

# ICT Entrepreneurship Model: A New Approach for Information Technology Bachelor Education

Pasi Juvonen\*. Päivi Ovaska\*\*

\* Saimaa University of Applied Sciences, Lappeenranta, Finland  
(e-mail: pasi.juvonen@saimia.fi).

\*\* Saimaa University of Applied Sciences, Lappeenranta, Finland  
(e-mail: paivi.ovaska@saimia.fi).

---

**Abstract:** This article describes experiences from developing and utilizing team learning and entrepreneurship environment (TLE) in information technology bachelor education in a Finnish University of Applied Sciences. In this study eleven ICT students (called teampreneurs) and their studying during the first year was observed. Our aim was to identify the main challenges of this first team. We used a mixed method approach in our study together with theme-based interviews and direct and participative observation as data collection methods. According to our findings the main challenge was difficulties to understand new team learning and teampreneurship principles. Teampreneurs were used to normal school learning where learning contents and goals are predefined. There were also misunderstandings and ambiguous expectations concerning both the coach's and the teampreneur's roles and responsibilities. We suggest that all these challenges are somehow related to overcoming fear. Teampreneurs were afraid of the new way of learning and its features. The rest of the article discusses the reasons for the fear and how to overcome it. We also outline the topics for further research.

*Keywords:* Team learning, entrepreneurship, IT bachelor education, team development, qualitative research, mixed method, overcoming fear

---

## 1. INTRODUCTION

The ICT sector is one of the most dynamic areas of the European economy, a key source of growth and employment. 5.3 million people were employed in the sector in 2006, in 520,000 enterprises. There is a growing demand for 'soft' skills in ICT work; these are increasingly emphasized in recruitment and selection processes. 'Soft skills' generally refer to: business skills, communications skills, team-working skills, competencies, personal attributes, individual qualities, transferable skills, social skills, interpersonal skills (Diversity Management in the ICT Industry).

People working in this field cannot base their skills (or expertise) on technical knowledge gained from the university. They have to learn to learn and think on their own, which forms a real challenge to our educational system. We have to develop learning environments, that activate students.

Societies need entrepreneurs. It is said, that entrepreneurship forms a future of every country. Educational system has to train young people who want to learn entrepreneurial skills. ICT business needs new entrepreneurs and innovative business cultures, such as in Silicon Valley in California.

These thoughts were a starting point to develop a team learning and entrepreneurship (TLE) environment to study information technology at Finnish University of Applied Sciences. The environment is based on theories of learning organization and knowledge creation.

The goal of this research was to study the main challenges of

the first year of ICT team entrepreneur students. We studied, using a mixed method approach, eleven first year ICT team entrepreneurs at the Finnish University of Applied Sciences.

The rest of the paper is structured as follows. Section two describes the background for this study. Section three represents our TLE environment. In section four the research method and process used in this study are expressed. Section five outlines the research findings and observations. Finally, we discuss the results, make conclusions and propose future research.

## 2. ORGANISATIONAL LEARNING AND LEARNING ORGANIZATION

Peter Senge et al. (2004) have argued that thinking will not change, action will not change either. In the best case we only become better in what we do but our worldview usually remains unchanged (Senge et al. 2004, p. 8). This has been one of the essential leading thoughts for developing a new innovative learning environment for IT bachelor education.

Organizations are collections of individuals, each of who has developed and stored meaning structures. These meaning structures include private, accessible and collective structures. By facilitating collective learning individuals can share their collective meaning structures and organizational learning can result from this exchange (Dixon 1984 p. 34 - 45). Argyris and Schön (1996) and Senge (1990; 2006) call these meaning structures as mental models. Based on Argyris and Schön (1996) individuals are defensive by nature because

they tend to avoid feeling vulnerable, incomplete and ignorant. This will result defensive reasoning which prevents individual learning and therefore also organizational learning. De Gaus (1997, p. 63) suggests that fear for the unknown makes individuals to repeat practices that used to lead to success. The fear for trying new practices can lead to learning disabilities within an organization.

Argyris and Schön (1996) suggest use of dialogue with planned interventions by researchers to solve the human defensiveness. Senge (2006, p. 163 - 167) suggests that our mental models – the way we each make sense how the world works – might be a major breakthrough for building a learning organization. Senge (1990) defines a learning organization as “an organization where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free and where people are continually learning how to learn together” Senge (1990) also presents five disciplines required to build a learning organization: 1) Systems thinking 2) Personal Mastery 3) Mental models 4) Building shared vision 5) Team learning.

Systems thinking is an ability to see invisible fabrics, patterns of behavior and connections between interrelated actions. It is the ability to see the conceptual framework of “what is happening?” Personal mastery means that an individual is committed to become better in whatever he is committed to do in his professional life. Mental models are everyone’s hidden assumptions that affect to how we think and act. One way to diminish mental models effect is trying to make them visible.

Building a shared vision deals with the “picture of the future”, the aim at which the team or group want to go. Shared vision cannot be a vision that some individual have, it is rather build up from personal visions that are melted together in the course of time and with practice. Team learning is crucial because teams have for a long time been the basic unit of learning. Team learning deals with patterns of defensiveness and tries to lift them to surface to get rid of them. By practicing dialogue it is in a longer run possible to achieve extra-ordinary results by really thinking together (Senge 1990; Isaacs 1999). The purpose of a dialogue is to go beyond any individuals understanding (Senge 1990, p. 241). This will require time and development of mutual trust between team members.

Marquardt (2009) points out the role of action learning. He defines action learning as “powerful problem-solving tool that has the amazing capacity to simultaneously build successful leaders, teams and organizations. It is a process that involves a small group working on real problems, taking action, and learning as individuals, as a team and as an organization while doing so” (Marquardt 2009, p. 2). The action learning framework is seen here as an essential framework for team learning and development.

### 3. TEAM LEARNING AND ENTREPRENEURSHIP ENVIRONMENT (TLE)

IT bachelor education in Finland usually lasts for eight semesters and includes 240 ECTS credit units. IT bachelor education has been recreated as a part of TLE environment. The objective has been to offer three learning paths for IT bachelor students from which they could choose the most appropriate for themselves. These learning paths (Figure 1) are international team learning, project learning and ICT entrepreneurship.

In this article we concentrate to describe the ICT entrepreneurship path (Figure 1). In this path team learning model originally developed nineteen years ago for business administration students at Tiimiakatemia in Finland is utilized. This model is applied for information technology education and it is called an ICT teampreneurship model. Based on our knowledge it is the first this kind of learning method in IT bachelor education.

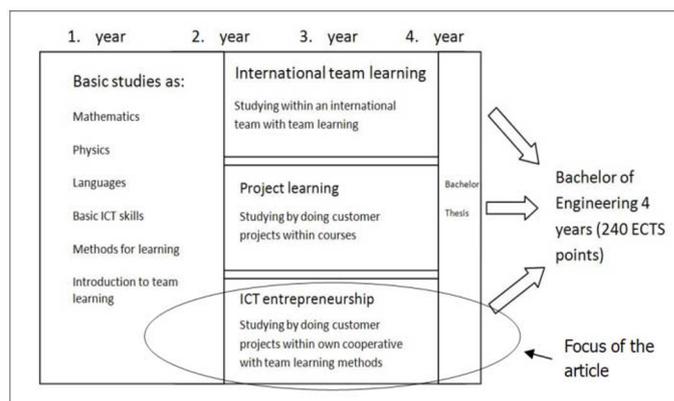


Figure 1. The recreated IT bachelor education.

In the ICT teampreneurship model, a teacher (called team coach) is an expert of team development process and learning, but also has to have knowledge of ICT business and entrepreneurship. Students (called teampreneurs) will establish a cooperative and learn by doing ICT business. This business acts as a motivator for students. Teampreneurs learn information technology by doing ICT projects for customers, reading books and having workouts. The team coach guides them by asking questions, helping their learning process and giving feedback. This type of learning is built on the principles of learning organization (Senge 1990) and knowledge theory (Nonaka and Takeuchi 1995).

Team learning is a continuous process, which needs suitable learning tools. The ICT teampreneurship model consists of three kinds of learning tools: team learning tools, teampreneurship tools and coaching tools (Figure 2). They are discussed in more detail in the next chapters.

#### Team learning tools

Team learning is based on three basic concepts: theory, practice, and creating and sharing knowledge. The tools for team learning are reading books, doing ICT projects for customers and workouts. Teampreneurs reads books of different subjects, such as ICT and business. They conduct ICT projects for customers billing them and getting money.

They attend workouts for eight hours a week. In the workouts they share information about their learning experiences from the books read by them, customer projects and all the other issues related to team and cooperatives. The coach attends to these workouts by making questions and giving feedback.

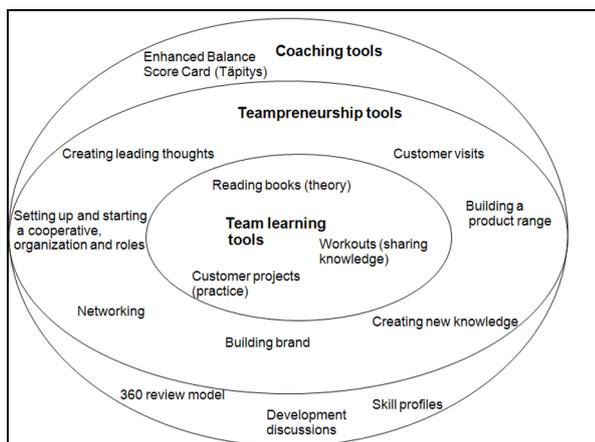


Figure 2. Learning tools of ICT teampreneurship model

### Teampreneurship tools

As seen from Figure 2, the tools for teampreneurship consist of various tools for running a business. These tools are shortly described in Table 1.

**Table 1. Fundamental teampreneurship tools (modified and based on Partus methods)**

| Tool   | A short description  |
|--|--|
| Setting up and starting a cooperative                    | Cooperative is a business organization owned and operated by a group of individuals for their mutual benefit, it is the most suitable way to organize teampreneurship learning. It is also cheap to start.   |
| Organization and roles                                   | Team will select a management board for a team organization. The roles are such as team leader, customer responsible person, communication responsible person and financial officer. These roles may change as often as the team decides.  |
| Creating leading thoughts (mission, vision and strategy) | Leading thoughts are teampreneurs source of inspiration, that are based on mutual trust, self-discipline and courage. Leading thoughts are created by teampreneurs and remind them why they exist and what they are fighting for.  |
| Customer visits  | The more teampreneurs visit potential customers, the more they sell and learn.   |
| Building a product range                                 | The goal of teampreneurs business is to find a portfolio of products they can market to customers. In the beginning they try to market a wide range of IT work and when they get to know the markets more, they try to develop their own products.                                 |
| Creating new knowledge, innovating                       | Innovating and creating new knowledge is the basis for team learning. Teampreneurs use different kinds of innovating tools, such as modified brainstorming (where individual ideas are emphasized before group session) and six thinking hats to aid the creation of new knowledge |
| Building brand   | Teampreneurs build a brand for their cooperative during their studies. They start by creating a logo for the company and design business cards etc. Later they will design a marketing strategy and ways how to build a brand for their company.                                   |
| Networking   | The heart of teampreneurship model's is networking. Teampreneurs network with other teams and business organizations. The more they cooperate, the more they get new business ideas and products.  |

### Coaching tools

Coaching tools provide tools both for the coach and the team leader for leading and evaluating the learning process for the whole team and each teampreneur. The model consists of individual goal setting and 360 review model evaluation meaning customer, self, coach and peer reviews after customer projects. The tool for the team goal setting and evaluation is an enhanced balance score card. The coach and the team leader use development discussions and skill profiles for leading the learning process of individual teampreneurs.

## 4. RESEARCH METHOD AND PROCESS

This chapter will shortly present the studied teampreneur organization, the research question and process. It will also clarify how data for the study was gathered and analyzed.

### 4.1 Studied organization

In this study, we observed eleven ICT teampreneurs and their cooperative called Icaros. They were the first ICT teampreneurs at this university, starting their studies in the year 2009. After one year at basic studies, they started their own cooperative in the year 2010. The Icaros team members have a team leader, a customer relationship manager, a finance manager and a public relationship manager like every real business organization. These managers form a board of the company. They study by running their business and each teampreneur applies his/her credits according to predefined principles. This principle is called the formula of coaches and is as follows: 2 book credits + 24 hours of working in customer project + 20 hour workout = 3 ECTS. Each book is rated from 1 to 5 book credits according to its content. The grade is build up with 360 review model (customer, self, coach and peer reviews). Basically all professional studies are carried out by running their business. The total number of credit units in the IT bachelor degree is 240 and 145 of it is carried out by running the business.

### 4.2 Research question and methods

This study is a part of a larger research where ICT entrepreneurship and team development in IT bachelor education within a Finnish university of Applied Sciences is investigated. The overall study follows the principles of action research (Stringer 2007). An essential objective in action research studies is to improve "what is going on". The research question for the study was formulated as follows:

Q: What were the main challenges of the teampreneurs during their first year?

Qualitative methods are appropriate when human beings and their actions are studied in their natural settings (Corbin and Strauss 2008; Flick 2009). Theme-based interviews and field notes from both direct and participative observation served as main data collection methods for the study. A total of 29 theme-based interviews have been made and analyzed. The interviews lasted from 30 to 120 minutes. In addition, 22 team learning sessions have been observed by the first author.

The duration of these team learning sessions has varied from 2-4 hours (workouts) to two 2 day retreats. The coach of the team (the second author) made field notes from every workout session. These workouts were kept two times a week during the whole first year.

### 4.3 Data analysis

The analysis of the data followed the grounded theory method (Corbin and Strauss 2008; Flick 2009). The analysis started with an open coding phase where data from the interviews and team learning sessions was analyzed. In an axial coding phase the findings were organized to the categories and explanations and relations between phenomena were discussed. Finally, the analysis ended with a selective coding phase during which we were able to form a core category of the study. The core category answers a question “What is going on here?” The reporting phase utilized the principles of case study (Yin 2003). To benefit from researcher triangulation (Flick 2009) we decided to select two different viewpoints for analysis. The first author analyzed the collected data based on theme-based interviews and field notes from both direct and participative observation and compared it to previous findings on the selected themes. We call this an “observer” viewpoint. The second author analyzed the themes based on the coaches field notes as a coach of the cooperative studied. The analysis is based on field notes made during team learning sessions and steering group meetings. We call this an “insider” viewpoint.

## 5. FINDINGS

The findings of the study are presented in Table 2.

**Table2. Themes selected for closer investigation**

| Theme                               | Insider   | Outsider   |
|-------------------------------------|---|--|
| Learning methods                    | Team entrepreneurs got in the middle of new learning environment. They had difficulties to unlearn from traditional school learning. However school learning environment was close, just behind the door. | Knowledge theory (Nonaka 1991) forms a basis for team learning. The knowledge theory is based on socialization, externalization, combination and internalization. All of these phases are required for knowledge creation. |
| Coachs' role and responsibilities   | To intervene or not? When you intervene you are in the inner circle of the team. If you do not intervene you are in the outer circle of the team.   | Coachs' role is to give support and guidance for learners. If dialogue goes beyond the framework, coach' role is to guide the dialogue back into the framework.  |
| Learner's role and responsibilities | Trust between team members seemed to be difficult within the team during the first year. Another challenging factor was knowledge sharing between team members.   | To read books to learn theory, to do customer projects to apply theories in practice and to share experiences based on them to create new knowledge.   |
| Over coming fear                    | Perhaps the most challenging for the team entrepreneurs was visiting the potential customers. They tried to find out every other way of getting new potential customers than visiting them.               | Students tend to avoid taking actions which they feel unfamiliar with. An example of this is the avoidance of visiting new potential customer.   |

### Learning methods: Observer viewpoint

Essential elements in teampreneurs learning philosophy are based on Argyris' studies on human defensiveness (Argyris 1991; Argyris & Schön 1996), further developed by Senge (1990). Senge's studies have been inspiring Tiimiakatemia.

The learning philosophy was complemented by Nonaka (1991) who has presented a knowledge theory. The knowledge theory consists of socialization, externalization, combination and internalization (SECI process) phases. In the combination phase teampreneurs read books to learn existing knowledge. For the internalization phase teampreneurs need versatile customer projects to apply and test the theories they have learnt. The practice has also another important role. It provides input for the socialization phase where teampreneurs have dialogue (Isaacs 1999) to share their experiences. The last phase, externalization gives teampreneurs an opportunity to create new knowledge based on previous knowledge and experiences shared via dialogue.

### Insider viewpoint

Teampreneurs had used to traditional school environment. They got to the new and unknown learning environment where nobody said how and what to learn. They were lost and wondered what actually the coach was doing with them. It seemed to them, that she didn't do anything but just sat and watched. Many times they commented if the coach was payed for this kind of work. Also the fact, that they talked about every morning, that they came to school, revealed their mental models. Another problem was that their new team learning environment was located in the middle of the school, and every day they saw “normal students” sitting in their classrooms and listening to the teachers. They noticed that actually it is much easier to be an ordinary student than a teampreneur.

### Coaches' role and responsibilities: Observer viewpoint

The coach's main role is to provide guidance and feedback for learners. Marquardt (2009) lists the roles of a learning coach. He suggests that the primary role of the action learning coach is to enable the members to take responsibility for themselves to learn how to develop as a team, to increase their awareness of how they are doing, and to generate norms and processes that will improve their effectiveness (Marquardt 2009, p. 141). Marquardt continues by presenting ways how the coach can make interventions to the team with questions, e.g. ask what actions will be taken between the current and next session (Marquardt 2009, p. 146).

### Insider viewpoint

The main challenge for the coach is a so called law of nonintervention. It means that the coach lets the teampreneurs themselves find the ways to the solutions and avoids interventions as much as possible. But when does she/he to intervene? I have got feedback from teampreneurs that in the first spring semester I should have intervened in a certain team situation but I did not do that. Instead, I intervened to situation later in the autumn semester of the second year. This

intervention took me into the middle of the team, and they started to find solutions for me, not for themselves. From this experience, I suggest that if the coach has to intervene, it is very important to go to the stage of nonintervention as soon as possible.

#### *Learner's role and responsibilities: Observer viewpoint*

There are three main methods how teampreneurs study. Firstly, they read books from different areas to learn theories. Secondly, they visit companies and other organizations to get customers and projects from those customers. Thirdly, teampreneurs have team learning sessions where they are able to share experiences they have got from reading books and customer projects. The experiences are shared via dialogue. All these learning methods connect tightly together and if one of them fails it directly affects the others.

#### *Insider viewpoint*

It was noticeable in the first year that the teampreneurs did not trust each other. They did not trust that the other team members were able to work in IT projects in such a way he/she wanted to work. Also helping others was difficult. Many times the team members decided to share the knowledge and help each other but this did not come true.

#### *Overcoming fear: Observer viewpoint*

Icaros teampreneurs tend to avoid challenging themselves with issues they are not familiar with. Challenging team objectives and feeling mutually accountable of them would help the team to develop. Fear is usually hidden and reasons why not to take fearful actions are justified with several ways. Fear could be diminished through dialogue. The dialogue should be restricted precisely to the issues that are challenging. This would force teampreneurs to face the issues avoided. It would also help to bring mental models and defensive reasoning more visible.

#### *Insider viewpoint*

Visiting new potential customers has been difficult during the whole Icaros team process. They organized different kind of campaigns, they decided to visit customer in pairs etc. but all these trials ended, and visiting customers remained difficult. In the first year, they said often that it is not necessary to visit customers because the customers are contacting them.

## 6. DISCUSSION

Based on our findings we suggest that fear for taking certain actions connects together several themes studied. Why do the teampreneurs fear then? By analyzing the data from this viewpoint some ideas arise. Support from the previous literature was also found for our interpretation.

During the second year in one meeting with team leader, marketing manager, financial officer and team coach a discussion of the team's situation took place. They used a "Five times why" tool created in the Toyota car factory to better understand the origin of problems. Here is how it went:

The coach: "How is Icaros team this week?" The members discussed mainly that team don't have enough customer projects. The team leader suggested use of "Five times why" tool. First they asked: "Why Icaros team doesn't have enough customer projects?" Marketing manager and financial officer both answered: "Because they don't want to visit potential customers" The team leader: "Why they don't want to visit potential customer?" "Because they're afraid of going there" The team leader: "Why or what they are afraid of?"

The third "why" question revealed the fear. For the next one and a half hour they discussed this fear. They came to the conclusion that Icaros teampreneurs fear because they think that they are too novice in implementing ICT products to the customers. They think that they should practice more before that. They suggested that they should do some smaller practices, for example virtual courses in programming, data base design etc. first. After these smaller exercises they would have the courage to implement customer projects.

Usually individuals protect themselves from feeling ignorant and vulnerable, so they utilize their primary inhibitory loops (Argyris and Schön, 1996 p. 90). A university culture tends to advocate "knowing" and sometimes people even pretend that they know what they are doing even if they don't (Senge et al. 1999, p. 260 – 261). If teampreneurs trusted each other enough to admit their incomplete knowledge and realized that everyone else has the same challenge - including teachers, coaches and other entrepreneurs - it might help them to establish more effective knowledge sharing practices.

Another issue which might foster trust development between teampreneurs is practices how to communicate with each other. Losada (1999), and Losada and Heaphy (2004) have studied the complex dynamics separating low, medium and high performance teams. The amount of positive feedback in high performance teams is three times higher compared to medium performance level teams and six times higher compared to low performance teams. The utilization of increased positive communication requires more positive thinking. It is crucial that positive communication is genuine and comes from the heart. Recognizing the success is also one of the practices of an exemplary leader (Kouzes & Posner 2007).

Moving to the world of possibilities does not happen without facilitating. Senge (1990) suggests some practical tools to help us to recognize our mental models. Firstly, teampreneurs could discuss and try to recognize leaps of abstraction – our natural tend to jump from observation to generalization. Secondly, comparison between what we say (espoused theory) and what we actually do (theory in-use) could provide teampreneurs new insights to their restricting mental models.

The third tool requires observation of balance between inquiry and advocacy. The balance between these two will also indicate the quality of the dialogue. The fourth tool presented by Senge (1990) is the articulation of what is not said. Argyris and Schön (1996) have called this tool "left-side column". During a dialogue teampreneurs could make notes

on what has been said to the right column and what they were thinking during the dialogue to the left column.

The coach has an important role in sensing whether teampreneurs' learning process is alive or not. In case when teampreneurs are in challenging situation and they are either thinking of problem solving or taking actions to beat the challenges they have, there is no reason for the coach to interfere with the learning process. In situations when the learning process is frozen and teampreneurs avoid dealing with the challenges, the coach has to make an intervention.

Elements how to build a learning organization are nowadays quite well known. The theories of knowledge sharing and knowledge creation have also been studied a lot. However, there are still not many studies where these principles have been taken into practice at large. A learning organization is still seen more as an ideal against which organizations are compared. In everyday organizational life the ideal may seem impossible to achieve.

## 7. SUMMARY AND CONCLUSIONS

In this study, we investigated the main challenges the teampreneurs faced during their first year. The teampreneurs studied IT bachelor degree using the ICT teampreneurship model and learning tools. We used a mixed methodology in the study by using theme-based interviews, direct and participative observation, and field notes as data collection methods. The data was analyzed with grounded theory and the reporting followed the case study approach. We selected two different viewpoints, called observer and insider to analyze the findings. According to our findings the main challenge during the teampreneurs first year was the difficulties to understand the principles of the new TLE model. Teampreneurs were used to normal school learning where goals and contents are predefined. Furthermore, the teampreneurs did not really commit themselves to mutual objectives, which caused anxiety between the teampreneurs. Based on our observations, these challenges are somehow related to overcoming fear. Everybody was afraid of the new way of learning. We suggest some reasons for this fear, e.g. non-acceptance of incomplete knowledge and the lack of trust between the teampreneurs. Regardless of the challenges in creating an ideal learning organization, we suggest that it is possible to create a learning environment where learners can affect the methods how they learn inside the university. The Finnish University of Applied Sciences created a team learning and entrepreneurship environment for IT bachelor education. This kind of learning environment will help teampreneurs take responsibility on their own, getting entrepreneurship and other 'soft' skills, and learning to learn in this fast developing ICT sector. After couple of years the results will be seen.

### 7.1 Topics for further studies

The study continues by following Icaros' development as a team. Other teams have also been established, and it will be interesting to see what kind of challenges they will face. The restricting mental models related to ICT business also

requires further investigation. It seems typical for IT students to see the ICT business very narrowly: making applications, or implementing systems with IS methodologies.

### Acknowledgements:

We are grateful for the Tulkki project in the EU Social Fund Programme 2007-2013 and to the Icaros teampreneurs and our colleagues in the IT degree programme.

## REFERENCES

- Argyris, Chris (1991). Teaching Smart People to Learn. Harvard Business Review, Vol. 4. No 2.
- Argyris, C. and Schön, D. (1996) Organizational learning II: Theory, method and practice, Mass: Addison Wesley.
- Corbin, J. & Strauss A. (2008) Basics of Qualitative Research 3e: Techniques and Procedures for Developing Grounded Theory. Sage Publications.
- Diversity Management in the ICT Industry: Challenges and Issues for Social Dialogue, [http://www.mature-project.eu/materials/DiversityManagement\\_en.pdf](http://www.mature-project.eu/materials/DiversityManagement_en.pdf)
- Flick, U. (2009). An Introduction to Qualitative Research, Edition 4. Sage Publications.
- Isaacs, W. (1999). Dialogue: The art of thinking together. Doubleday, Randomhouse Inc.
- Kouzes, J.M. & Posner, B.Z. (2007). The Leadership Challenge, 4th edition. John Wiley & Sons Inc.
- Losada, M. (1999). The Complex Dynamics of High Performance Teams, Mathematical and Computer Modelling, Vol 30, pp. 130 – 141.
- Losada M. & Heaphy, E. (2004). The Role of Positivity and Connectivity in the Performance of Business Teams. American Behavioral Scientist, Vol. 47 (6) pp. 740 – 765.
- Marquardt, M. J. (2009). Optimizing the power of Action Learning. Davies-Black.
- Nonaka, I. (1991). The Knowledge-Creating Company. Harvard Business Review, November – December 1991.
- Nonaka, I. & Takeuchi, H. (1995) The Knowledge Creating Company. Oxford University Press.
- Nonaka, I., Toyama, R. & Byosiére, P. A Theory of Organizational Knowledge Creation: Understanding the Dynamic Process of Creating Knowledge in Dierkes, M., Berthoin Antal, A., Child, J. & Nonaka, I. (2001). Handbook of Organizational Learning and Knowledge. Oxford University Press.
- Partus methods. Available in www – format in: <http://www.partus.fi/en>
- Senge, P. (1990). The Fifth Discipline – The Art & Practice of the Learning Organization, Sage, New York.
- Senge, P. M. (2006). The Fifth Discipline Revised and Updated, Random house 2006.
- Senge, P., Schamer, C. O., Jaworski, J. & Flowers B. (2004). Presence. Human purpose and the Field of the Future. The Society for Organizational Learning.
- Stringer, E.T. (2007) Action Research. Thousand Oaks: Sage.
- Yin, R. K. (2003) Case Study Research: Design and Methods. Thousand Oaks: Sage