Student teamwork analysed through knowledge management models

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Abstract: In this paper we are going to deepen our knowledge on chosen knowledge transfer models and present two real life cases which we have experience on and study how the transfer was executed in practice.

The cases chosen to be analysed are both from university environment in Finland, one from Oulu University and the other from Oulu University of Applied Sciences. The first teamwork we are going to analyse is an event organizing task at Oulu University that consisted of organizing activities for upper secondary school students who are getting to know the Oulu University as a possible future study place. The second task is a course assignment teamwork that was done at the Green Thinking course at Oulu University of Applied Sciences. The aim of the task was to analyse the differences in the ways green thinking affects businesses in different countries and also to give examples of such companies in these countries.

We are going to analyse the cases with the help of Nonaka's SECI framework because it's widely recognized in the field of knowledge management as the base stone of knowledge transfer theories. Since it's been argued that SECI has some flaws related to the nature of knowledge we were hoping to find other model which would concentrate specifically on learning and development of knowledge. In the end we chose Collective Information Processing (CIP) model to support Green Thinking case to really see the inoperativeness of the teams.

Keywords: knowledge, teamwork, SECI, CIP model.

1 Introduction

The authors of this paper are the teacher and three students in the course “Introduction to Knowledge Management” in Oulu University of Applied Sciences. In this paper we are going to deepen our knowledge on chosen knowledge transfer models and present two real life cases which we have experience on and study how the transfer was executed in practise.

1.1 Cases

Our group has experiences of team working in two Finnish universities, Oulu University (OU) and Oulu University of Applied Sciences (OUAS), and we chose our cases from those institutions. One of the cases concentrates on an optional course at OU called “Practical Business Communication”, which is part of the study program of Nordic Philology. This teamwork case we are going to analyse is an event organizing task at Oulu University that consisted of organizing activities for upper secondary school students who are getting to know the Oulu University as a possible future study place. The other case is about Green Thinking course at OUAS which is an obligatory course in the degree programmes of Business

Information Technology and International Business. The aim of this task was to analyse the differences in the ways green thinking affects businesses in different countries and also to give examples of such companies in these countries.

We chose these examples because we wanted the tasks to be from two different environments and we wanted to have an example of both a well-planned group work and a group work that had some issues.

1.2 Knowledge transfer models

We are going to analyse the cases with the help of Nonaka's SECI framework (Nonaka & Takeuchi 1995) [1] because it's widely recognized in the field of knowledge management as the base stone of knowledge transfer theories. Since it's been argued that SECI has some flaws related to the nature of knowledge we were hoping to find another model which would concentrate specifically on learning and development of knowledge. In the end we chose Collective Information Processing (CIP) model to support Green Thinking case to really see the inoperativeness of the teams. (Propp 1999, 226, 231 - 236) [2].

SECI framework

SECI framework introduced first in 1995 by Nonaka and Takeuchi is still, 20 years later one of the best known and definite corner stones of knowledge conversion. SECI model is based on two knowledge concepts in which Nonaka immersed himself with, Tacit and Explicit knowledge. (Frost, 2016) [3].

Tacit knowledge is defined as knowledge that is difficult to transfer from one person to another. It's challenging to write down or visualize. It's often based on individual's experiences, feelings or associations with others. Explicit knowledge on the other hand is possible to articulate and document. It can be generated by logical deduction and stored objectively. (Mikkonen, 2016) [4].

The SECI framework proposes four ways to convert between tacit and explicit knowledge. Nonaka named these four ways of knowledge converting; socialization, externalization, combination and internalization. (Frost, 2016) [3]

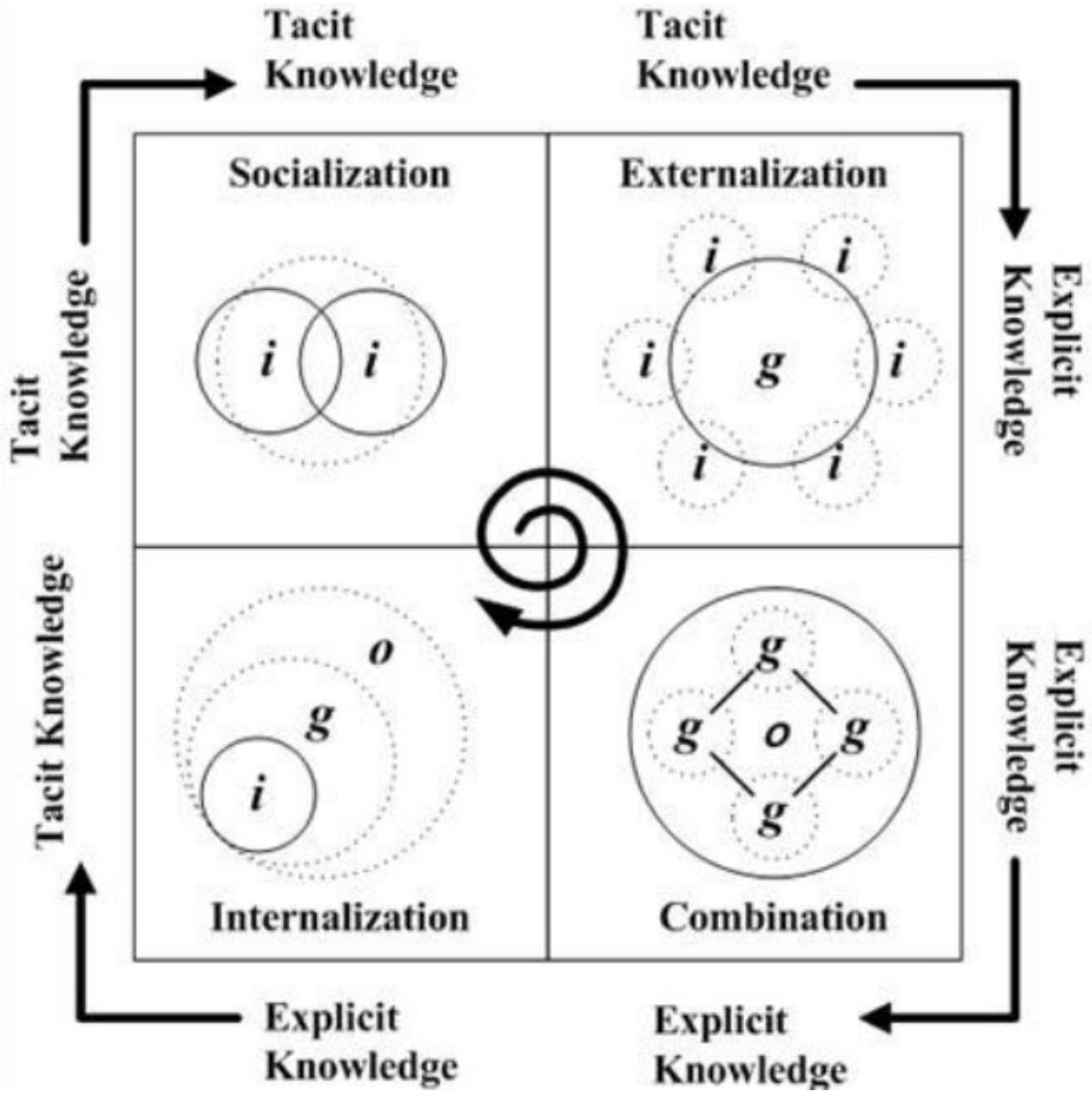

Fig. 1 The SECI Process (Tammets, 2016) [5]

Figure 1. displays the process of knowledge transfer as introduced by Nonaka and Konno. (Nonaka and Konno 2000) [6]. First in socialization phase tacit knowledge is passed along through practises, observation, imitation and guidance. Meetings and brainstorming support this action of tacit to tacit transfer.

In externalization phase the tacit knowledge is transitioned forward as explicit knowledge. This is the phase where knowledge gets articulated forward or published. It becomes basis of new knowledge since it can be shared with others and by them.

Explicit knowledge is combined, organized and integrated in combination phase. Databases and network-based communication can support this part of transfer process.

In the last dimension of the SECI model, individual receives the knowledge and starts to apply it. This is when explicit knowledge is transferred to tacit knowledge again, in Nonaka's model this phase is called internalization. New knowledge has now become an asset and a part of individual's knowledge.

Collective Information Processing (CIP) model

The collective information processing model is the concept of having the result of a group work be the conclusion of collective thinking and working instead of individual clumping together their separate work results. Its emphasises the communication between the individual of the group and the positive effect this communication has on the results of the work.

Collective Information Processing model has four stages: Individual knowledge base, group knowledge base, communicated information base and final collective information base. To have successful results with the CIP model, all the stages should be gone through successfully within the group. Often the main problem of a group work is the lack of communication and the lack of willingness to share information between the different members of a group. Reasons for this lack of sharing could be for example an existing competitive setting between the members of the group, the feeling of inequality between different parts of the group or the size of the group being too large for the communication between the members of the group to be successful. (Propp 1999, 226, 231 - 236) [2].

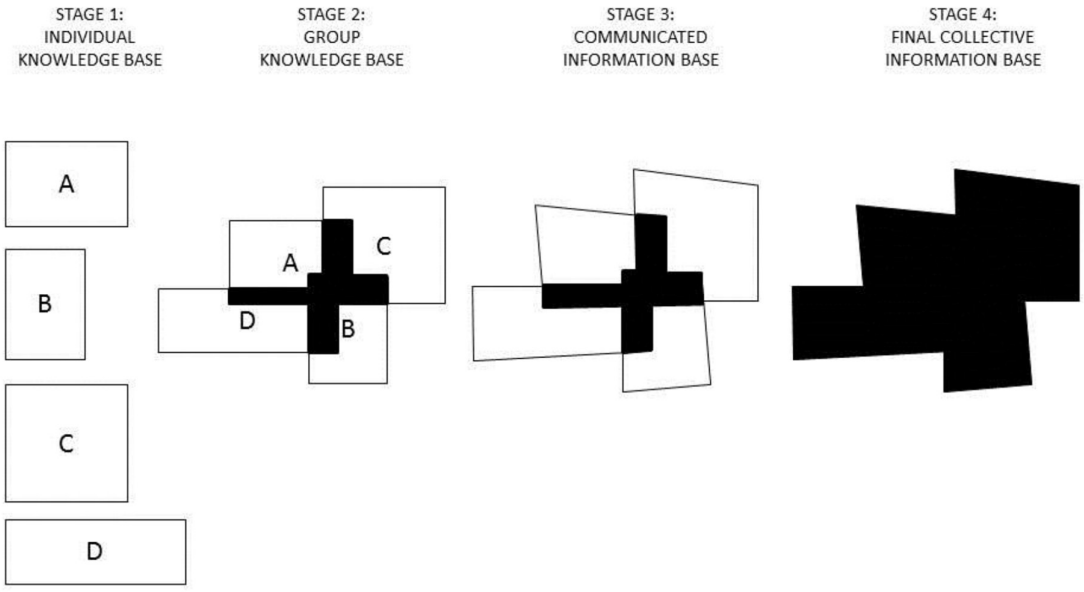

Fig. 2 Distillation model of collective information processing (Propp 1999, 233) [2]

The 1st stage is individual knowledge base. Everyone gathers experiences throughout her/his life that is individualistic, as well as personal perception possesses known only to her/him. The amount and quality of knowledge possessed by each group member determine the maximum size of knowledge pool. The 2nd stage called the group knowledge base forms the common knowledge base for a group from the overlaid knowledge shared by group members. The 3rd stage is the communicated information base where each team member can express her/his own

opinions and share her/his knowledge and experiences while proving her/his points. As a result of communication, group knowledge as well as individual knowledge might be modified and updated. The 4th stage, called the final collective information base, is the logical output from the previous stages. Based on the logical output, the group decision is rendered. (Propp 1999, 231 - 236) [2] [9].

The main advantage of group work is that a group can gather more information than each individual separately, can store and retrieve information more effectively, and can validate the information more thoroughly for decision making. Also, group knowledge is a combination of information and experience from each member, and the group can find more interesting and unusual viewpoints. (ibid. 225, 228-230.) But it is not always the case in reality, as collective information processing (CIP) is influenced by non-communicative factors, for example, the presuppositions of how parallel individual concepts in the group are, the amount and quality of unique knowledge possessed by each member, the size of the group, individual status, relationships in group, characteristics of task, time constraint, and communication medium (Propp 1999, 236-244) [2] [9]. Also, the CIP model reveals that a group considers collective opinions rather than individual ones, thus sometimes individual thoughts get ignored if they are not proved to be worthwhile for the group (ibid. 230-231). In this report, the CIP model will be used to analyze the teamwork dynamics in the Green Thinking project.

2 Results

In this chapter we will be introducing the results of our analysis of the teamwork projects and implementing them into the existing knowledge management theories.

2.1 Green Thinking teamwork in the framework of the CIP model

In a university environment there are many occasions when you are bound to work with a team that you're not familiar with. On many occasions these teams result in many innovative ideas and multiple interesting points of view, but the mix of people who don't know each other or each other's ways of working may also result in many communication and knowledge transfer issues.

An example of a team work suffering from knowledge managing issues due to CIP related issues are the tasks in the Green Thinking project. The goal of these green thinking tasks was to bring together people from different background and cultures so that they could bring to the table as many different green thinking ideas as possible. The aim of the task was to investigate the different green thinking and eco-friendly solutions from different companies from several countries and evaluate the effectiveness of these solutions. The solutions were presented in both written and presentation form.

One of the major issues with the green thinking teamwork was the lack of communication. Due to the fact that each of the group members seemed to only work towards their own goal in the task, instead of wanting to achieve something as a team, the amount of communication was very minimal. The only time when the team came even close to having a working communication situation was when the self-elected group leader of the task group was giving orders to other group members and questioning them about their work.

Another one of the issues in the task arouse from the different positions of the members of the group. Due to the fact that one of the team members had chosen herself as the leader of the task, hindered the communication within the team and made the rest of the members less comfortable to express their own ideas for the task. Due to this issue, most of the decisions

concerning for example the schedule and different tasks that were assigned to people, were decided by the "leader" character in the team instead of them being shared decisions.

Serious issues occurred also when some team member didn't do their tasks and dropped out from the project in the middle. This caused a lot of extra work and planning for other members because they had to finish the project without one member. On this teamwork the team size was around five people which is not that much and when someone is not doing their tasks as agreed, others have to do their work and the results of the group work may not be as desired.

Usually teamwork has a deadline and when issues like this occur, scheduled time to finish the work might not be enough and the team must think about new ways to achieve the desired end result or just focus on getting the best results as possible. When the team is going through this kind of issue, communication plays an important role and in this case communication was quite poor and the time was limited. This issue brings out the importance of planning and if planning is made correctly, this kind of issue shouldn't affect into end result very dramatically.

In this case also the support between team members was very poor and everyone just tried to survive on their own when they should have tried to survive as a team. When there is no connection between the members of the team, workings as a group can be very challenging.

2.2 Organizing the university visitation day for secondary school graduates

The learning outcomes for the Practical Business Communication course at OU were listed as following: Fluency in oral and written situation in organizational communication practices. (Weboodi.oulu.fi, 2016) [7]

In practice this course was organized in a bit different way in each year. The tasks students did included writing business letters, press messages and doing PR work for the faculty of Nordic Philology.

In this particular year that we have experience on the mission was to organize the university visitation day for secondary school graduates and plan the event and presentation for the subject of Nordic Philology. The course is part of optional subject studies and targeted to 2nd and 3rd year university students.

Starting point

The grounds for the project were good. Group sizes in Nordic Philology courses were never too big and on the course at that time were approximately 20 participants. It was also possible to spend some money for this event thanks to the tight co-operation with cultural organizations Svenska Nu and Pohjola Norden. In the first meeting we agreed mutually on our schedule and every participant could express their will to work on a specific task. Responsibility groups were the following: one group to organize the official presentation for Nordic Philology in one of the lecture halls in the faculty introduction event. Another group was in charge of logistics since we had a whole classroom reserved for our activities and for rap artist JesseP who was one of our attractions. One group had the responsibility to arrange all the accessories for visiting students. For example pens, USB-sticks etc. Then we had one group to come up with all the activities and prizes. (Svenska.yle.fi) [8]. In the following we'll concentrate mainly on the performance of the activity group due to the personal experience from working in that team.

Fig. 3. Oona Huoponen and Maija Niva talking with the high school students [8]

Communication and the activity in the team

One of the most important success factors was that this was a free-choice study. We suggest that since everyone had the opportunity to drop out of the class when the course contents were discussed kept the group motivated. Of course, as always some seem to be somehow more motivated than others. Other success factor was definitely the small size of the teams and the whole subject of Nordic Philology in general. Even though there were 2nd and 3rd year students, everyone knew one another and there was a mutual goal and "we" - spirit the whole time – as in the Nordic philology studies in general. The good spirit was improved even by letting the students form the teams and ask for the tasks.

In our activity group the communication happened mainly via social media and on Wednesday morning lectures. Few times on the last week the team gathered at the university to actually test out our activities and finalize our creations.

We began working by throwing in different ideas and prizes, brainstorming. One of our members took naturally the critical viewpoint and shut down our ideas while we tried to create more. And together as a team we quickly cut out the craziest ones. Including for example searching for a person dressed as a Viking from the university hall etc.

Our small team didn't have an assigned leader or more specific roles inside the team since we all knew each other at some level, we were all Finns and studying the same field. We could easily count on each other's effort and work morale.

The actual challenges occurred in between team's communication. We had a study platform called Optima to use for the communication, but since everyone had their own timetables and lectures, so actual meetings were almost impossible to organize. The problem with the online communication however was, that nobody really liked to use the platform. It was clumsy and uncomfortable to use, which led to the situation that communication between the small teams happened only on Wednesdays contact lectures early in the morning at 8:15 AM. Often this led

to a situation where only one or two members of a team were present and partly due to bad communication, planning or strongly divided responsibilities inside the small groups, there were situations were those teams who weren't fully presented on the lectures could not give a fully understandable report to other groups of what was going on inside the team.

3 Conclusions

After having studied an extensive course about the different models of knowledge work and how these models can be applied to real world knowledge work, it was fairly easy to find real life examples to reflect these theories upon. Our decision to revise team working and knowledge sharing cases from two different university environments was successful, because it not only gave us a chance to investigate the working manners of two different organizations but also the differences between a successful and a flawed way to work as a team.

3.1 Pitfalls of the Green Thinking project

While investigating the flaws and pitfalls of the Green Thinking project in the informative frame of the CIP model, we discovered few main reasons for the communication mishaps within the working teams. One of the main reasons that the communication was flawed between different parts of the teams, was their lack of willingness to achieve the tasks result as a group. Whether it was the inequality between the group members or the complete lack of participation to the task, the members of the groups were having trouble in sharing and getting information from each other. One of the reasons for this was the fact that the members of the group weren't familiar with each other's working manners and ways, and thus were unable to fit these manners into one working result. This clearly points out the importance of reserving enough time for the teambuilding and thus securing the CIP stage 3 (Communicated Information Base) to be achieved successfully.

Also the fact the different members of the group had different motivations and levels of working enthusiasm, resulted in some of the members feeling themselves compelled to boss other people around and to give commands to other people, who they felt weren't doing their part of the work. This resulted to even more feelings of inequality between the members of the group and hindered the communication between people even more. According to these results we came into a conclusion that not all of the stages of the CIP model were successful and the reason of failure of group work was unsuccessful communicated information base stage.

3.2 Success of the University visitation day in contrast with SECI framework

When we ponder this case in the framework of SECI the most problematic phase was clearly the externalization. We had clear instructions to use the study platform of Optima actively to discuss our ideas with other groups. As mentioned earlier Optima was frustrating to use and face to face meetings were unpleasantly timed to be very early in the morning. Fortunately, Optima had a feature which enabled auto sending all the messages to participant's email, which made sure that everyone was informed of the time schedule and possible changes.

The other phases of SECI were more successful. In the Socialization phase our whole team participated in brainstorming and threw in ideas. Inside the small team even the externalization phase worked fine since we actively shared notes of ideas which we had come up with on our own time. We had a ton of ideas when entering to combination phase where we carefully presented our ideas to few members of other groups, mainly our friends and asked for their

opinion. Ideas were dropped based on logistic reasons, activities being too time consuming or challenging for the target group. For example, we went through few of the most popular upper secondary school course books to see what kind of topics where handled to form questions that were somehow familiar to the visitors. Internalization phase was mainly our actual execution of the University visitation day for the secondary school graduates. Before the actual zero hour we did execute few mock-up practices with our activities to see how they turned out.

In the end our group had planned two activities: a quiz on the presentation stand where by passers could pick up a question from a jar. There were four categories to choose from:

sports/free-time, literature, geography and entertaining.

All the questions where somehow related to Swedish language, culture or Sweden itself. On a correct answer they were rewarded by better candies. In fact, our candies were said to be the best at the University that year and we went out of those after the first day and we had to buy more. In the lecture hall, we had snacks for the visitors and as for the activity we had a memory/combination game where one supervisor took time and at the end of the visitation days the fastest competitor won a basket filled with delicacies.

For these two teamwork cases we have analyzed for this report we can conclude the importance of the team spirit and the motivation has on the success of a student project. There are many factors included but our findings, both the positive ones and the negative ones, are mainly related to the motivation of the students and the team spirit the team has able to create.

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