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VIRTUAL TEAMWORK – FEATURES OF EFFECTIVE TEAMWORK

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Tiivistelmä/Abstract <p>Nowadays organizations rely more and more on distance working and virtual teams. The aim of this study is to identify the characteristics of effective virtual teamwork and to provide a wide view on what a team is, how it is defined, which are the enabling factors for successful distance teamwork and what are the benefits of virtual distance teamwork.</p> <p>This thesis is a qualitative study and was conducted as a systematic literature review. Data is collected both from University of Oulu Nelli portal and The University of Melbourne Discovery Database and studies up to 15 years old are approved.</p> <p>Based on the results, teams are open and complex systems where the personalities, level of expertise and current cognition of the team members modify the team building, learning and working. High team resilience in virtual teams allows teams to cope through multiple tasks and is also directly connected to the outcome and effectiveness of team working.</p> <p>Literature describes team learning as essential for team working, and it can be enhanced via shared understanding and communication. A good team consists of members who are willing to cope with others: all other team building blocks are unnecessary if members are not able to collaborate. The most important role of the leader is to motivate and divide clear tasks and roles to virtual team members. There are multiple benefits in virtual distance teamworking, e.g. we will show that job satisfaction and productivity may increase when work can be done regardless of time and space.</p> <p>These results suggest that among other things, basic team learning, resilience and effective communication help to build trusting and effective virtual working teams. This data supports the view that it is possible for teams to work even cross-culturally without seeing each other by using only electric technology. Digitalisation enables effective communication and sharing, which in turn helps to build trust among members – even if they will never see each other face-to-face.</p>			
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## Contents

<b>1 INTRODUCTION.....</b>	<b>1</b>
<b>2 MAIN CONCEPTS.....</b>	<b>3</b>
2.1 TEAM.....	3
2.1.1 <i>Team Learning</i> .....	4
2.2 TEAM WORKING BLOCKS .....	6
2.3 VIRTUAL TEAMS .....	7
2.4 TECHNOLOGY AS A SUPPORT FOR VIRTUAL TEAMS .....	10
2.4.1 <i>Distance working</i> .....	10
2.4.2 <i>Virtual teams in distance working</i> .....	11
2.4.3 <i>Technology-enhanced working</i> .....	12
<b>3 QUESTIONS AND TASKS.....</b>	<b>13</b>
<b>4 RESEARCH STRATEGY.....</b>	<b>14</b>
4.1 QUALITATIVE RESEARCH METHOD .....	14
4.2 LITERATURE-BASED RESEARCH METHOD .....	14
4.2.1 <i>Methods in literature review</i> .....	15
4.2.2 <i>Systematic literature review</i> .....	16
<b>5 FINDINGS.....</b>	<b>18</b>
5.1 CHARACTERISTICS OF EFFECTIVE TEAMWORK.....	18
5.2 ENABLING FACTORS FOR SUCCESSFUL DISTANCE TEAMWORK.....	19
5.2.1 <i>Successful leadership</i> .....	23
5.3 BENEFITS OF DISTANCE TEAMWORK.....	24
<b>6 DISCUSSIONS AND CONCLUSIONS .....</b>	<b>26</b>
<b>REFERENCES.....</b>	<b>29</b>

# 1 INTRODUCTION

The prevalence of virtual teams is growing and today's global economy relies more and more to communication technologies and distance working: nowadays innovations in communication and information technologies enable the use of virtual teams and have increasingly encouraged organizations towards team work (Flanagin & Waldeck, 2004). According to the Institute for Corporate Productivity (as cited in Olson & Olson, 2013) in 2008, 67% of the companies with 10,000 or more employees predict that they will increase the use of virtual teams.

Members of a virtual team are not bound by time or geographic location: they can collaborate and communicate across the office or across the world without necessarily any face-to-face meeting. It is not a requirement to use computer-mediated communication technologies in order to be a virtual team but it is typical and it may be a necessity among geographically dispersed teams. Overall, as the reliance on electronic communication increases, also the degree of virtuality grows. (Berry, 2011.)

Team learning is important due to constant changes – it is crucial to companies to remain effective. It is essential for the individual learning, the team effectiveness, as well as for new innovations. If a team operates always in the same way it fails in creating new results. (Decuyper, Dochy & Bossche, 2010.) Team learning includes building of shared cognition, which leads to perceived performance. Further, perceived performance leads to greater team effectiveness and outcome, which are the main characteristics for effective team working. (Van den Bossche, et al., 2010.)

We got our inspiration to this research together from our life situations. Männistö is working and studying in Australia and New Zealand at the moment and Tervo is studying and working all over the Finland. We were both interested in the possibilities communication technology provides for working life, and we decided to study more of the subject and test our skills in practice. The whole thesis is made by using only computer-supported learning and working, writers being distant from each other – on the other sides of the globe. We have learned together as a virtual team to gain better overall view on teams in 21<sup>st</sup> century.

The purpose of this systematic literature review is to describe features of effective virtual teamwork. We also examined the benefits and enabling factors for successful distance teamwork by focusing to document the key features and investigated what are the most visible behaviors, events, beliefs and processes among this phenomenon.

## 2 MAIN CONCEPTS

### 2.1 Team

According to Berry (2011), a team consists of individuals who work together to accomplish certain outcomes or tasks. By combining the definitions of Cohen and Bailey (1997) and Salas, Burke and Cannon-Bowers (2000), Boon, Raes, Kyndt and Dochy (2013) distinguish five key characteristics of a team: interdependence, the development of a shared mental model, boundary crossing, shared responsibility and the ability to draw the boundaries of the team.

There are two forms of interdependence: outcome interdependence and task interdependence. Outcome interdependence describes how much team members' outcomes depend on their personal or team performance. For example under cooperative outcome interdependence members think that they fail or succeed together as a team. On the contrary, competitive outcome interdependence means that members assume that when they succeed, others will sink. (De Dreu, 2007.) Alternatively, according to Savedra, Earley and Van Dyne (as cited in Burke et al., 2006) task interdependence describes the degree of how much team members are depending on each others to accomplish their task.

Team members are interdependent, even though they may have different roles, responsibilities and different areas of expertise - the purpose is to aim at the same goal. To achieve this, teams need to have a shared understanding for the purpose they are working and knowledge about those processes that will help them to reach their objective. (Hinds & Weisband, 2003.) Shared mental model refers to sharing and storing knowledge of the key elements of the team's task environment between team members. Shared mental models can be seen both as inputs and outcomes for team learning processes and these are related to the learning potential of the team. (Decuyper, Dochy & Van den Bossche, 2010).

In this context, boundary crossing means seeking or giving information, ideas and views between individuals or units. Boundaries are either mental, physical or organizational and interaction is a crucial feature of boundary crossing. (Kasl, Marsick & Dechant, 1997.) Other

important features of a team are members' shared responsibility for the outcome and the ability to distinguish the boundaries of team from the rest of the world (Boon et al., 2013).

For example in the work context, team members share objectives and in order to achieve these common goals, they have to interact with each other. The size of the group is such that it would be defined as a small organization: this means that a work team usually includes from three to 20 members. Nevertheless, work groups have an organizational identity because they have a defined organizational function. Also team members have different kind of roles: the degree of interdependence may vary and some roles are more detailed than the others. (Borrill & West, 2004.)

According to Salminen (2013), a team is a work community whose members are committed to achieve a goal together. A functional team has no more than 10 members, because the bigger the size of a team, the more there will be different views, and creating trustiness will take a very long time (Salminen, 2013). Minimum size for a team is 3-4 members to allow different expertises, views and team roles to occur (Borrill & West, 2004).

When a team truly collaborates, team intelligence increases, members are able to work faster and solve more complex problems because of the different expertises mixed with other expertises. Team intelligence means the ability to create shared mental models (Decuyper, et al., 2010), understand the task and solve the problem together. Only putting a bunch of very intelligent people in the same team will not lead to the desired outcome, if they do not create a shared understanding of the problem. Team intelligence bases on interaction, ability to perceive different know-how, and the ability to sense feelings in others. In other words, team members have to be socially delicate to be able to work together. (Salminen, 2013.)

### 2.1.1 Team Learning

Van den Bossche, Gijsselaers, Segers & Kirschner (2006) define team learning as "building and maintaining of mutually shared cognition, leading to increased perceived performance." In addition to this, team learning is also defined as an element of team effectiveness (Boon et al., 2013).

According to Decuyper et al. (2010), team learning includes communicative skills, where sharing, co-construction and constructive conflict are balanced. Sharing is the process where knowledge, competencies or opinions are distributed. If members succeed in sharing, they develop shared knowledge which is essential for team learning. Failure in sharing e.g. because of error in communication leads to constructive conflict that shall be solved before sharing can continue. However, finding the balance itself is not enough: it is important to find the answers for communication and reply questions like “Communication about what? With whom? For what?”

Besides communication skills, there are five other important process variables in team learning: flexibility, activity, boundary-crossing, storage and retrieval. Boundary-crossing is very important for team learning as it widens the perspective and expertise of members. Boundary-crossing is crossing one’s own physical, mental or organizational comfort lines. When team learning occurs, they finally store new knowledge and retrieve it in need. Retrieved knowledge can be developed to grasp new knowledge that can again be stored. When a team learns, they collect similar knowledge and team members are aware of each other's areas of expertise – who knows and what. In this way, by participating in team’s activity, members are able to create a shared understanding. (Decuyper et al., 2010.)

Decuyper et al. (2010) combine two theories about team learning: general system theory (when individuals bring their own inputs and make outputs together, which again becomes individual's learning inputs) and complexity theory. They mean that teams are complex and open systems, whose actions are affected by member’s temperaments, sociocultural backgrounds, physical properties, economy and the environment in organisation. Team learning is divided into eight categories that influence team working, and which together becomes learning outputs: sharing, co-construction, constructional conflict, team flexibility, team activity, boundary crossing, storage and retrieval.

In addition, Van den Bossche et al. (2006) include self-efficacy into team learning model. Self-efficacy is a person’s belief in his or her ability to be successful in certain situations, and it is predictive for individual performance and learning. Individual learning on the other hand is an important condition for team learning. All these elements (Decuyper,et al., 2010; Van den Bossche et al. 2006) play a major role in building and maintaining mutually shared cognition in a collaborative learning environment, leading to higher effectiveness (Van den Bossche et al., 2006).



## 2.2 Team working blocks

A successful working team has a great resilience. Resilience is the ability to withstand and recover from challenges and situations that create pressure or stress. Resilience in one person differs from team resilience: individual resilience means keeping positive attitude, being cognitively flexible (forgiving others, keeping itself emotionally balanced) and facing own fears with realism. Team resilience has the same characters, but the lack of it results from team members who do not communicate with each other or cannot find agreement about the roles, e.g. leadership. Finding common working methods and giving each other a helping hand are features that increase team resilience. (Alliger, Cerasoli, Tannenbaum, & Vessey, 2015.)

By following three steps during a task, resilient team is able to survive better from stressful tasks than a non-resilient team. First step is to minimize the amount of confusing elements by locating the main challenges and preparing for “what if” scenarios – a resilient team knows their strengths and weaknesses. Second, a resilient teams manage their working during the task. People tend to think egoistics under stressful situations, and therefore it is especially important to remember to support each other. All members remain aware of their tasks and keep their basic functions and rules that are created in a group. A non-resilient team forgets to collaborate and support each other, and members leave their role to function independently. The last step is to regain after the task, including recovery from stress, going through the process and learn from it. A resilient team reflects what went right or wrong and is able to response to their weaknesses to obtain better readiness for the next challenge. (Alliger et al., 2015.)

A high class team consists of members who pull together, solve conflicts and avoid and are able to solve personal miffs. A top team a) has common goals and knowledge how to use its resources b) its members are committed to the team where every member is responsible for the results - they develop shared knowledge and share common values and norms c) keeps up the team spirit and utilizes features and characteristics of the members d) gives open and honest feedback e) has equal members and is capable to share leadership if necessary f) keeps up the positive team spirit and open culture in organisation, and uses enthusiasm as a resource to proceed towards goal g) wants to develop and improve team actions (see *Team Resilience*, Alliger et al., 2015) h) values dissimilarity, which is seen as richness i) has

atmosphere which support individual performance j) creates mutual trust and commitment and k) is able to transform during and after tasks, if necessary. (Salminen, 2013.)

As Decuyper et al. (2010) defines system complexity theory, Salminen (2013) describes systematic approach of a team in six steps: 1) defining the problem and creating a common apprehension of the problem 2) analyzing the problem together and creating a shared mental image about the reason, features and effects 3) reasoning different solutions together 4) assessing different solution options and potential effects 5) making decision of the best solution, and making team boundary to reach the goal and 6) fulfilling the chosen option and assessing its effects. A top team assesses their actions regularly and makes changes if necessary - this assessment deepens over time when team members strengths get more familiar (Salminen, 2013). Membership in a team requires openness and willingness to build interaction with other team members. Shared responsibilities help to avoid confusion and conflicts, and the most common way to create specific responsibilities are distinct team roles (Borrill & West, 2004). Salminen (2013) also speaks about team-contract, where the responsibilities of team members are defined. Team contract may contain e.g. team goals, functioning principles and main rules, member's special tasks and authorization to function in team and developing their actions.

### **2.3 Virtual teams**

Globalisation and technological improvements have changed our way to communicate and enabled collaboration across national borders and cultural and linguistic barriers (Joy-Matthews & Gladstone, 2000). Consequently, need for virtual working can be seen as the increased prevalence of virtual teams. Horwitz, Bravington and Silvis (2006) define virtual teams as groups of people who work on interdependent tasks, collaborate while geographically distributed, complete their work mainly through an electronic medium by using information and communication technologies and share responsibility for the team's outcome.

According to Hinds and Weisband (2003), the effectiveness of a virtual team is constructed of three enabling conditions: shared understanding, integration and trust. As previously

mentioned, teams must have a shared understanding to achieve the common goal including several dimensions such as mutual expectations about tasks, goals, work and team processes and member characteristics and roles. Geographically separated teams face more challenges when developing a shared understanding because members mainly communicate by using mediating technologies, are not geographically proximate and have different work contexts. They often have different backgrounds and limited opportunities to share common experiences which are the main building blocks of a shared understanding. (Hinds & Weisband, 2003.) These relationships and effects are illustrated in Figure 2.

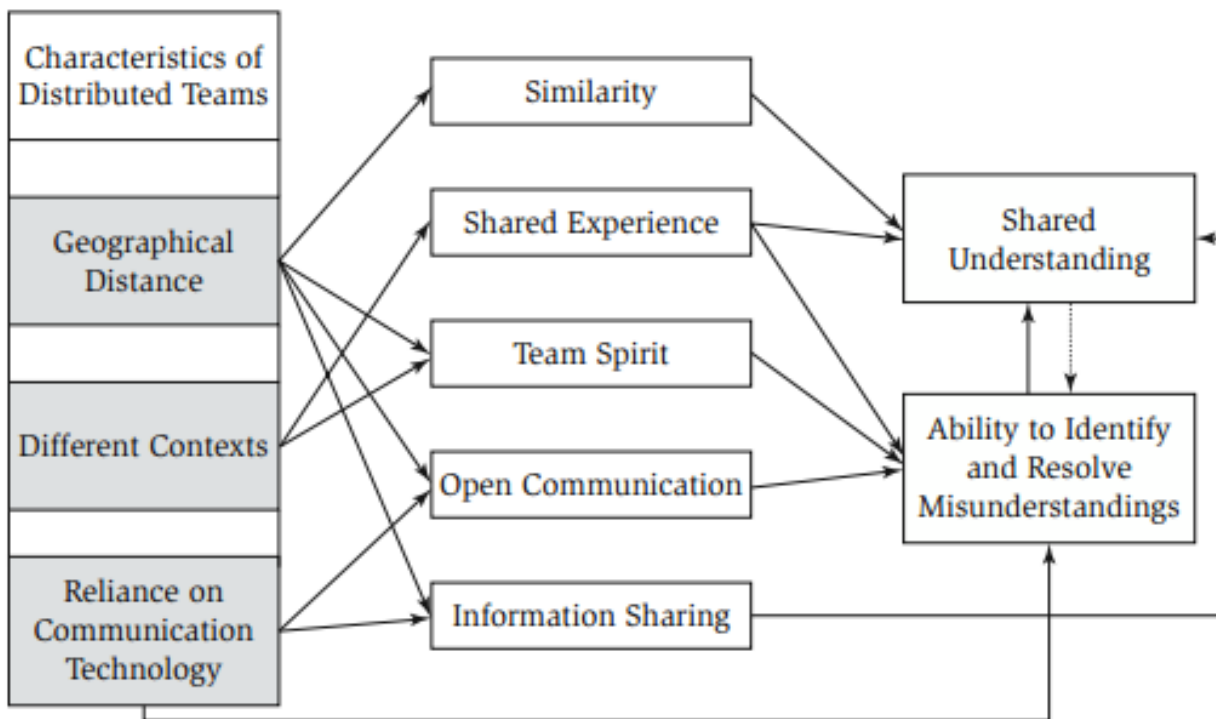


FIGURE 2. The effects of team characteristics on shared understanding (Hinds & Weisband, 2003, p. 26)

Different contexts refer to different geographical and work environments, cultures and technologies. Creating a shared understanding requires more attention in virtual teams because members usually have different regional, national and organizational cultures and thus for example different social structures, and members do not share the same experiences, routines and behavioral norms. (Hinds & Weisband, 2003.)

Third feature, reliance on communication technology, is both an enabler and barrier when creating the shared understanding and effective virtual teams. Communication technologies enable virtual team's members to share information and communicate without geographical boundaries but it also has its limitations such as lack of face-to-face interaction and in addition nonverbal cues which can lead to misunderstandings. (Hinds & Weisband, 2003.) According to Roebuck, Brock and Moodie (2004), virtual teams face three challenges when accomplishing their goals: the lack of face-to-face interaction, the building and accessing relationships and leveraging the unique knowledge of each team member to achieve the team's goal. Because members of virtual teams lack one of the primary feature in communication, nonverbal messages, it is important to acknowledge this fact among new members of a distributed team. This is also closely related to relationships building; virtual teams have to have the ability to establish trusting working relationships through technological interaction. When preparing people for virtual learning it is important to support open and complete communication and information sharing in the way that all the information is accessible and nothing relevant is missing to achieve the common goal. (Roebuck et al., 2004.)

In addition to shared understanding, other main characteristics of effective virtual team are integration and trust. All of these three enabling conditions are related to each other: Shared understanding is like a cognitive map providing the route for virtual team members to accomplish their goal; where they are going and the ways how to get there. Integration means structures such as systems, policies and forums that enable distributed team members to work together. The more enabling activities like minimizing language and cultural barriers, the higher probability that shared understanding will occur. Trust is essential for virtual teams to function: it affects positively to open communication, fluent information sharing and decreases conflicts and misunderstandings. (Hinds & Weisband, 2003.)

## **2.4 Technology as a support for virtual teams**

### 2.4.1 Distance working

Distance working is a diverse concept and various terms have been used to define this enabling form of working. For example one of these terms, telecommuting, has been described as distributed work, virtual work, flexible work, telework, remote work and flexplace (Allen, Golden & Shockley, 2015). The term telecommuting refers to a flexible working option where working is not tied to a specific time or place - teleworker is a mobile worker who can work from any place which provides Internet and telephone connectivity (Jayakumar, 2009). According to Allen et al. (2015), telecommuting is a work practice where people in organisations replace either a few or all of their work hours to work away from their actual workplace by using technology to accomplish their work assignments.

Telecommuting has grown increasingly over the years: rapid development in technology and among mobile connections have made this kind of work mode easier worldwide (Allen et al., 2015). For example data from the American Community Survey illustrates that 2.5% (3.7 million employees) of the US workforce work from home at least half the time and the number of non-self-employed people who are working regularly from home has increased 103% since 2005.

Similarly, European Community (EC) defines distance working as a way to organize work under the terms of employment contract by using information technology so that work could be done regularly outside the workplace. Distance working does not mean doing more work than he/she would do at the physical workplace, but e-technology has made it possible to move the work somewhere else. In short: distance working is a way to organize the way of working, and it agrees with the same work legislation as normal. The most common reason to shift into distance working is the flexibility of working hours, but this depends on the workplace culture. (Salli, M., 2012.)

## 2.4.2 Virtual teams in distance working

Virtual teams use computer-mediated communication technologies to work interdependently across space, time and organizational boundaries. But the use of technology alone does not mean that a team is virtual: however, geographically dispersed teams often have no choice except to communicate electronically. Overall, the amount of technology use defines team's virtuality. The highest degree of virtuality is when team members only communicate and interact through computer-mediated communication. Managing virtual teams, especially distant from each other, differs from managing face-to-face teams and it is more complex: in the same way than any traditional team, virtual team also consist of individuals who have different characteristics. (Berry, 2011.)

Fried and Hansson (2014) emphasize the importance of trust; it is essential for distance team working and the most common fears are related to the lack of trustiness. Virtual team members must communicate and collaborate in order to solve problems, proceed with the task and accomplish it, similarly to a face-to-face team (Berry, 2011). Virtual teams may have bigger lack of trustiness because they may not see their team members in real life which makes the idea of sharing more complicated. Also facial expressions do not come across to each other unless members have a virtual video conference. Facial and physical expressions are one of the most important factors in increasing trust between two or more people. (Fried & Hansson, 2014.)

The members of virtual team may work geographically far away from each other, so workers have to develop a common comprehension about everyone's working cycles. It is important to define the processes and construction of the work before or in the beginning of working. Also working culture has a significant impact on communication which is one of the main component when building a functional distributed team (see more in chapter 2.1 "Team"). (Fried & Hansson, 2014.)

### 2.4.3 Technology-enhanced working

Telephone, e-mail, electronic bulletin boards, chat groups and other electronic databases are used in the work of a virtual team (Berry, 2011). Electronic databases may vary and it can mean e.g. sharing the computer screen, coordinating to-do lists, using real time chat, editing the same document at the same time or saving files in the cloud services if the content of the document is not sensitive or secret. Team members have to pay more attention to security-issues, so that documents won't end up to unwanted businesses. Encryption of hard disc, management of devices and ID-issues shall be in order. (Fried & Hansson, 2014.)

Delivering the right tone of a message is more difficult with technological devices than to face-to-face. It is easy to be misunderstood if the members don't know each other (Fried & Hansson, 2014) and that is why distance virtual team work requires good skills in writing and communication. Virtual communication differs from face-to-face discussions and often creates misunderstandings also because virtual teams have less possibilities for directly explain or correct the misunderstandings (Berry, 2011). This may be corrected by creating shared mental models and rules for the team from the very beginning or in the team formation stage (see chapter 2.1 "Team").

### 3 QUESTIONS AND TASKS

The purpose of this study is to describe features of effective virtual team work: what makes a successful team, how does a distributed team function and how technology enables distance working. We focus on documenting key features and investigate what are the most visible behaviors, events, beliefs and processes among this phenomenon.

Our research questions are:

1. What are the characteristics of effective teamwork?
  - How do we define “team”?
2. What are the enabling factors for successful distance teamwork?
  - How does the team work in distance?
  - How is technology enabling the function of a distance team?
3. What are the benefits of distance teamwork?



## **4 RESEARCH STRATEGY**

### **4.1 Qualitative research method**

We use the qualitative research method measuring the qualitatives and meanings of a phenomena, and striving to describe the real life (Hirsjärvi, Remes & Sajavaara, 2005). This method was chosen as the main interest was not in the quantity of distance workers, or the time used to compose their team, although it is an interesting field for further research. The purpose of this study is to describe how a team functions in a distance work, where technological tools are utilized. What is a good team? How does it construct? How does a team, where members are distant from each other, function? Furthermore, we aim to find out how computer-technology supports the function of a virtual team. We document central, interesting features of the phenomena and find out what are the functions, events and processes in distant team working.

We chose to use literature review, more precisely systematic literature review as our research method, because it suited with the purpose of our study. We collected data from previous researches and aim to find different views about how a team works, how it works virtually and in distance, and what are the features that makes teamwork effective in these contexts.

### **4.2 Literature-based research method**

A scientific research involves choosing the right research method as research shall always be systematic and based on logical thinking. We will use literature review method. Literature review, as any other scientific method, has to fulfill the criterias for scientific research. Some of these criterias are publicity, criticism and objectivity. (Hirsjärvi et al., 2005)

Literature review as a scientific method aims to recreate and confirm science by collecting data from different sources and reusing them: "to research researches". The goal of a literature review is to develop existing theories and also to build new theories. It also helps to evaluate the existing theory because of its comprehensive amount of data: the advantage is to get an overall view of premade theories when having them all available. It gets easier to recognize problems in previous researches and follow its development historically. Combining and comparing researches from different sciences enables to see even surprising connections between research results. Literature review and meta-analysis shall be used for achieving cumulative knowledge within a science. (Salminen, 2011.)

In our review, we will use sources from previously made studies to search information about co-working methods, and how technology can be used to create effective workspaces between co-workers – even when distant from each other. A literature review is always based on critical analysis of multiple researches. It is not adequate to review one research and make conclusions based on that (Salminen, 2011).

#### 4.2.1 Methods in literature review

There are different types of literature reviews: descriptive literature review, systematic literature review (described below), and meta-analysis with qualitative and quantitative contents. A descriptive review offers a kind of freedom to study an object: it has no strict methods that shall be used. It is a method itself: the object that is being researched can be described extensively and therefore it offers phenomenon for systematic review (Salminen, 2011).

#### 4.2.2 Systematic literature review

The systematic literature review is a basic way to do a literature review, and it is the one used in our review. It contains an abstract from previous studies in a certain field. The task is to gather interesting and important findings from studies that will be helpful in a literature review. Of course to keep in mind that some information may seem non-interesting, but it can be very precious information concerning the specific literature review. When done systematically, the researcher reads through previous material, analyzes the main contents and finds the most significant points. It is an effective way to test hypotheses, present the results in a compact way and justify their coherency. The systematic way of working aims to create the scientific approval for research. When using systematic literature review, one important dimension is the evidence based decision making which means getting the scientific information to support decision making with the aim of finding the best and effective functional models. Its purpose is to get information for decision making about the best options, which may be challenging because of today's rapidly growing information. (Salminen, 2011.)

The Finkins model clarifies the progress of a systematic literature review in seven steps. At first a research question is chosen, followed by the choosing databases and finding the right sources. We wanted to find answers to the research questions "How team works?", "What is a good team built of?" and "How does a team work effectively in virtual environments?". We used data from both Nelli Portal (The University of Oulu) and Discovery database (The University of Melbourne). In second phase the keywords are chosen, which helps to limit search results that answers the research question. Careful choosing of the keywords helps to limit the outcomes in the way that the material that remains corresponds to the research question. Our keywords are *team*, *teleworking*, *virtual team*, *distance working*, *distance teamwork* and *distributed team*. Third stage is to prune the search results by its year of publication and language that is used. We used studies that are up to 15 years old and either in Finnish or English. Computer technology and attitudes towards virtual teams develop very fast, so we wanted to obtain as relevant information as possible. In fourth step, the aim is to find material that is scientifically qualitative: we pursued to find original studies that responds to our questions. Fifth phase is to make the survey. Collecting data from articles has to follow a certain guideline, that everyone who is involved in making the research should follow. (Metsämuuronen,

2005.) We created a framework for our study by beginning with term explanation. We continued to share information via electronic communication and made a coherent understanding about what and how material shall be surveyed. The last phase is to synthesize data which means combining collected information. This is the most critical phase that most researchers fail to make: integration of the studies remains too shallow in description. (Metsämuuronen, 2005.)

## 5 FINDINGS

### 5.1 Characteristics of effective teamwork

In this chapter we answer the questions “how do we define team?” and “what similarities there are between face-to-face and a virtual team?”. We also consider the relation between team learning and team working. Decuyper et al. (2010), Berry (2011), Horwitz et al. (2006), Boon et al. (2013), Salminen (2013), Van den Bossche (2006) and Hinds & Weisband (2003) are main studies we have leaned on.

Van den Bossche et al. (2006), define team learning as “building and maintaining of mutually shared cognition, leading to increased perceived team performance”. They see team learning as a key to organisational learning, which is seen as a requirement for innovations and therefore team working and effectiveness. Innovations are important in our constantly changing society and a team has to find ways to keep up in these changes. In short, occurrence of team learning affects team performance and working positively.

Team members’ need to have a common understanding of the purpose for which they work and processes needed for achieving the goal of the team (Hinds & Weisband, 2003). As Salminen (2013) describes, the structure of the processes of a team consist of six steps with a particular focus on creating a **clear objective** which is equivalent to the current problem and creating a common apprehension, values and norms; a shared mental model (Berry, 2011.). As Borrill and West (as also cited in Salminen, 2013) describes, minimal size for a successful team is 3-4 members which allows different competencies to take place.

Decuyper et al. (2010) define teams as open and complex systems, where the temperaments, sociocultural backgrounds, economy, physical properties of team member and the organisation’s environment all are reflected in the team. Individuals bring their inputs and members achieve the learning outputs together, which again becomes learning inputs for the individuals. Team learning includes the ability to share knowledge, to construct knowledge together, to be flexible among team members, to be active in one’s own role in team and to mix expertises. A shared understanding for the purpose the members are working for and knowledge about those processes will help the members to reach their objective (Hinds &

Weisband, 2003). The features described by Decuyper et al. (2010) affect team learning and thus team working – the ability to strengthen these elements in team increases the quality of team’s output during a task (Decuyper et al., 2010).

Individual learning is an important for team learning (Decuyper et al., 2010). However, individual learning is only a base for team learning and has no use for the team, if the individual input is never used. Alliger et al. (2015) mention individual resilience to differ from team resilience. Team resilience is in indirect connection to team effectiveness, because a resilient team is capable to face multiple challenges together and overcome them without collapsing. It is result of team’s ability to share knowledge, leadership and understanding, and due to the constant adjustment of team members to correspond to a certain role or task (see also Harvard Business Press, 2005 and Borrill & West, 2004). Every member knows each other’s strengths and weaknesses and therefore knows how to relate to efforts of others. Individual resilience means keeping a positive attitude, forgiveness, being cognitively flexible and realistic and having a bit of mental hardness, which in this context means having the courage to face one’s own challenges but not collapsing when facing difficulties or failures. However, a group of resilient individuals does not guarantee resilience within a team. This is why sharing is the main term when dealing with teams - everyone functions based on their own understandings and opinions. If information is not shared, the team works in contradiction. As can be expected, this is also why good communication is important: members have to know *how* to share information and create common understanding (see more in next chapter about communication).

## **5.2 Enabling factors for successful distance teamwork**

This chapter strives to combine information about the enabling factors for successful distance teamwork, how team works in distance and how technology enables the function of a distance team.

In Harvard Business School Press (2005), clustering is indicated to be the most important feature when building functional virtual teams. Dynamics between people should not be forgotten when creating a virtual team: paying attention to team members’ personalities has

as big role as the technical implements to enable distance working. Because virtual teams use computer-mediated communication technology as their primary tool of interaction, the lack of face-to-face interaction may give some extra challenge when building trustworthy working relationships (Roebuck et al., 2004). Horwitz et al. (2006) describe social cohesion as essential for the team members to commit, but Decuyper et al. (2010) disclaim social cohesion, willingness to make bonds with others, to be important because it has a tendency to create uncritical acceptance of thinking. Task cohesion however, defined as “the shared commitment among members to achieve a goal that requires the collective efforts of the group”, is critical for team success, team learning and creating shared mental models. According to Salminen (2013), the commitment of members’ to the team and the shared responsibilities are characteristic of a top team. It is important for the work of an efficient virtual team to clarify the role and purpose of each member – not only for the individual but because of the whole team. The value of the team collaboration should also be emphasized so that the importance of work will be recognized by team members and the whole organization (Salminen, 2013).

It is important that virtual teams use the most effective technology channel available – it is the basic building block for trust within the teams and organization (Horwitz et al., 2006). Virtual environments do not offer opportunities to pursue other members and build trust on each other based on direct observation (Harvard Business School Press, 2005). Trust is essential for both face-to-face and virtual teams: it is needed for effective communication and successful teamwork between different parties in organization. In a trustful working atmosphere the organizational employees are in constant contact and organization has a possibility to learn the reality of its employees which gives the employees an opportunity to learn its objectives and preferences. (Mansor, Mirahsani & Idayu, 2012.)

Leading a virtual team requires special attention to the goal and shared leadership. The goal defines team’s function: when it is well defined and clear, the team can function more effectively and with less difficulties. Team is not together without a good reason. Shared leadership means that different people lead depending on the task: tasks may vary, and it is rare that one person handles all the features that are needed. Also role the clarification and following them are important for a balanced group dynamic (Harvard Business School Press, 2005). Correspondingly Borrill and West (2004) mention the role distribution to be important for functional virtual team. There are different roles depending on the task and goal, but we are not clarifying those further; there are as many roles as there are team

members and some roles overlap with others. Every group needs different expertises – therefore the roles are based on need and are created by determining the requisite skills.

One of the main enabling factor for successful virtual teamwork is effective communication. Berry (2011) defines communication as the process of transferring information, meaning and understanding between two or more persons: effective communication is essential to getting organizing or work done as it is the basic element upon which collaboration, decision making and goal achievement takes place. Horwitz et al. (2006) suggest that communication, including both the frequency and quality of communication, need to be monitored when working in virtual team. These are the most important areas among team processes that need to be supported (Berry, 2011). It is essential to encourage people to open communication and information sharing which are relevant for achieving the common goal (Roebuck et al., 2004). Team membership also requires willingness to build interaction with other team members which can be supported by sharing responsibility among members (Borrill & West, 2004).

Virtual team needs to have appropriate technology to be able to communicate and create shared working platforms. Virtual teams enhance in effectiveness if they have standardized electrical platforms in all team member locations, and the organization has enabled this for all their distance employees. Communication may happen via telephone, email, electronic bulletin boards, chat groups or other electronic database (Berry, 2011). For example, sharing screen or editing the same document and saving files in cloud services help team members to work in real time (Fried & Hansson, 2014).

Members of a virtual team can work without national boundaries so it is important to take into consideration the effects of cross-cultural communication: different time zones, cultural differences and difference in level of technology which may occur within distributed teams (Horwitz et al., 2006). Different contexts e.g. cultures, backgrounds, languages, technologies and geographical environments, lead to very different views about understandings and ways to work. Again, one of the main feature in successful teamwork is a shared understanding, especially when team members do not share the same cultural background. By taking these factors into account, team effectiveness has greater chance to appear. (Hinds & Weisband, 2003.)

Mansor et al. (2012) examined how to get effective virtual teams in organizations to enhance trust among employees. They suggest that Organizational Trust consists of six different



components: ability, integrity, communication, training, risk and work engagement (FIGURE 3.). These components have positive effects towards Organizational Trust which leads to the better Virtual Team Effectiveness. In this context ability means specific skills, competencies or characteristics in some specific domain - when the responsibility is given to someone competent to that area. The term integrity illustrates trustworthiness: for example when manager sets principles that employee, the one who trusts, finds acceptable. Work engagement describes the expression of the self through work and employee-role activities and risk predicts trust - the need for trust appears especially in a risk situation. Turning to training, the higher trust, the higher organizational performance and managers tends to offer more training to their employees. (Mansor et al., 2012.)

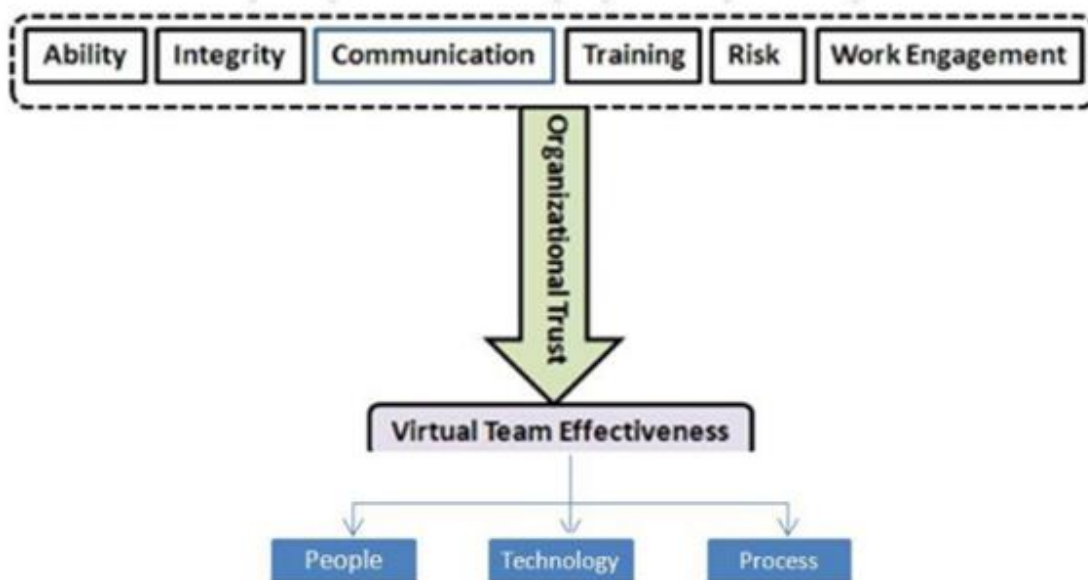


FIGURE 3. The contributor factors of “Organizational trust” in effective “Virtual Team” context (Mansor et al., 2012, p. 286)

### 5.2.1 Successful leadership

To success in leading a team, the leader has to consider all the aspects mentioned above. When a new group starts its activity, the expectations bend towards the leader: the group has not created its boundaries yet and needs some sort of guidance (Lähteenmäki, 2007). In order to successfully form a team, the leader has to know the requirements of task and understand the different working phases. The leader needs skills for creative problem solving. The leader must share the work equally, and point right persons to right tasks depending of their skills (Fried & Hansson, 2014). Clarifying objectives, roles and responsibilities help the team members to manage their areas (Horwitz et al., 2006). Motivation works like fuel to intellectual working, and that is something the manager cannot force to. (Fried & Hansson, 2014). The biggest challenges that managers have faced within virtual teams are team forming, grouping the members, controlling their work, assuring good communication and relationships and choosing the right enabling technologies (Horwitz et al., 2006).

In order to be able to control virtual teams, manager needs a basic knowledge about how to manage a face-to-face team. Virtual team needs a clear mission and description about aims. Leader can not assume that everything is clear for all immediately; instead it is important to clarify every step and everything that may be relevant for the task - and make sure that everybody shares a common understanding during team work. In the same way, only the use of good advanced technology doesn't make a virtual team effective: both face-to-face and virtual teams require management, thinking, and inconvenience from the manager (Berry, 2011). Communication builds trust, and small talk is a good way to keep up the communication, which can be implemented with electronic platforms in virtual teams. If a virtual team meets complications, the manager can use the phone to call - voice works better than email. (Harvard Business School Press, 2005)

As pointed, virtual team leaders still need to understand the base elements of team building, learning and working. The main difference between leading a face-to-face and a virtual team is the need to offer possibilities for effective electronic discussion and clarify roles in a more specific way than with a face-to-face team: face-to-face team members have the opportunity to sit down and observe each other's actions and speaks, whereafter forming the roles happens almost automatically (or at least easier than in virtual teams where members may not have seen each other) (Berry, 2011). Enabling good electrical communication means that

organization needs to offer well functioning base for communication and guide principles for everyone how to use it (Horwitz et al., 2006).

### **5.3 Benefits of distance teamwork**

We describe the benefits and beliefs about distance teamwork in this chapter, leaving out the cons. Unlike most face-to-face teams, virtual teams are not bound by geographical location or time. This gives virtual teams considerable advantages both the individual and the organizational level because they are able to communicate, collaborate and create outputs regardless of time and space. (Berry, 2011.) Members of virtual team do not need to be physically in the same place in order to achieve team's goal: team can function effectively and successfully from anywhere (Fried & Hansson, 2014). The summary of positive effects of distance teamwork is shown in figure 4.

Team learning enhances effectiveness and creates better outcomes which affecting team working directly. Effective team working in turn increases the positive outcome of an organisation, leading to greater success and better opportunities to develop further. Good team resilience ensures that positive outcomes will continue but when facing difficulties, team knows how to overcome it. In short, a team who is able to learn reaches greater effectiveness and therefore better team working, and a good team working allows the team to cross their boundaries all the time. When sharing the understanding, roles and norms are succeeded, team wastes much less energy trying to find coping methods under surprising (and everyday) situations. (Alliger et al., 2015; Hinds & Weisband, 2003; Van den Bossche et al. 2006)

The opportunity to work from everywhere enables employees' autonomy and therefore job satisfaction and productivity. It reduces inequality because it is not necessity to be physically present: it provides more working options to employees with disabilities or health problems. Employees can achieve better work and family balance when distributed work makes childcare issues less stressful. It allows team members work when they feel they are most effective: it is not a basic assumption in virtual teamwork to operate and complete your work at the same time. (Madsen, 2011.)

Distance teamwork promotes diversity and improves employee recruitment by giving organizations the possibility to hire the best experts anywhere in the world (Fried & Hansson, 2014). Therefore it also decreases the borders between different countries. It reduces office expenses and commute time although distance working does not mean that there is no office at all - due to the nature of virtual work it may just not be necessary (Madsen, 2011; Fried & Hansson, 2014). The use of virtual teams creates organizations with increased opportunities for better services: they can utilize various expertise easily as a result of advanced information and communications technology and communicate actively both inside or outside the organization. Also developed information transfer allows large and complex files to be send instantly and regardless of location and daily use of technology increases technical skills of team members. (Berry, 2011.)

<b>THE POSITIVE EFFECTS OF DISTANCE TEAMWORK</b>
<ul style="list-style-type: none"> <li>• Communication, collaboration and creation of outputs regardless of time and space</li> <li>• Increased autonomy</li> <li>• Increased job satisfaction</li> <li>• Promoted diversity</li> <li>• Reduced office expenses</li> <li>• Increased technical skills</li> <li>• Increased opportunities for better service</li> <li>• Improved productivity</li> </ul>

FIGURE 4. The positive effects of distance teamwork for individual and organization.

## 6 DISCUSSIONS AND CONCLUSIONS

In this study, we combined data from different sources by using literature review as our research method. We aimed to get describe what a team is, how it is defined, and how a team can successfully work in distance with the help of electrical platforms. We also examined the benefits of virtual distance teamwork. We started with the definition of main concepts which are included in a team and its building, team working, distance working and technical implements in virtual teams.

First, we found various different terms and features to define “team”. Based on the review, a team constructs as a result of following: team consists of members whose personalities, level of expertise and current cognition affect team building, learning and working. There are multiple characteristics for team working: interdependence, shared mental models, shared responsibility, boundaries (Boon et al., 2013), boundary crossing (Boon et al., 2013; Decuyper et al., 2010), shared knowledge about working processes (Hinds & Weisband, 2003), team intelligence (Decuyper et al., 2010; Salminen, 2013), team learning (Van den Bossche et al., 2006), effective communication, sharing, co-construction (Decuyper et al., 2010), flexibility, activity, storage, retrieval (Decuyper et al., 2010), and self-efficacy (Van den Bossche et al., 2006).

All the features mentioned above affect team building and how team learning occurs, and therefore affect the outcome of a team and its tasks. The outcome of team, in turn, is as a measurement for team effectiveness and working. A team is committed to achieve a goal together, and it should consist of 3-10 persons: less blocks for combined expertises, and the more members, the more difficult to build trust (Salminen, 2013). Borrill and West (2004) mention that a work team consists of 3-20 members. Our conclusion is, that over 10 members in team is possible, but the whole team and its leader should invest in communication, trust building and role clarification much more than in groups with less than 10 members.

Second conclusion is that it is not enough to only build a team: it is important to make sure that the members are able to work together, especially when working virtually and in distance. Good team resilience is required to ensure the team won't collapse during stressful situations. Team resilience is not automatically built from resilient individuals:

communication, role division, working habits and willingness to help others are the main components when building team resilience (Alliger et al. 2015). Also common goals, commitment, shared responsibilities (team roles), utilization of knowledge, feedback, shared leadership, trust building and willingness to build interaction are features a virtual team must fulfill to reach the most effective outcome as possible (Salminen, 2013). In order to create effectiveness and functional teams, enabling features found in this study are: clustering (Harvard Business School Press, 2005), task cohesion (Decuyper et al., 2010), trust (e.g. Horwitz et al. 2006), organizational trust (Mansor et al., 2012), effective communication and appropriate technology as an enabler (Berry, 2011). Based on this, it can be concluded that even if a team does not work autonomously, members can consciously enhance its effectiveness by paying attention to these above-mentioned criterias e.g. by increasing communication or developing the use of electrical databases.

Telephone, email, electronic bulletin boards, chat groups and other electronic databases can be utilized when working in distance as a team (Berry, 2011). Leading a virtual team requires similar skills than leading a face-to-face team. Managing a virtual team differs from traditional team because of the lack of communication that usually manifests in virtual teams. Good technology is the basal requirement for communication to occur in virtual teams. The manager has to guide employees about how they can utilize electrical devices in communication (Horwitz et al., 2006).

Third question we considered is: what are the benefits and beliefs in distance virtual teams. Virtual team is not bound by geographical location or time (Berry, 2011), and the team can work effectively and successfully from anywhere (Fried & Hansson, 2014) if the team working features are fulfilled. This increases job satisfaction, productivity, and gives more working options for employees with health problems or disability. It can also improve work and family balance, and it enables the employees to work when they feel the most effective (Madsen, 2011). Hiring employees to work virtually gives variation (Berry, 2011) and allows to recruit the best people from all over the world. It also provides great ways to enhance internationalization in companies (Fried & Hanson, 2014). If the company enhances internationalization, cross-cultural communication must be considered and guided to all team members who are involved in cross-cultural working (Horwitz et al. 2006).

Interesting research questions for further research are: how organizations already utilize the benefits of virtual teams, why virtual team work is still rarely used, what are the attitudes

towards virtual team working, and how virtual teams could be used in certain contexts. As individual motivation in virtual teams was not studied here it would also be an interesting subject in the future.

## REFERENCES

- Allen, T. D., Golden, T. D. & Shockley, K. M. (2015). How effective is telecommuting? Assessing the status of our scientific findings. *Psychological Science in the Public Interest*, 16(2), 40-68.
- Alliger, G., Cerasoli, C., Tannenbaum, S., Vessey, B. (2015). Team resilience: How teams flourish under pressure. *Organizational Dynamics*, 44, 176-184.
- Berry, G. R. (2011). Enhancing effectiveness on virtual teams. *Journal of Business Communication*, 48(2), 186-206.
- Boon, A., Raes, E., Kyndt, E & Dochy, F. (2013). Team learning beliefs and behaviours in response teams. *European Journal of Training and Development*, 37(4), 357-379.
- Borrill, C.S. & West, M.A. (2004). The psychology of effective teamworking. In N. Gold (Eds.), *Teamwork: Multi-disciplinary Perspectives* (pp. 136-160). Basingstoke: Palgrave Macmillan.
- Burke, C.S., Stagl, K.C., Klein, C., Goodwin, G.F., Salas, E. & Halpin, S. M. (2006). What type of leadership behaviors are functional in teams? A meta-analysis. *The Leadership Quarterly*, 17(3), 288-307.
- De Dreu, C. K.W. (2007). Cooperative outcome interdependence, task reflexivity, and team effectiveness: a motivated information processing perspective. *Journal of Applied Psychology*, 92(3), 628-638.
- Decuyper, S., Dochy, F. & Van den Bossche, P. (2010). Grasping the dynamic complexity of team learning: an integrative model for effective team learning in organisations. *Educational Research Review*, 5(2), 111-133.
- Flanagin, A. & Waldeck, J. (2004). Technology use and organizational newcomer socialization. *Journal of Business Communication*, 41(2), 137-165.
- Fried J. & Heinemeier Hansson, D. H. (2014). *Etänä – toimistoa ei tarvita*. Helsinki: Kauppakamari.



Global Workplace Analytics. (2015). Latest telecommuting statistics. Retrieved from <http://globalworkplaceanalytics.com/telecommuting-statistics>

Harvard Business School Press. (2005). *Toimiva tiimi*. Helsinki: Art-Print Oy.

Hinds, P. J. & Weisband, S. P. (2003). Knowledge sharing and shared understanding in virtual teams. In C. B. Gibson & S. G. Cohen (Eds.), *Virtual teams that work: creating conditions for virtual team effectiveness* (21-36). San Francisco: Jossey-Bass.

Hirsjärvi, S., Remes, P. & Sajavaara, P. (2005). *Tutki ja kirjoita*. Helsinki: Tammi.

Horwitz, F. M., Bravington, D. & Desmond, S. U. (2006). The promise of virtual teams: identifying key factors in effectiveness and failure. *Journal of European Industrial Training*, 30(6), 472-494.

Jayakumar, V. (2009). Telecommuting: a perk or prerequisite? Hyderabad, Telangana: IBS Case Development Centre. Retrieved from <http://search.alexanderstreet.com.ezp.lib.unimelb.edu.au/view/work/2778052#page/1/mode/1up>

Joy-Matthews, J. & Gladstone, B. (2000). Extending the group: a strategy for virtual team formation. *Industrial and Commercial Training*, 32(1), 24-29.

Kasl, E., Marsick, V.J. & Dechant, K. (1997). Teams as learners. A research-based model of team learning. *Journal of Applied Behavioral Science*, 33(2), 227.

Lähteenmäki, S. (2007). *Ryhmäyttäminen ohjaajan työkaluna*. Jyväskylän ammattikorkeakoulu. Retrieved from [https://publications.theseus.fi/bitstream/handle/10024/20296/jamk\\_1196685534\\_2.pdf](https://publications.theseus.fi/bitstream/handle/10024/20296/jamk_1196685534_2.pdf)

Madsen, S. R. (2011). The benefits, challenges, and implications of teleworking: a literature review. *Culture & Religion Review Journal*, 2011(1), 148-158.

Mansor, N. N. A., Mirahsani, S. & Idayu, S. M. (2012). Investigating possible contributors towards "Organizational trust" in Effective "Virtual team" collaboration context. *Procedia - Social and Behavioral Sciences*, 57, 283-289.

Metsämuuronen, J. (2005). Näyttöön perustuva päätöksenteko ja systemoitu kirjallisuuskatsaus. *Psykologia*, 40(5-6), 578-581

Olson, J. S. & Olson, G. M. (2013). *Working together apart: collaboration over the internet*. San Rafael, California: Morgan & Claypool.

Roebuck, D. B., Brock, S. J. & Moodie, D. R. (2004). Using a simulation to explore the challenges of communicating in virtual team. *Business and Professional Communication Quarterly*, 67(3), 359-367.

Salli, M., (2012). *Epäviralliset työsuhteet käytännönläheisesti*. Helsinki: Kauppakamari.

Salminen, A. (2011). *Mikä kirjallisuuskatsaus? Johdatus kirjallisuuskatsauksen tyyppeihin ja hallintotieteellisiin sovelluksiin*. University of Vaasa. Retrieved from [http://www.uva.fi/materiaali/pdf/isbn\\_978-952-476-349-3.pdf](http://www.uva.fi/materiaali/pdf/isbn_978-952-476-349-3.pdf)

Salminen, J., (2013). *Onnistu tiimityössä - Tiimin jäsenen kirja*. Helsinki: J-Impact Oy.

Van den Bossche, P., Gijsselaers, W.H., Segers, M. & Kirschner, P.A. (2006). Social and cognitive factors driving teamwork in collaborative learning environments: Team learning beliefs and behaviors. *Small Group Research*, 37(5), 490.