Organizing professional communities of practice
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Summary

Introduction

This dissertation focuses on how organizational change and development can be stimulated through employee learning in communities of practice. It is about helping polytechnics to become learning organizations - organizations that are able to change relatively easily according to signals from the environment, and as a result are more competitive (Denton, 1998) – by stimulating teachers’ learning. Developing communities of practice is one approach to doing this. In the private sector, communities of practice have for some years been recognized as an effective knowledge management method for stimulating organizational learning by inspiring learning and innovation among its employees (Fox, 2000; Hakkarainen, Paavlova et al., 2004; Hinds & Pfeffer, 2003). Communities of practice in the private sector are cultivated in order to improve firm competitiveness in the marketplace through investment in learning at the individual level (Davenport & Prusak, 1998). Communities of practice (CoPs) are defined as “...groups of people who share a common set of problems, or a passion about a topic, and deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger et al., 2002).

There were two goals to this research. The first is a practical goal, which is to come to a tested set of design rules that will help managers in polytechnics organize communities of practice as human resource development trajectories enabling faculty professionalization. The second goal is about contributing to theory about CoPs and HRD. I translated these goals into the following main research question:

How can communities of practice be designed and implemented as forums for employee learning in knowledge-intensive, service-based organizations such as polytechnics?
In order further guide the research I also developed several sub-questions:

1. What factors are needed to help CoPs function effectively?
2. What does a theoretically effective system for organizing CoPs look like?
3. How can CoPs be tested for effectiveness?
4. What does a tested system for organizing CoPs look like?
5. What contextual factors contribute to the effectiveness of CoPs?

These questions are answered in the following chapters.

**Chapter 2: Designing effective communities of practice**

This chapter is an attempt to answer to the first and second research sub-questions. It opens with a discussion of what CoPs are and how they function as learning environments. Then, a review of the literature from the following different fields was done in order to find factors that affect the learning processes in CoPs: the field of community of practice, of social constructivist learning, of human resource development and of workplace learning. The model pictured below is the result.
Figure 7.1. Factors affecting learning processes in CoPs

After developing the model shown in Figure 7.1 the next step was to use Andriessen’s (2004) design cycle model in order to design a system for organizing effective CoPs. The result is a series of interventions that, in its entirety, take each of the factors displayed in Figure 7.1 into account. The purpose of the interventions is to trigger certain generative mechanisms that produce the desired results, which in this case are factors that positively affect learning processes in CoPs. Most of the interventions used in the first iteration were developed during a large project on CoPs in polytechnics done in cooperation with what was then the Digital Universiteit. The result was the CoPOS, or Community of Practice Organizing System, which is shown in Table 7.1 below.

Table 7.1. Interventions in the CoPOS

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of business case to management and potential members</td>
<td>Garnering management support and introducing concept to potential members.</td>
</tr>
<tr>
<td>Community kick-off</td>
<td>Developing the learning agenda; finding common ground.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Intervention</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>New product development</td>
<td>Working on group process and finding a concrete goal to work towards.</td>
</tr>
<tr>
<td>Storytelling workshop</td>
<td>Working on group process and shared understanding.</td>
</tr>
<tr>
<td>DeBono’s Six Thinking Hats</td>
<td>Working on group process and shared understanding.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Individual and group reflection exercise.</td>
</tr>
</tbody>
</table>

Chapter 3: Design and instrumentation

The previous chapter presented the theoretical design of a system for organizing effective CoPs. In this chapter the research model used to test the design is developed, which is an answer to research sub-question three.

First a review of the literature on CoPs was done in order to search for dependent variables related to participation in CoPs that can be linked to organizational learning. It was found that learning in general can be approached as either a process, a product or as a combination of the two. One type of end product of learning for an individual participating in a CoP is an improvement in competence in the domain of the CoP. According to one perspective on organizational learning, such an improvement in individual capability is directly related to improved organizational capability. Another type of individual learning outcome associated with participation in CoPs is linked to a specific type of behavior referred to as critically reflective work behavior (CRWB). Employees who exhibit high levels of CRWB are needed for learning organizations and an increase in individuals’ CRWB can be seen as an improvement in organizational capability.

According to the literature, well-functioning CoPs have certain traits that make them effective knowledge building environments. One trait is psychological safety. Psychological safety considers that group members are not afraid to experiment together and experimentation is an important aspect of new knowledge building. Another trait conducive to group knowledge building is group self-efficacy, or the idea that the group is capable of solving difficult problems or taking on complex tasks.
CoPs are knowledge-building environments located within organizational contexts and as such, should produce new knowledge products, or innovations, beneficial to the greater collective.

**Hypotheses**

The theoretical models developed in chapters two and three are part of the empirical cycle of fundamental research. The purpose of the empirical cycle is to develop and test a theory. The theoretical model showing effective CoPs, the design of the system and the theoretical outcomes of CoPs provide the elements for the following hypotheses that are tested in this study:

H1: Participants of CoPs organized using the system will contribute to organizational learning by having improved domain competence and higher levels of critically reflective work behavior.

H2: CoPs organized using the system will exhibit high levels of Team Learning Orientation and Group Learning Climate.

H3: CoPs organized using the system will contribute to organizational learning by developing new knowledge products (innovations).

The research model shown in below in Figure 7.1 reflects the hypotheses.

*Figure 7.1. Research model for testing the system*
In order to test the model a quasi-experimental design based on what Cook and Campbell (1979) refer to as an “Untreated Control Group Design with Pretest and Posttest” was used, which is shown in Figure 7.3. The general quasi-experimental design of this research is shown below.

<table>
<thead>
<tr>
<th>CoP members</th>
<th>O1</th>
<th>O2</th>
<th>O3</th>
<th>O4</th>
<th>O5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>O1</td>
<td>O2</td>
<td>O3</td>
<td>O4</td>
<td>O5</td>
</tr>
</tbody>
</table>

Comparison group:

| O1 Domain competences | O2 CRWB | O3 Group learning climate | O4 Team learning orientation | X CoPOS implemented | O5 Innovation |

**Figure 7.3. The general quasi-experimental design of this research**

**Instrumentation**

The dependent variables in this research are the learning outcomes for individuals and the CoP as a collective. Individual learning outcomes were measured in regards to domain competence and changes in levels of CRWB. Three different instruments were used to measure individual learning outcomes because of the different domains of the CoP participants. First an existing scale was used to measure changes in CRWB. In order to measure changes in domain competence, existing lists of competences for management consultants and teachers were used to develop a survey.

Group learning outcomes were measured by; 1) innovations produced by the CoP, 2) Group Learning Climate and 3) Group Learning Orientation. These last two outcomes were measured using existing scales. Any innovations were looked for in written surveys or interviews, or community artifacts.

**Chapter 4: Empirically testing the system**

This chapter presents the results of the empirical tests of the CoPOS and leads to the answers to sub-questions four and five. The system was tested in a total of six
organizations in order to judge its effectiveness. Each case study follows the following structure; 1) context of implementation including a description of the organization, the problem at hand if any and the participants in the CoP 2) a description of the implementation of the system 3) a report on effects of the CoPOS on learning outcomes 4) discussion of results and 5) improvements to the system.

The chapter ends with an analysis of the aggregated data that leads to an answer of research sub-question four. A cross-case analysis is then done to look at contextual factors influencing effectiveness of CoPs – the answer to sub-question five.

The context of implementation
The CoPOS was implemented in two Dutch management consultancy firms, two polytechnics, one university in Macedonia and one inter-organizational group of consultants. Two of the CoPs already existed and I was asked to implement the CoPOS in order to improve declining participations. In three cases I was asked to try and organize a CoP in order to help solve a specific problem and in one case I approached the organization to see if they would be willing to experiment with CoPs. In all cases, the organizations were both knowledge-intensive and service-based.

CoP membership was made up of typical knowledge workers. Members were all well-educated people who invested a great deal of time in informal and formal learning. Age, length in service and time in the field varied among members, but one-way ANOVA testing showed no significant differences either within or between groups.

Implementation of the CoPOS
This did not go according to the original plan developed in chapter two, but did adhere to the original design. The original plan was rather instrumental and followed a rigid path. The reality of the situation was such that the system needed to be adjusted several times for process as well as content. However, this flexibility was part of the original design. Furthermore, while some of the individual interventions were shortened, the underlying principles were kept in tact. Evaluations, done using a quantitative survey supported by interviews showed that in each case the CoPOS was implemented satisfactorily.
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Effects of the CoPOS - learning outcomes
Individual learning outcomes were observed using a scale that measured CRWB and a survey that measured gain in domain competence. The former was measured before and after the implementation of the CoPOS. There were a few significant changes in CRWB and the underlying dimensions between the measures. There were also some varied effects. No significant changes in domain competence were observed due to the problems with the validity of the instrument. The results might have to do with the fact that the CoPs organized in this research were focused on implicit, not explicit learning, which would influence changes in both CRWB and competence development.

Group learning outcomes were measured by looking at Team Learning Orientation, Group Learning Climate and new knowledge products or innovations. In regards to the first two, there were few significant changes observed and some observable effects. Furthermore, five of the groups produced a concept of a product and four of these were planning on developing the innovation to the point where it could be implemented in the organization.

Discussion
In this section the combined results of the implementation are analyzed in order to gain further understanding for the refinement of the CoPOS system. Each iteration contains a full report of the individual case.

Reflections on the case and changes to the system
Between the first four iterations there were several changes made to the CoPOS. This was needed in order to be able to implement it. For example, the first change was to shorten the individual interventions, but yet keep the essentials. Another change was the addition of a new product development intervention. In general, the flexibility of the original design was held to.

Aggregated data analysis and cross-case analysis
The last sections of chapter four are a look at the results in regards to research questions four and five. An analysis of the aggregated results is done in order to answer the question of what a tested system for organizing CoPs looks like, while a cross-case analysis is done for understanding in what contexts CoPs can be organized.

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**Chapter 5: Conclusions**

In this chapter I draw conclusions based on the findings in relation to the main research question. These findings are formulated as a set of six tested design principles about how CoPs can be organized using examples from the CoPOS. These were divided into three principles about motivation, two about process and one about context. In general I conclude that motivation needs to be triggered in specific ways done in the CoPOS, that process does not take precedence over content in the CoP meetings but is still important and that context can seriously (negatively) affect the effectiveness of the CoPOS and needs to be carefully considered.

**Chapter 6: Discussion**

This chapter is a return to the original motivations for doing the research, a look at the added value of it and some critical reflections about the research process itself.

I found that organizations have systematic problems that remain unsolved, and it seems that CoPs can help with these problems in a relatively simple manner. Individuals benefit from participation in more intrinsic ways related to learning and collaborating, such as improved task performance and network expansion. The added value of the CoPOS is linked to how it systematically organizes CoPs effectively by weaving process and content in a way that ensures motivation for participation and a powerful learning environment. It is also relatively simple to implement and low cost.

After pointing out the added value of CoPs and the CoPOS, I go on to discuss the generalizability of the findings, which in DBR is more accurately called transferability. The argument is based on the plausible rival explanation framework given in chapter three.

Then, contributions the research makes to CoP theory and the field of HRD are given. I suggest that CoPs can help inform HRD theory and practice, especially how CoPs, as human resource development trajectories, can be designed and organized in a way that leads to observable organizational learning.
The chapter ends with some suggestions for future research in the direction of organizational traits that are conducive to organizing CoPs, the people who participate and understanding how CoPs could contribute to organizational knowledge retention.