relaxed and often spontaneous when they discuss with colleagues. Therefore, it is significant to have good relations within the organisation and networking is a part of finding information and competences.

“The person sat on another floor, and we knew each other since before. Much of the job is to have contacts, one on storage, one on server hardware, etc. You cannot know everything yourself, but you know enough to ask questions and understand the answer” [Author’s translation]

Trust and feelings of safety were also agreed upon as essential. To ask questions, the learner needs to feel that the environment is safe and allows asking enough questions in order to understand.

“Those who are in their comfort zone, those who do not dare go outside, dare not ask those questions because they are afraid they will end up in an area they don’t know enough about” [Author’s translation]

Motivation for participating in learning activities:

To have a broad understanding of how others work within the organisation seemed to be important for the informants.

“If you can understand how others are working, then it would help us to set a value on what we are presenting for costumers” [Author’s translation]

Further, it was important to see their areas from a new angle and with another perspective.

Colleagues were also a motivating factor, both to attend the same activities as already known colleagues but also to discuss with colleagues in other positions and roles which could lead to new even better discussions from a new perspective.

5.1.2.2 Second round of interviews, after the first Learning Session

After the Learning Session and with the results from the first observation questions were asked to the participants to investigate the experienced learning outcome and their reflection about the social interaction between both themselves and the experts. Questions that were
focusing on scalability with technical communication tools were also added to the interview template. From the inductive analysis the following categories and themes were derived:

**Experienced outcome of the Learning Sessions:**

Many informants experienced that the Learning Session gave them a broader perspective and a deeper understanding of trends both within the organisation and on the market.

However, due to the high-level perspective new areas where not discussed in detail and some of the subjects felt that they wanted to discuss more technical details. This might create motivation for acquiring more knowledge after the Learning session.

“One hour [pause] Then it is enough with a high-level discussion and then you learn that here we have a competence, an area I’m interested in, and then you can go back to that person and drive a 1-1 dedicated technology meeting.” [Author’s translation]

The experienced outcome was discovered to be closely linked to motivation. If participants experienced that the topics were not interesting for them their willingness to pay attention and motivation for actively participating decreased.

“/…/ you should always know what you are going to be learning there, because if you just come as “you just landed there” you are going to be figuring out what this is for the first hours. And then maybe you figure out that it is not relevant to you and you lose the attention, even though the second part might have been relevant.”

**Interactivity:**

All informants agreed that they think that this type of activity is an efficient way of sharing information and experience. Discussions is an including way of learning where all participants need to be active in order to contribute to each other’s learning processes.

“It makes me think a lot because it is a totally different approach to the way that we are used to. As I said, in the seminars, you have a subject, and then you just learn about the thing. In this case we can interact and drive in the way that we are learning the thing, because we can ask the guy to stop and then “okay, what is your view of this subject?” and then we have the opportunity to get a lot of feedback from the other participants, what they are saying, their views and their experience.”

This participant also argues that they were not prepared for the session to be highly interactive and that they were more used to having passive seminars.

However, to create an environment that allows discussions and questions, subjects claim that the interactivity should be more structured, with suggestions that someone should lead the discussion.

“I do not think it would work just to sit down and start discussing, to learn, you have to have an agenda, and there must be someone who knows a little more that can help lead the discussion” [Author’s translation]

“If it is the right audience, you can really just let the questions come, and then you have to think if someone digs too much into one detail so that you may not be able to cover a whole, then you may have to have a moderator that can go in and say ‘that was
interesting, we have come this far in the discussion, but we have to go ahead, let’s pick it up later” [Author’s translation]

More knowledgeable peers were also discovered to be significant for creating an environment for discussion. According to the informants, experts need to have more appropriate knowledge than the rest of the participants and participants must have the appropriate pre-knowledge and be on the same level as the other participants so that they can have a discussion together.

“You could have an entry-level and say "Have you read this and can do that? Then please feel free to join. You can ask questions that are not covered by other material.” But if you come completely reset and start asking anything, you might destroy the exchange of skills for the others who may have the basic understanding already” [Author’s translation]

The use of technical communication tools:

Informants explained that they are used to handle technical communication tools and that delivering information over the phone is easy; however, they experienced asking questions freely and with right timing as challenging.

“It’s very big difference to sit physically in the room, you also feel that you have to wait for your turn, and if you are calling in there is a little delay, and the little delay makes that you never get to talk, because then someone in the room has already taken the "voice pointer", and with the pointer, we usually wait in Sweden until someone finishes their sentence, then you say yours, but then you have already lost the chance because of the little delay, and it’s already someone in the room who has taken it.” [Author’s translation]

They also pointed out the importance of being able to see the other person when communicating. For the one who is talking it is crucial to see the reaction of the listeners.

“You cannot capture the facial expression in the same way, you do not know what they think, what they have for questions. And on the other hand, this person would have had to look at us when we have questions” [Author’s translation]

This was stated in all interviews, and it was said that it is essential with a combination of sound, picture and virtual tools like a shared virtual whiteboard. The reason for that is that many informants experienced that it is difficult to focus without having anything to look at.

“If you are not looking at the person then you are starting to lose what he is saying, I prefer to have a person in front of me. /.../ It is about getting my attention, that is the thing, it is like if I only have a voice, I start to look around, and then I lose my attention, my concentration.”

The need for sharing information and thoughts visually and a virtual whiteboard as a tool for discussing new topics with the ability to draw figures was also important according to the informants.

“If there is an area where you may go outside the presentation area, where there is an issue that cannot be explained with an existing picture then it is always nice to be able to go to the whiteboard and to be able to sketch and draw, and then it is almost necessary that you are in the same room” [Author’s translation]

“But we actually managed now when we had a meeting before with three people over the phone, but then he had to be super active, and we all looked together on the
screen. So, we could share the screen, draw on the screen together” [Author’s translation]

**Relations:**

Relations with the other participants were claimed to be significant, particularly if technical communication tools are used. Some informants believed that it is easier to communicate over distance if they had already met the other person face-to-face before and therefore already had a relationship, and then gave examples about their relationship with their customers.

“At least you want to meet them at least once or twice before you can run a video presentation, it will not be as good otherwise, you do not see how customers think, and then you can’t see when they are sceptical as well.” [Author’s translation]

Body language has an impact on how informants assess information given by another person.

“As we can have like, you have like, the body language, and I think that it is very, very important. Because you can really understand what the feeling of the person to the subject is, it is one thing what the person says, and it is one thing what the person shows, sometimes it is some kind of difference.”

Before accepting and starting processing information given by another person subjects felt that they were trying to figure out who the other person was, and why this person’s expertise was relevant.

“I was wondering, ”Why do we have that guy? Why is he over there?” These questions were rummaging around in my head, why is he sitting over there and doing things like that?” [Author’s translation]

### 5.2 Second iteration of observations and questionnaires

#### 5.2.1 Observations

The data obtained from the second Learning Session was collected from the video conference room located in Sweden.

The sessions during Learning Session two lasted for about 60 minutes each, with a 15 minutes break between each session. This was according to the planned schedule. All participants attended either from the room in Sweden or the room in India, and the two video conference rooms were connected with a video conferencing system.

The total interaction in each session was measured, and the interactions were categorised into questions, answers and adding new content to the discussions. In Figure 10, all questions are visualised, and in each session, more questions were asked from the room in Sweden. During the first session, the differences in the number of questions were the smallest. This session was the one where the expert called into the Learning Session from a third location. By calling in it means that the expert connected to the video conferencing system by using Skype on a laptop. The same pattern in interactivity was seen in answering questions and adding new content to the discussion.
Furthermore, notes were taken by the observer during the session about other activities that were performed. It was observed that during sessions the office in India muted their microphones and only activated them when they had a question or something else to contribute with to the discussion. During the time the microphones were muted it could be seen that the participants were discussing with each other. However, the room in Sweden did not mute their microphone during the first session, and in the two other sessions, it was not possible to mute the microphone because the experts attended from the Swedish location. Thus, a reason for the considerable number of questions measured from the room in Sweden could be that there were more questions currently during the experts’ speech and because the observer was attending from the same room.

After analysing the results, the author contacted the organiser from India with follow-up questions to clarify if the results were correctly interpreted. For example, they clarified that when having smaller questions, they did not want to interrupt the expert. Instead, they had a small discussion on-site and if they still were not able to find an answer the one who asked the question from the beginning asked the expert and the remote site.

Further, it was discussed with the organiser from India whether they were more used to virtual meetings or not compared to employees from Sweden, and they explained that they are having many virtual meetings, and that always using camera and the function of muting microphone is not demanding and that it impacts meetings in a positive way. They were also of the opinion that they were using the camera when having virtual meetings to a greater extent than other locations.

**Figure 10: Number of Questions Asked by Participants in the Learning Session Two from Two Different Locations.**
5.2.2 Questionnaire
The data were obtained from a questionnaire sent out by email to all participants in connection with the second Learning Session.

Seven out of ten participants experienced that the level of interaction was higher with participants in the same room than with the participants in the other room, three participants experienced that it was the same level of interaction with participants in both locations and no one experienced that the level of interaction was lower in with the participant in the same room than with the participants in the other room.

When quality was measured three out of ten participants experienced that the quality of interaction was higher with participants in the same room, six participants felt that the level of quality was the same regardless location and one participant answered that the participant did not know if the quality was higher or lower.

Participants from Sweden experienced to a greater extent than the participants from India that the level of interaction between them and the expert was low.

All participants experienced that the quality of interaction was high or very high with the first expert who called in during the session, and this expert did not attend physically in either location.

Three out of ten did not experience that the quality of interaction was high with the experts during session two and three; of these two out of three attended from the remote site.

Seven out of ten felt that they had to perform other activities during the sessions, these other activities consisted of working with other tasks not related to the session, emailing or making telephone calls.

From the inductive analysis of the qualitative data the following categories were discovered:

**Interactivity:**
Informants pointed out that the human setup is vital for creating a good environment for discussions. It was perceived that the interaction worked well between both locations and the experts, but it was harder to interact with participants from the other location.

“I felt that the interaction between on-site and off-site participants was fair with the presenters but not so much interaction between the participants.”

An important factor identified by the subjects was that the location where the expert attended physically asked questions frequently to the other location if they had questions or comments to the discussion.

“It was good how remote location participants were being asked to put up questions.”

**Expectations and outcome:**
Comparison with expectations and what was learned depends on how participants expected the Learning Session to be like and what type of questions that were going to be discussed. Informants from India participated for the first time, and they felt to a greater extent that the content did not meet all their expectations since they expected the content to be more technical with technical details.
“It [Information-email] is good because it gave good idea of Presenters and what to expect in the session.”

This might imply that information sharing is needed in both ways to give participants a chance of having proper expectations. From the questionnaire, it was suggested that it should be a more significant focus on discussing expectations before the Learning Session and then also discuss and reflect afterwards if expectations were meet.

“However, I kindly suggest that you list down the expectations or questions to be answered out of the learning then you ask the participants to reflect on them at the end.”

Relations:

According to the informants, Learning Sessions might help them to know where to find competence within the organisation and to get connected with them.

“/.../ that a lot of critical competence is actually available inside the company.”

Additionally, sharing knowledge between different parts of the organisation was experienced as motivating.

“Honoured to get to speak to some leading IT organisation in the world. Very enlightening.”

5.3 Results from additional Data Gathering

In general, it seemed like employees had many meetings and conversations over Skype during a day of work. However, most of the time the author observed that functions in Skype were not entirely used since most employees did not use the video function.

From Ericsson’s internal page for Global collaboration and Knowledge management, there is a guide for how to organise virtual meetings. If this guide were found and used before structuring the Learning Sessions, which are a type of meeting, some difficulties might have been avoided. However, according to the employee responsible for updating this guide, it was more often used when Skype was new to Ericsson, but today it is not well known. A reason for that might be that everyone feels that he or she understand how Skype works and does not need a guide for how to communicate through Skype and organise virtual meetings.

However, problems that occurred during the sessions indicates that there is a need for using a guide for how to organise virtual meetings and before the Learning Sessions agree on rules for participation as the already existing guide suggests.
6 Analysis and Discussion

The Analysis and Discussion section include a discussion about the result and a part where the results are connected to the theories used. At the end of this section, a summary is included.

The purpose and goal of this study were to investigate if Learning Sessions are a way forward for a large organisation like Ericsson to facilitate formal learning, and how technical communication tools could help to scale up the concept of Learning Sessions. From the theoretical perspective, that knowledge is something that individuals construct in interaction with the surrounding world; interactivity has been focused with the belief that a high level of interactivity sets the basis for a good learning environment.

6.1 Analysis and Discussion of Results

6.1.1 Interactivity and Interactive Videoconferencing

6.1.1.1 Enable interaction through a structured environment for discussions

During the first observation, the results when using video conferencing tools versus communication face-to-face can be compared. During the session when the expert called in with Skype, the lowest number of questions were asked; nevertheless, these questions were all assessed as relevant to the topic by the observer. It should be mentioned that this assessment was tricky to make since the author could not assess it by only analysing the content, because of the author’s lack of expertise within the topic. However, a combination of the reaction of the group and the answer from the expert or other participant was taken into the assessment of the relevance. There is a reason to believe that participants had more focus when asking questions to this expert, and the reason could be that it is more demanding using virtual communication and therefore a higher level of focus was required, and this is consistent with earlier research (e.g. O’Conaill et al., 1993). Another interpretation of this phenomena is that since it was more challenging to ask questions when using Skype, participants might have avoided asking questions when they did not find them with certainty to be relevant to the topic discussed at the moment.

In the second observation a similar pattern, with fewer questions when using Skype, was observed; however, this time it was two locations connected with a video conferencing room system and a third location calling in with Skype. From the questionnaires, after Learning Session two, all participants agreed that they experienced the quality of interaction high or very high in this particular sub-session when the expert did attend from a third location. A reason for participants to interact more and feel like having a high quality of interaction could be that both the Swedish and Indian location had the same preconditions when it comes to interrupting the discussion going on with questions. Both were having the same preconditions might also have led to feeling the same level of involvement. However, the number of questions was lower when IVC tools were used, compared to the number of questions asked by the Swedish location when the expert was physically in the same room as them.

In the second round of interviews, the finding was that participants wanted to have a more structured environment so that it would be easier to have discussions and ask questions. Therefore, a discussion leader was chosen for the second Learning Session, and the findings from the questionnaire were that the remote location felt included in the discussions because the participants were asked for questions and other input.

All participants agreed on the importance of seeing the person whom they are talking to, and therefore it was surprising that none of the experts who called in wanted to use their video camera even though they were asked to turn it on. In the first Learning Session the expert did
not use his camera, and neither did he see more than two participants since the conference room used did not have a camera, and therefore a laptop was used which had a smaller camera angle. During this session, questions were only asked in two intervals, after the question if anyone had any questions. It is most likely that it is because the participants could not see when the expert was going to breathe or take a natural break in his speech; furthermore, the expert could not see the participants facial expressions when they had questions, or their body language when they started to lose their attention and work with other tasks. A way to solve the problem with not being able to see if participants understand the topics in the conversation could be, except using a camera that makes everyone participating visible, that they need to signal visually if they are understanding or not, and when they have questions. This could for example be done easily with paper cups of three different colours, where every colour has its’ meaning (Red = “I do not understand”, Yellow = “I have a question” or Green = “I understand, and I am following the discussion”) if they do not have any digital solutions like led-lights to use.

In the second Learning Session, every participant in the rooms was visible for the camera so the experts could see all participants at all times. It can be argued that not using the camera is only a bad habit and, with more structured information before the session, everyone attending might understand the importance of body language and facial expressions as visual impressions, which is in line with earlier research (e.g. Storck et al., 1995) and Ericsson’s internal meeting policy for virtual collaboration. Being visual is essential for both impression building but also for the participants to keep up their concentration. The functionality of the video conferencing rooms is not fully utilised since the camera could, for example, be used to zoom in on the participant who is talking at the moment. The author’s impression is that not enough time and consideration has been taken to understand which the features and limitations of the existing technology are. According to earlier research (e.g. Pinjani et al. 2013), it is useful to practice using the technology, since this will help utilise the technology in the best way possible.

A reason for the high amount of questions from the Swedish office could have been that every question asked were noticed by the author because of being in the same video conferencing room. The author noticed how the Indian office was discussing before asking questions or adding content to the virtual discussion. The reason for these small discussions according to the organiser in India was that they saw the possibility of discussing and clarifying content on-site, and only ask questions when no one in the room knew the answer or had an explanation. This type of smaller discussions in an IVC environment is suitable for the exchange of knowledge and the possibilities of creating impressions and relations of/to each other. Therefore, it could be argued that it would have been better if all experts would have been calling in to Learning Sessions so that the Swedish office could have the possibility to mute their microphones as well. Additionally, to encourage smaller discussions, background noise and other sounds disturbing the other rooms would be eliminated. A question that was not possible to answer was if the Indian office risked missing out on the content provided by the expert because of the smaller discussions on site. However, it can be argued that the risk of missing out because of lack in focus is always a problem, and it is hard to control if there is no test of what has been obtained after the sessions. In this particular case it was expected from the discussion leader to ensure that the discussions were on the right track; therefore, it should have been a discussion leader on both locations.

From the questionnaires, 70 per cent of the participants felt that they were interacting more with participants from the same location; however, 60 per cent experienced that the quality of interaction was on the same level with both locations. Nevertheless, participants said that it is more difficult to communicate with the remote site. Even though they felt that it was more demanding to communicate with the remote site, it seemed like they were more focused when
doing so. This is in line with earlier research (e.g. Anastasiades et al., 2010) that participants strained more when communication with colleagues from other locations, both because of the reason that they want to show their best side, but also because it demands more focus when using IVC tools and therefore the content in the interaction is better.

It can be argued that it is easier to keep the activity in small scale, to avoid interaction difficulties with IVC tools. However, today’s market is global, and the competence of the employees should not depend on where in the world the employees are working. Travelling is not an option in a sustainable world, either in an environmental aspect or economic aspect. Scaling with IVC tools saves both money, the climate and time.

To minimalize the difficulties mentioned above, it must be taken into consideration during the planning of Learning Session what differs the most when face-to-face communication is compared with communication over distance, for example, the experienced delay, how it affects impressions and relationships, cultural and language differences and most of all, if the technology does not work there is no communication.

Furthermore, there exists an internal guide for how to have interactive virtual meetings at Ericsson, and a Learning Session is one type of meeting, where the expected outcome of the meeting is an exchange of knowledge, ideas and questions. The question is why this guide is not used anymore, and why so few know about it. One possible explanation, which was mentioned to the author, is that the internal guide was used when Skype was a new tool and that the employees see no need to use it now when they feel comfortable using Skype. Another explanation is that there are too many sources for collecting information, and therefore no one knows how to find it or have the time to search for it. It seems like rules for how to set up a meeting like Learning Sessions is necessary, and it demands a better structure. A beginning could be to bring back the old guide for how to interact again.

6.1.1.2 The importance of relations
The results were surprising since the relations between participants and experts within the organisation seemed to be crucial. When using technical communication tools, it is more difficult to build an impression of a person. Therefore, participants argued that it is better if they can meet the persons face-to-face before the meeting, but in a global company that is not always possible and therefore a consciousness about the differences is required.

That communication over distance is more demanding was clear from the interviews. Almost everyone stated that they found it more difficult to concentrate on the topic, particularly if they could not look at the person who was talking. Some of the participants declared their thoughts that they had at the beginning of the session in the first Learning Session where the expert was using Skype, and some of the reoccurring questions were about who the expert was, what relevance the expert had to them and what the competence of the expert was. This was both energy- and time-consuming, and minimising this would save both time and energy that could be used to discuss instead. This suggests that the participants should be given more information about each other and the experts before the Learning Session, which was tried before the second Learning Session.

6.1.1.3 More knowledgeable peers
Learning Sessions is an activity where employees that do not usually discuss specific topics together sit together for a short time. This might lead to that they realise where to find appropriate competence in the organisation and expand their network. According to previous research (e.g. Illeris, 2011), the social interactivity between employees from different departments and fields of expertise facilitate a good learning environment, which participants from both Learning Sessions agreed on.
Participants pointed out the importance of experts that had more appropriate knowledge than the rest of the participants, i.e. the more knowledgeable peer; nevertheless, participants must also have the appropriate pre-knowledge to keep the discussion at a high level. This can be interpreted as meaning that they all should end up within the ZPD (Vygotsky, 1978), because if the participants do not have the appropriate pre-knowledge, then the gap will be too big between what they know at what knowledge they should acquire, and the risk is then to end up outside the ZPD.

6.1.2 Motivation, attitude and expectations
Motivation, attitude and expectations seem to be linked to each other since positive expectations lead to increased motivation. If participants feel motivated to participate, they will naturally have a better attitude while participating.

6.1.2.1 Expectations in learning outcome
Expectations can both promote and impede learning; thus, expectations will impact with which attitude and motivation participants enter the Learning Session. If the participant feels like their expectations are met immediately, the same motivation and attitude will stay for the rest of the Learning Session. However, in the first Learning Session, many participants expected that discussions would be more into technical details, which was not the case. According to one of the participants in the first Learning Session, the worst-case scenario was when expectations were not met during the first sub-session, then there was a significant risk of losing both focus and motivation also for the upcoming sub-sessions.

Therefore, before the second Learning Session, all participants were informed by email, and the employees were also informed by small talks in the office that these sessions were supposed to give a broader perspective and a more holistic view on trends. The participants who got this information felt to a greater extent that their expectations were met during Learning Session two. The participants who only got information by email similarly responded to the questionnaire as participants did after the first Learning Session, that they felt like missing out on technical details.

Furthermore, some of the participants felt that they were not used to this type of Learning Sessions, and therefore they did not know what was expected of them as participants. When they expected that this learning activity would be similar to a seminar where no interaction is expected, then it was not likely that they would participate actively in discussions, which is in line with results from previous research (e.g. Stephens, 2007).

Based on these findings it could be concluded that even more information, what to expect, should be given to the participants. It could be done by sending out even more descriptive information to the participants before the Learning Session. Another approach could be that all participants should be contacted by telephone or a Skype-call so that questions and misinterpretations could be answered and explained directly.

However, this lack of meeting of the participants’ expectations about details during the sessions led in some cases to the motivation of acquiring a more in-depth understanding after the Learning Sessions were over. Some of the participants stated that they would read more about the topics and that these Learning Sessions gave them an understanding of what was important to gain a deeper understanding of. One of the participants organised a new dedicated meeting for some of the more specific details they wanted to learn more about. It could be interpreted that Learning Sessions gave the participants a broader understanding of what is new information to them and what the significant trends are, and therefore a motivation to continue to learn.
6.1.2.2 Possibilities for Social Interaction

Another motivation was the possibility for social interaction with both colleagues they already know, but also new colleagues. This was mentioned in both interviews and questionnaires, that Learning Sessions expanded their social networks and that they now know whom to contact if they want to learn more within the discussed topics. Therefore, it is important to inform that contact information will be shared so that the participants do not need to worry during the session that they do not remember the names of the other participants. Contact information was also asked for during the sessions, which took time from the actual learning process.

Furthermore, from the first round of interviews, the informants explained that learning when there is a social interaction is often more accessible since it feels spontaneous and just like a normal conversation, which is in line with research about informal learning (e.g. Ellström 1992, Kock, 2010).

6.1.2.3 Time and priority

Additionally, the amount of time employees felt that they have for learning activities impacted their attitude and motivation to participate. According to earlier research (e.g. Kock, 2010), the inner structure of the organisation affects the time, and support participants have when developing themselves and their competence.

They must feel that this learning activity is worth their time, and if it is more than one day participants will probably not stay focused during all sessions since they feel that they have other work tasks to complete at the same time. Results from the questionnaire point out that 70 per cent of the participants during the second Learning Session needed to perform other activities not related to the Learning Session during the sessions. From the first observation, it was also noticed that many participants were leaving the room for phone calls and answering emails throughout the whole day. This suggests that the Learning Sessions should stay short so that the participants can dedicate that time only to focus on their learning. If later, the participants feel that the concept and learning outcome meet their expectations and they want to have more of it, then Ericsson can gradually increase the time for each session.

Another factor for successful competence development is to organise these formal learning activities during work hours according to factors discovered in earlier research (e.g. Kock, 2010), which was not the case for everyone participating during Learning Session two. If the Learning Session had been organised in the morning in Sweden, it would have resulted in an afternoon session in India. In this case the employees in India put a high priority in participating even though it was outside work hours; however, this cannot be taken for granted and therefore, the decision on which locations to invite should be decided before planning the schedule.

6.2 Theoretical reflections

From socio-cultural and constructivist perspectives the results which have been discussed and analysed above can be further interpreted. Knowledge and competence is, from these perspectives, not something that can be transferred from one person to another, but a Learning Session seems to be a starting point, where the individual gain the knowledge about what is essential, and from there the individual creates his or her understanding. This process is a process of assimilation and accommodation, depending on what existing cognitive schemes the individual already has, and this process is not restricted only to the Learning Session.

When the topics are relevant for the participants, they are motivated to participate actively and to be involved in the session, which might lead to being able to create understanding and knowledge. To learn from the Learning Sessions, the participants have to interact with the
content, i.e. to mentally process the information and develop their knowledge. The results from this study suggest that relevance and motivation are important aspects in this process.

A Learning Session is a possibility for participants from different departments to exchange knowledge and experience, interact with each other in the form of asking questions and having discussions. In each session, an expert is invited, and therefore a more knowledgeable peer is present, which could lead the participants into the Zone of Proximal Development where it is possible for them to start their appropriation, i.e. learn new concepts and ideas. Learning from each other is vital for successful Learning Sessions. However, the setting (being in the same room or participating through video conferencing) affect the interaction, and this needs to be taken into account when scaling up Learning Sessions.

Learning Sessions as they are structured today seems to be a good starting point for continuous learning. However, with the support of theoretical perspectives, the analysis point to the fact that for a real competence development to occur, the individual needs to continue the process of learning after that the Learning Sessions has taken place.

6.3 Summary of Analysis and Discussion

The main points discussed in this chapter can be summarised as follows:

- Interactivity and Interactive Videoconferencing:
  - How to enable interaction through a structured environment for discussions
  - How relations are created in this context
  - How the presence of more knowledgeable peers affects learning outcome

- Motivation, Attitude and Expectations
  - How possibilities for social interaction affect learning outcome
  - How expectations in learning outcome affect motivation and attitude
  - How time and priority affect participation

From the foregoing analysis and discussion, we can say that the interactivity has been discovered to be central even in this case study, which is in line with the theories of learning (e.g. Vygotsky, 1978). Relations, more knowledgeable peers, social interaction are all closely related to interactivity. The ones who drive for this competence development needs to help participants to set the right expectations. Expectations are then related to how much time employees feel that they have for Learning Sessions, and if their expectations are high, then they will also set a high priority in participating.
7 Conclusion

The Conclusion section will conclude what has been discussed in the previous section and then provide some recommendations for further development of the concept of Learning Sessions. Limitations of the study and future studies will also be discussed.

Based on these findings we can say that the concept of Learning Sessions seems to be a way forward for Ericsson as a large distributed organisation within the fast-developing area IT. This is a way of formalising an informal interactive activity that employees already perform on a smaller scale. With the correct use of IVC tools, Learning Sessions can be scaled up to include several locations and connecting them in a safe and interactive learning environment.

7.1 Main Research Questions

To return to the original questions:

RQ1: How participants experience Learning sessions

Based on the findings it is apparent that participants mostly experience Learning Sessions as valuable; however, it is strongly dependent on their expectations and their understanding of Learning Session as a concept. The participants who felt in the least extent that their expectations were met were those who searched for a more in-depth technical understanding, since the discussion was mostly on a higher, more holistic level, to give a broad perspective. However, Learning Sessions seems to be a starting point for each individual to continue their process of learning since motivation and new questions occurred when new concepts and trends were introduced to them.

RQ2: What important aspects are identified for successful Learning Sessions

Since Learning Sessions are designed as an interactive discussion where everyone is supposed to contribute with questions, thoughts and new ideas, the central aspect is how to support a high level of qualitative interactivity and help the participants to know what to expect and at the same time what is expected from them. To achieve that, participants need to feel that they are in a safe learning environment, where relations and trust are central, and where it is acceptable to go outside their “comfort zone” in order to ask questions and learn. For that environment to exist participants needs to be well informed, both about topics and content, but also about the other participants and the experts. Another way to create a safe environment is to have common rules for how to participate.

The information sent out needs to motivate the participants to participate, but also be informative so that the right expectations could be set. Expectations are important since they affect both motivation and attitude towards the learning activity. Additionally, if the activity is scaled up and conducted over many locations simultaneously, there must be a structured way of using IVC tools. The participants and expert need to know where the camera is located and the importance of using both visual and audial communication, further they also need to know how to handle both picture and audio, and how to interact in a way that invites everyone regardless location.

RQ3: How does the interaction change in a Learning Session when scaling up the activity by connecting two distanced locations Interactive Video conferencing tools

Interaction over distance seemed to be more demanding because it does not come naturally for the participants, but if done correctly it might increase the focus, and the discussion could easier be kept on track of the topic. To help participants to interact it is crucial that the video
conferencing tools are used in the right way, utilising full functionality. Smaller discussions on site might enrich the learning outcome, and if the technology with muting microphones is managed correctly, these smaller discussions will not disturb the other participants and additionally, muting microphones eliminates the problem with disturbing background noise. However, a discussion leader is needed at every location to ensure that the participants are not missing out on the information given by the expert when having smaller on-site discussions.

7.2 Recommendations for practical use
Recommendations for how this study could be used practically will be given in three separate parts that cover what should be done before, during and after a Learning Session to ensure that the learning outcome is fulfilled and to improve the overall experience.

7.2.1 Before the Learning Session:

- **Decide which locations to include** before sending invites and making decisions about when to schedule the Learning Session in order to prevent problems with the time difference.
- **Provide information** about topics and content, participants and experts.
- **Collect expectations by talking to participants** to be able to pick up participants with expectations that will not be met by this type of learning activity or to clarify and answer questions.
- **Inform everyone what is expected of them as a participant** since this is an interactive learning activity that builds on the contributions of participants.
- **Explore technical features** of the interactive video conferencing rooms, and practise how to utilise them.
- **Test technical equipment** and connection before starting the session.

7.2.2 During the Learning Session:

- **Provide a clear structure for interaction** with a moderator for keeping to the schedule and a discussion leader moderating questions and engaging participants in the discussions.
- **Use existing guidelines** for how to collaborate virtual, and if it is needed additional state rules for how to interact and use IVC tools.
- **Use cameras and their full functionality** in the video conference rooms when participants are sitting in groups and on laptops when experts/participants are calling in.
- **Be aware of both locations**, and remind the expert and other participants of this, always repeat questions asked and invite participants to discussions.
o **Mute the microphone** when having small discussions on-site, or when someone is entering/leaving the room

### 7.2.3 After the Learning Session:

- Request participants to **reflect upon if their expectations were met**
- Organise a **Q/A session** after a while to collect and respond to new questions
- Encourage the participants to take responsibility for their learning process and to continue learning about what is new to them.

### 7.3 Limitations and Future Study

Limitations with the most significant impact of this study are time and number of informants. If there was more time for the study, more sites of Ericsson could have been included. Now the study is centred around the Swedish office, and all interviews were performed with informants employed here. Patterns found in the result could therefore not be taken for general at Ericsson since it could differ if the in-depth interviews were performed on other sites. However, even though the number of informants was small, patterns could be recognised, and some conclusions could be drawn.

Also, a general limitation of qualitative studies is that it is the reader who needs to find usage for the results since it is a description of a situation in a specific context.

Reason for faulty interpretations or conclusions might be personal biases from the author or misleading data from the informants. Even if the study is performed again following the same methodological approach results might differ since it is a qualitative case study. A small group of employees were studied when participating in a group activity. These types of group activities are unique every time since the group dynamics depend on many factors and what the participants are contributing with.

Criticism of the chosen method is that it might have been more suitable for the need to conduct a study with Action research as a method since the results show that there are still improvements to do, and if this study were conducted with Action Research more iterations of the observed Session would have been performed.

For future study, it would be interesting to involve more sites to gain a more global perspective, where the cultural aspect could have been deeper analysed. Further, both sides of the interaction could have been analysed, involving the experts of the Learning Sessions and investigating their experience of having this kind of learning activity. One of the aims is that the learning should go both ways and that participants contribute with new perspectives and views as well.

Lastly, it is interesting to investigate if the participants feel that they could use their new understanding and perspective in their daily work with customers. Therefore, the same study should be performed and then take more time to interview participants one or two months after the sessions to control what the actual learning outcome was with the focus if they have used anything of what they discussed in meetings with customers.
References


### Appendix A: Interview templates

**Interview template before Learning Session One, only Swedish informants:**

- **Q1:** Berätta om vilka förväntningar som ledde till att du anmälde dig till detta Learning Session.
- **Q2:** Det finns tre teman för det kommande tillfället, (Strategy, Digital Transformation & IT | Operations and Security | Cloud Brokering). Vilka av dessa känns relevanta för ditt kunskapsbehov och varför? Vad har du för intentioner på att ta detta vidare in i verksamheten?
- **Q3:** Har du några frågor som du vill ta med dig till det här tillfället? Hur tänkte du när du tog fram de frågorna?
- **Q4:** Om du försöker minnas en situation där du senast inhämtade ny kunskap, hur var den situationen? Kan du förklara?

**Interview template after Learning Session One, three questions were asked to everyone, and then three different templates were used depending on what was observed:**

- **Q1:** Upplevde du att något som sades under den senaste Learning Sessionen:
  - var helt nytt för dig?
  - Kunde du associera det till något som du kunde sedan tidigare? Kände du att det var relevant? Lärde du dig något av det?
  - motstred något som du redan kunde?
  - Vad var det motstridiga? Tror du att du ändrar din uppfattning eller anpassar din uppfattning?
- **Q2:** Tror du att man kan lära sig tekniskt avancerad kunskap genom diskussioner och frågor? Varför/Varför inte?
- **Q3:** Känner du att du kan välja vad du vill lära dig? => Hur väljer du vad du vill lära dig?

**Group 1 [For those who asked many questions or was interviewed before Learning Session one]:**

- Hur skulle du vilja att en diskussion leds? (För att hålla sig till ämnet, inte tappa den röda träden)
- Hur mycket skillnad tyckte du att det gjorde att den som presenterade var närvarande/inte närvarande i rummet?
  - På vilket sätt tror du att det påverkade ditt lärande?
  - Du/vissa ansåg att kommunikationen blev enkelriktad, reflekterade du över det?/Hur reflekterar du över de?
- Tycker du att det finns behov av ett “efterarbete” (Reflektion/Dokumentation/Sammanfattningar, Individuellt/gemensamt?)

**Group 2 [Participants active during session 1 and 3, questions about physical presence]**

- Har du varit med på något av de tidigare Learning sessions?
- Hur mycket skillnad tyckte du att det gjorde att den som presenterade var närvarande/inte närvarande i rummet?
  - På vilket sätt tror du att det påverkade ditt lärande?
  - Vissa ansåg att kommunikationen blev enkelt, reflekterade du över det?
- När man har en konversation ansikte mot ansikte är vi oftast väl bekanta med hur det görs mest framgångsrikt, är det samma sak när man inte befinner sig i samma rum?
  - Påverkar det om man ser personen man pratar med?

Group 3 [Participants who did not ask questions during the sessions]:

- Have you attended one of these Learning Sessions before?
- What is your intuitive opinion when it comes to the concept “Learning Session”?
  - Do you think it is possible to learn advanced technology from discussing in small groups? Why? Why not?
- Do you think that it is easy to ask questions in order to acquire new knowledge? Would you feel comfortable asking questions in a situation like the Learning Session?
- What do you think about the chosen topics we had last time? [Strategy, Digital Transformation and IT. Operations and Security, Cloud Brokering]
  - How much do you feel like you want to decide what the topics should be?
- Was it some new trends or other information that was new to you? What?
- What did you experience was the biggest difference from having the expert in the room vs on Skype? [Except from the part that one was in the room and the other one on Skype]
  - Do you think that it impacted your learning? Your ability to remember?
Appendix B: Questionnaire

From which location did you attend? *

- Kista
- Other

Interactivity

According to you, what was the level of interaction between you and *

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<th>Very low</th>
<th>Low</th>
<th>Either low or high</th>
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<td>Presenter 3 from Kista</td>
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<td>The participants</td>
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How did you experience the quality of interaction between you and *

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Do you have additional comments about the interactivity?
For example, what should have been done differently to make it easier for you to ask questions or join the discussion?

Ditt ovan

Learning outcome

What did you take with you from the session? *

Ditt ovan
Did the knowledge you acquired help to answer any of the following sorts of questions *

☐ I got facts and new information about IT and Cloud [The question "What?"]

☐ I got useful knowledge information about how to deal with IT and Cloud [The question "How?"]

☐ I got better understanding of why the development in IT and Cloud affects me in my work [The question "Why?"]

☐ Övrigt:

Did you experience that the learning can be applied directly in your daily work? *

1 2 3 4 5
Not at all ○ ○ ○ ○ ○ Absolutely

If yes, please give an example? If no, what should have been done differently?

Ditt svar

Other

During the session, did you have to do any of the following? *

☐ Read/Send e-mails

☐ Make/answer telephone calls

☐ Work with other tasks not related to the session

☐ Övrigt:

How did you experience the information sent out before the session regarding content and topics, other participants and the presenters from Ericsson IT?

Ditt svar

Other comments that you want to give to help improve learning at Ericsson

Ditt svar
Appendix C: Example of Coding

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<tr>
<td>Någon tipsar dem kring det här systemet eller den här databasen där det finns bra material, eller att prata med ”nisse” för nisse har gjort det här förut.</td>
<td>Kollegor kan ge tips om var man hittar rätt innehåll eller vem man ska fråga för att få tillgång till kunskapen.</td>
<td>Lärande sker i relation till andra.</td>
</tr>
<tr>
<td>Kundmöten är väldigt interaktiva /.../ det brukar oftast vidareutvecklas och det är ju egentligen att själva vara förberedd, och att ha rätt frågor för då kommer man vidare.</td>
<td>När man är väl förberedd kan man ställa rätt frågor och då kan kundmöten vidareutvecklas och vara väldigt interaktiva.</td>
<td>Lärande är en interaktion.</td>
</tr>
<tr>
<td>Ibland är vi själva lite rädda, för att våga ställa frågor, för att vi inte ska uppfattas som tillräckligt kunniga.</td>
<td>Ibland är vi rädda för att ställa frågor som kan göra att vi uppfattas som mindre kunniga.</td>
<td>Lärande sker när man vågar ställa frågor.</td>
</tr>
<tr>
<td>Dom som är i sin comfort zone, alltså dom som inte vågar gå utanför, vågar ju inte ställa dom frågorna, därför att dom är rädda att dom ska hamna i ett område som de inte kan</td>
<td>Dom som är i sin comfort zone, alltså dom som inte vågar gå utanför, vågar ju inte ställa dom frågorna, därför att dom är rädda att dom ska hamna i ett område som de inte kan</td>
<td>Om man inte vågar gå utanför sin comfortzone kan det bero på att man inte vågar ställa de frågor som kan göra att man hamnar utanför sitt område.</td>
</tr>
</tbody>
</table>