STUDYING IT TEAM ENTREPRENEURSHIP AS A LEARNING ORGANIZATION

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Abstract: This position paper describes settings for a study of emerge and development of a learning organization within a Finnish University of Applied Sciences will be studied. A group of twelve students from information technology training programme have established a cooperative where they will continue their studies as IT team entrepreneurs. The students will utilize team learning methods and learning by doing in their studies with support from their coaches. In the position paper we will present how emerge and development of the cooperative will be studied during three years. Key concepts related to learning organization will also be shortly discussed. The position paper also presents and discusses data collection methods and research and analysis methods that are considered to be utilized during the study. Observations from interviews within IT team entrepreneurs suggest that for several students participating to the cooperative was based on strong motivation to try something that is totally different from traditional school. It was also expressed in the interviews that students value learning by doing and learning as a member of a team.

1 INTRODUCTION

Globalization has affected a structure of industry all over the world, also in Finland. One of the phenomena related to globalization is outsourcing where part of the production, like information systems development is moved to lower cost level countries. Outsourcing has been under research during recent fifteen years. Some of the most common viewpoints taken to the subject have been driving and inhibiting factors (Kakabadse and Kakabadse 2002; Carmel 1999) and hidden costs and transaction costs (Senn and Gefen 1999; Lacity & Hirschheim 1993; Matloff 2005). It is obvious that outsourcing will continue also in future and for developed countries like Finland this means more changes in the structure of industry. It is obvious that when an organization outsources certain parts of its business to lower cost level countries, it also outsources some of its competencies in a longer run. When projects are globally distributed the person is hired from a location where they are easily and for reasonable price available (Aubert et al. 2005; Ericson and Evaristo 2006).

Within these globalization challenges, it seems probable that some of the previous knowledge and skills will become not so useful in a shorter time than we expect. Some old professions will slowly disappear and in the same time new professions will emerge. Furthermore it is impossible to predict what kind of new knowledge and competencies will be needed after few years. We are preparing our young people to professions that might not yet exist. This is a challenge to our educational system in Finland and with no doubt to any other educational systems in other developed countries. Instead of concentrating to i.e. technologies, we should shift our focus more on meta-skills which will help to utilize and create new knowledge (Ruohotie 2005; OECD report 2007) and meta-cognition where new knowledge is produced, used and shared within and between communities of practice (Lave and Wenger 1991; Brown and Duguid 1991).

This position paper tries to provide an insight to a new learning environment called Information Technology (IT) team cooperative, which is a new approach to learning information and communications technology within Saimaa University of Applied sciences. The position paper tries to clarify how emerge and development of IT team cooperative will be studied and analyzed in future and what kind of data collection and analyses

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methods might be useful to describe these development processes.

This position paper is organized as follows. Next section introduces IT team cooperative and how it has been earlier utilized in Finnish educational system. Section three defines concepts learning organization and communities of practice. In section four, the data collection methods, the methods for analysis and research timeline will be shortly introduced. Section five discusses some observations from interviews with IT team entrepreneurs. Finally, in section six the possible future directions of the study will be shortly discussed.

2 IT TEAM COOPERATIVE

A team cooperative is not a new learning environment in a field of Finnish University of Applied Sciences. Team Academy in Jyväskylä in central part of Finland has been practicing team learning methods with marketing students since 1993. This concept has since spread to tens of university level schools and companies worldwide. Team Academy tries to develop individual and team abilities in three different areas: team entrepreneurship, team learning, and team leadership (Partus methods 2010).

Despite that a cooperative as a learning environment is not a new phenomenon in a Finnish educational system it has not been applied to information technology training programme. So cooperative is at this point seen as a new learning environment.

In IT team cooperative IT students have established a cooperative named Icaros, in which they work together as IT team entrepreneurs. After one year of traditional way of studying, IT team entrepreneurs start in this cooperative. The cooperative is a company that is totally owned by the students. The studying methods in this learning environment are based on organizational learning principles, which consist of reading books (theory), customer projects and running a company (practice) and dialogue (community learning). This community learning is an instrument of knowledge creation process (Nonaka et al. 1998) by which students process information and create and share knowledge their produce from the information. Some of the general studies like mathematics will be studied in a more traditional way.

In this case twelve first year students who are studying in information technology training programme have established their cooperative named *Icaros* during the spring 2010. In autumn 2010 they will continue their studies as IT team entrepreneurs.

3 DEFINITION OF CONCEPTS

This s section shortly introduces concepts learning organization and communities of practice (CoP) and how they have been defined in literature.

3.1 Learning Organization

The Fifth Discipline by Peter M. Senge is inevitably one of the cornerstones in learning organization literature. Senge 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).

Based on Senge many organizations have been paralyzed in their ability to learn. One of the most common reasons for this situation is that most of the employees will lose their commitment, the sense of mission and excitement to what they are doing (Senge 1990). To better avoid the situation described before, Senge presents his five disciplines and how they are combined together to create a learning organization. The five disciplines: 1) Systems thinking 2) Personal Mastery 3) Mental models 4) Building shared vision 5) Team learning.

Systems thinking is defined as 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?” and it is not easy to recognize the system if one is part of the system that he wants to analyze and understand. *Personal mastery* means that individual is committed to become better in whatever he is committed to do in his professional life. With support from one’s organization an individual commits to his personal lifelong learning. *Mental models* are everyone’s hidden assumptions that affect to how we think and act and one way to diminish their effect is trying to make them visible. To be able to develop as individuals and as a team, everyone should share one’s ingrained assumptions, generalizations and other phenomena that affect to our way of understanding the world and our actions as part of it. Building a shared vision deals with “picture of the future”, where do 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 course of time and with practice. *Team learning* is crucial because team is has 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).

Community of practice (CoP) is a social setting where learning takes place. It has been defined by many authors (Lave and Wenger 1991; Brown and Duguid 1991) as group of individuals that share common values and beliefs. In the learning process a learner internalizes knowledge that is discovered, transmitted or experienced in interaction. Based on the studies of CoP's it has been argued that CoP's foster developing of expertise, knowledge, innovation and learning.

Every organization is a product of how its members think and interact (Senge et al 2000). A learning organization tries to utilized learning and knowledge creation of its members. Furthermore a learning organization does "Continuous testing of experience, and the transformation of the experience into knowledge – accessible to the whole organization, and relevant to its core purpose." (Senge et al. 1994). Based on these definitions learning organization is a widely used concept. It usually describes organizations where there have been efforts for better cooperation and learning though team learning methods. A community of practice is also widely used concept. It describes a social setting where learning takes place and therefore it could be seen as a synonym for team or group.

4 RESEARCH METHODS

The study has been started on February 2010 and it will last until June 2013. Longitudinal approach was seen as a natural choice because IT team entrepreneurs will probably graduate during spring 2013. A three-year-time will also provide authors a possibility to retrieve enough qualitative data. It probably also makes possible to follow and analyze how interventions made by coaches will affect team's actions.

4.1 Data Collection Methods

Data collection was started on February 2010. There are three main data collection methods that will be used during the study. First, all the IT team entrepreneurs will be interviewed two times per year. A theme based interview will cover past, current situation and future expectations. Themes will include i.e. discussion of strengths and possibilities related to IT team entrepreneurship in current situation and in future. Review of remarkable success stories or places for improvement are also discussed. Amount and quality of communication within team entrepreneurs and with other reference groups will also be evaluated.

Secondly, direct (non-participative) observation will be used to gather data from team learning situations. Team learning situations (dialogues) will take place twice a week lasting usually four hours. One of the authors will act as a coach and carry out participative observation. Third data collection method used during the study will be using knowledge repositories. IT team entrepreneurs have already granted authors access to their e-learning platform. When they will deploy a new information system which will act also as a knowledge repository, authors will be able to utilize data that will be stored there.

4.2 Methods for Data Analysis

When studying human beings and their actions in their natural settings there are usually lots of variables that affect the situation observed. It is impossible to exactly record and analyze all of them. Therefore it is natural to use qualitative methods as a main approach to gather and analyze the data. This does not automatically rule out use of quantitative methods so they will be used if they are needed.

A social network analysis is an analysis method that might provide new insights to communication within the team. The social network analysis is based on the network perspective. In network perspective social structure is defined as follows: "Social structure consists of regularities in the patterns of relations among concrete entities; it is not a harmony among abstract norms and values or a classification of concrete entities by their attributes" (Knoke and Yang 2008). In this study the social network analysis will be used to analyze how quantity and quality of communication within IT team entrepreneurs will develop.

The research methods that are likely to be used during the study are presented in table 1.

Table 1: A summary of the research methods which are likely to be used during the study.

Method	A short description	Reference(s)
Action Research	Action research examines the phenomena in its natural settings. Action research as a method has emerged from different traditions and it covers several different approaches, i.e. practioners research, action science, participatory rural appraisal, teacher research, participatory action research and feminist participatory action research.	Herr and Anderson 2005.
Case study	Case study is an empirical inquiry that investigates a phenomenon within its real-life context. Case study research means single and / or multiple case studies, that can include either quantitative or qualitative evidence, even both. It usually relies on multiple sources of evidence and benefits from the prior development of theories.	Eisenhardt 1989; Yin 1994.
Ethnography	Ethnography as a reflexive approach permits to refocus and makes changes as the research progresses and in situations where answers to question influence the direction of furthers questions. This is typical to qualitative research approach where theory no predominant theory is used but rather data speaks for itself.	Myers and Tan 2002.
Grounded theory	Grounded theory is a research method that has its origins in social sciences. Grounded theory is an inductive research method where research starts with almost no a priori knowledge about the subject studied. Theory emerges from the data during the data is being analyzed.	Glaser, B.G. and Strauss, A. 1967; Strauss, A. and Corbin, J. 1997.

Critical incident technology (CIT) is a qualitative analysis method that helps researcher to dig in to critical positive and negative incidents that have happened to interviewees based on their own expressions (Symon and Cassell 1998). With CIT it will be possible to capture the most (i.e. 5 – 10%) critical positive and negative that have happened and possibly separate them for further analysis. By especially concentrating to critical incidents CIT might also provide interviewee a possibility to reflect their personal development and learning experiences as a team member.

Case study method helps a researcher to answer two important questions: “how” and “why”. It is a research approach that is very common in social sciences. It is typical for the case study method that characteristics of phenomena are presented and compared. By case study method researcher is able to utilize triangulation so build explanations to phenomena based on data from multiple sources (Yin 1994). In this study it will be essential to understand what is happening, how it happens and why it is happening so the case study methods is essential research approach for the study. Furthermore, if it will be possible to compare different teams also the cross-case analysis will be used.

Grounded theory (GT) is a qualitative research method that is very common in social sciences studies. The grounded theory analysis starts with open coding where interesting phenomenon are marked from the data and categorized. In second phase, axial coding connections between categories are recognized and further developed. In third phase, selective coding the core category is selected and it will be described in a theoretical sense (Straus and Corbin 1990). In GT theory emerges from the data, so it will not be essential to have a priori framework for the phenomena under investigation. In other words data will “speak for itself” and researcher has to confirm the interpretations from other researchers and practioners (Klein and Myers 1999).

In addition, both authors work as teachers in the same training programme where IT team entrepreneurs study. It is probable that there will be also unofficial sources of data that will help triangulation of data and validity of perceptions. Frequent discussion with peer researcher will also help to validate research findings and lead to better inner validity of the study.

5 OBSERVATION ON MOTIVATION OF STUDENTS

The first round of theme-based interviews with IT team entrepreneurs was carried out between mid of March and end of April 2010. Students were asked i.e. to reflect their motivation to become IT team entrepreneurs. Some of the quotations are included here:

- *"I see team entrepreneurship as an approach of versatile way to learn and especially to learn by doing in different kind of projects. You are able to affect a lot what kind of projects you will be involved with by being active."*
- *"I have lot of expectations from team learning. I feel that positive pressure from*

others will help me to gain my learning objectives."

- *"I don't like that learning is bond to some predefined schedule. I am more interested in learning by doing and I hope we will be able to gain challenging projects."*
- *"I feel that I have done my time in a traditional school. I see this as a change for something different."*
- *"Team learning motivates me. I am able to do better when I am part of the team."*

We can observe from interviews that these students seem to be quite frustrated how the traditional school operates. They seem to be looking for new approach to learning and they value practice based learning and taking care of their own schedules related to learning. Several students also expressed that they prefer learning within team.

During the study it will be interesting to find out how these twelve students will perform with the "old style" courses and how could the possible change in their performance be explained.

6 SUMMARY AND DISCUSSION

In this position paper we have described how emerge and development of IT cooperative, called Icaros, will be studied as an organizational learning environment in Saimaa University of Applied Sciences.

During recent years new methods and tools for learning have been deployed in our information technology training programme little by little. The past development could be described as incremental learning. For these twelve students that have established cooperative Icaros and will continue their studies as IT team entrepreneurs, past few months has been time of radical learning. It has been time of radical learning also for their coaches and other personnel in information technology training programme. The radical learning usually means also that learners who participate to this learning process will also abandon something old i.e. method and practices. In other words it is a change process that will affect to all individuals that are somehow connected to it.

There will be several future directions where this study might go. They all might provide useful insights. Firstly, there are no much experiences about utilizing cooperative in studying information technology. A longitudinal description of emerge and development process of the cooperative Icaros will be carried out. That might provide a framework for further studies related to same subject.

Secondly, there are not much scientific studies of utilizing cooperative as a learning environment overall. There are lots of possibilities to analyze i.e. the use of different team learning methods and learning by doing through different theoretical frameworks.

Thirdly, dialogue that students utilize in their community learning might also provide us new insights about knowledge creation and knowledge sharing within this kind of learning environment.

By utilizing critical incident technology it might be possible to identify some critical incidents for closer investigation. Phenomena that might be useful to study in more detail could be i.e. process of getting first customer, first severe crisis among IT team entrepreneurs and deployment of first information systems.

To summarize, there will be numerous possibilities how to study emerge and development of the IT team entrepreneurs. We hope that we will be sensitive enough to be able to grasp to interesting phenomena that will be provided to us. In the same time the team develops, it will be interesting to follow how this development process affects to teachers who are directly or indirectly connected to it. This will be an interesting learning process both for the students and for the teachers.

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