

Qualitative variation in the learning experiences of Communities of Practice's members:
towards a model of learning in a Community of Practice

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1. Introduction

Communities of Practice (CoPs) are groups of professionals who share their knowledge, ideas and practices on a common domain or topic. So far, the learning processes within a CoP have been widely studied within 'situated learning' approaches (Lave & Wenger, 2001) which highlight the key processes related to learning within such framework: negotiation of meaning, reification, sense of belonging, participation, etc. Many researches use these key processes as a general framework for understanding learning and professional (identity) development within groups of professionals (Johnson, 2001). These groups may be distributed or not.

In our project, we are working with several CoPs in order to develop technological services that support the collaboration between their members and the management of their knowledge. We are also developing learning and organisational resources for CoP moderators and members to organise and manage activities, to choose and use tools for their CoP or to support and evaluate their learning. Regarding this objective of development of resources, we intended to create a tool that supports CoP moderators or members to understand and evaluate the different ways to experience learning within a CoP. So, rather than trying to highlight general processes such as participation, reification or negotiation of meaning, we chose a phenomenographic approach in order to understand the qualitative variation in CoP members' experiences of learning with CoPs. By analysing variation in learning experience, we sought to examine different reasons for engaging in a CoP, variation in the perceptions of the learning process, and variation in the perceptions of learning outcomes. This ongoing work is then intended to be used to develop resources for those involved in the development of CoPs'.

2. Context

PALETTE is a European Integrated Project¹ that aims at facilitating and augmenting individual and organisational learning in CoPs. Towards this aim, an interoperable set of web-

¹ PALETTE (2006-2009), IST European Research & Development project, <http://palette.ercim.org>

based services as well as a set of specific resources and scenarios of use are designed, implemented and validated with a dozen CoPs from diverse contexts. The services, resources and scenarios aim at supporting CoPs towards a comprehensive representation of their practices, to manage argumentative debates about practices, and to provide procedures for the reification and creation of new practices. 15 institutional partners from Switzerland, UK, Belgium, France, Greece, Luxembourg and, Canada and Algeria are involved.

Our research takes place within this framework. It is conducted by a multi-national interdisciplinary team who, working in two languages, collectively generated and analysed data using a phenomenographic approach. In this paper, we present our methodology of research, the ‘outcome space’ we constructed from the analysis of data, and the outline of learning resources we are developing for CoP moderators and members. In the discussion, we also address the issues involved in conducting such research in a multinational, multi-disciplinary and distributed team of researchers working across two languages (English and French).

First of all, from the dozen CoPs we are working with, we have generated data about eight of them. They are briefly presented in the table below:

Domain	Name of CoPs	People involved	Interests and purposes
Teaching and training	ePrep	Teachers in French Grandes Ecoles (France - http://www.eprep.org)	Uses of Information and Communication Technologies for teaching and learning in the “Classes préparatoires aux grandes écoles” (CPGEs) preparing students for the entrance exams to the Grandes Ecoles
	Doctoral Programme	PhD students (UK)	Support for achieving a thesis
	Did@cTIC	Teachers and assistant professors in a University (Switzerland - http://www.unifr.ch/didactic)	Teaching in Higher Education (evaluation, technologies, teaching methods, etc.)
	LEARN-NETT (Learning Network for Teachers and Trainers)	Teachers and tutors supporting collaborative groups of students at a distance (Belgium, France, Switzerland - http://ute2.umh.ac.be/learn-nett)	Collaborative learning and tutoring at a distance
	@PRETIC	Teachers in secondary schools (Belgium - http://www.apretic.be)	Uses of Information and Communication Technologies for teaching and learning in secondary schools

Domain	Name of CoPs	People involved	Interests and purposes
	Form@HETICE	Teachers in Higher Education (Belgium - http://www.stecrifa.ulg.ac.be/formahetice/)	Uses of Information and Communication Technologies for teaching and learning in Higher Education
	CoPeL (CoP e-learning)	Community of trainers and designers of training in e-learning (Luxembourg)	e-learning (methods, tools, products)
Nursing	TFT (“Transition Formation-Travail” – Transition between training and workplace)	Nurses and teachers responsible of the welcome of student nurses in hospitals (Belgium)	Support and exchanges for welcoming student and novice nurses in hospitals

Table 1: the eight studied CoPs

In PALETTE, each CoP is supported by a mediator who is a contact person between the project developers and the CoP members: she analyses the needs and urges of her CoP, presents the PALETTE services to the CoP members, organises initiation activities, proposes scenarios of use, collects feedbacks from the CoP members about the services, etc. In the present research, the mediators have also been involved as researchers for generating and analysing data, and designing the learning model and resources. Seven of the CoPs described above are francophone, so supported by francophone mediators, while only one is English speaking.

As mentioned earlier, the aim of our research is twofold:

- To develop a comprehensive model of learning and professional development of CoPs' members and to develop a model of the organisational development of CoPs (activities and issues of development);
- On the basis of the two models, to develop instruments which members of CoPs can use to analyse their learning and to manage the development of their CoP.

In this paper we focus on the development of the model of learning through a phenomenological approach. The instruments to develop are part of the PALETTE “learning and organisational resources” which aim at supporting CoPs for defining their needs of development and supporting their members' learning, and at assisting them in the choice, appropriation, and adaptation of technological services.

3. Methodology

In order to collaboratively develop and elaborate the model of learning and professional development in CoPs, we designed an approach that uses a collective phenomenographic (Marton & Booth, 1997) analysis of CoP members' accounts of actual learning experience within their CoPs. We take “learning experience” in a wide sense. Their learning may occur during an “event” (activity, training, etc.) or more informally, for example through discussions with other CoP members.

We followed the process described below:

1. Researchers asked individual members of their CoPs to describe an actual situation in which their involvement in their CoP led to the development of their professional knowledge in some way. Some questions suggested to the researchers are included in Appendix 1. These questions could either be asked in a face-to-face interview or in an email conversation. Where the situation described involved written exchanges (for example via email discussions or an on-line forum) that the researcher had access to, these have been included to supplement the CoP members' accounts. This process has initially been piloted with a small number of accounts in order to validate the approach. Then all the researchers collected learning accounts.

2. For each account, the researchers, where necessary, translated the account into English and provided information on the names and contact details of the CoP member involved. Due to the work involved in collecting and translating the accounts, we suggested a maximum of three accounts from each CoP. 21 accounts have been generated.

In each case, regardless of the method of elicitation used, the focus was on getting CoP members to describe an account of an actual situation in which they felt they had developed their knowledge within their CoP. This was essential if the interviews were to be suitable for phenomenographic analysis, which is reliant on interviews that (Ashworth & Lucas 2000; Åkerlind, 2005; Ashwin, 2006; Bowden, 2006; Trigwell, 2006):

- Focus on specific experience of a phenomenon for an individual;
- Are fairly open ended and focused on eliciting the meaning of that instance of the phenomenon to the individual;
- Involve the researcher 'bracketing' their previous experience.

3. The CoP members' accounts and, where appropriate, the extracts of the written exchanges, have been circulated to all of the task partners. Each partner undertook an initial analysis of the accounts and extracts and attempted to identify the qualitative differences in the types of learning taking place in the accounts (a common guide has been provided for this, see Appendix 2).

4. The task partners met to share their initial analysis of the accounts and to develop a model of learning and professional development based on their analysis of the qualitative differences in the types of learning activities occurring in the extracts.

5. During this discussion, the task partners also identified whether they needed to collect further data from the CoP members whose accounts had been analysed or possibly new accounts. It has been decided to collect some new accounts specifically from experienced CoP members.

6. The researchers contacted the CoP members and collect the data. Five new accounts have been generated. These have been circulated to the other researchers.

7. The researchers met to revise the model on the basis of the new data. Then, several email discussions occurred for revising the model.

8. On the basis of the final model, an iterative process is occurring. We are currently involved in this stage. The different versions of the model will inform us to generate different versions of resources to validate with the CoPs.

9. The instruments will be validated with selected CoPs and further amended based on this validation.

4. Results

The objective of the outcome space is to describe the qualitative variation in the way that CoP members experience learning in CoPs, or, in other terms, to describe the differences in the meanings that CoP members assign to learning events/experience.

At a face-to-face meeting, the researchers discussed the *qualitative variation* in the accounts of learning generated from the different CoPs. After an initial discussion of the data, it was agreed to focus on the qualitative variation in three aspects of the CoPs:

1. Qualitative differences in the reasons that CoP members had for participating and engaging in their CoPs;
2. Qualitative differences in perceptions of CoP processes;
3. Qualitative differences in perceptions of learning outcomes from CoPs.

This resulted in the differences set out in table below being identified by the researchers:

Differences in reasons for participation and engaging in a CoP	Differences in perception of CoP processes	Differences in perceptions of learning outcomes
<ul style="list-style-type: none"> - consolidating practice (reassure existing practice or gain new practice) <i>vs</i> challenging practice (to confront it) - evaluation <i>vs</i> no evaluation (=no judgement from the others) of individual practices - to meet people (socialize) <i>vs</i> to share objects, documents, etc. - explicit knowledge objective <i>vs</i> implicit knowledge objective 	<p>Learning occurs:</p> <ul style="list-style-type: none"> - through planned <i>vs</i> unplanned events - through formal <i>vs</i> informal situations - when expected <i>vs</i> unexpected - through distributed <i>vs</i> dyadic <i>vs</i> individual reflections/discussions - through face-to-face <i>vs</i> distant - through direct <i>vs</i> indirect participation of the member - from peers <i>vs</i> from experts 	<ul style="list-style-type: none"> - learning about oneself (my practice, skills, knowledge, etc.) <i>vs</i> about others - addition of knowledge (assimilation) <i>vs</i> change in the structure of thinking or doing (accommodation) - change in thinking (embrained) <i>vs</i> change in doing (embodied) - individual <i>vs</i> collective <i>vs</i> no reification - outcomes are expected <i>vs</i> unexpected

Table 2: Initial analysis of the qualitative variation in CoP members' accounts of knowledge development within their CoPs

Following the meeting, we re-examined the learning accounts to find extracts that illustrated the variation that was identified in table 2. Then, by iterating between the qualitative variation identified in table 2 and the identified quotes, we attempted to set out a structure for the qualitative variation that had the following characteristics (in line with phenomenographic approaches to data analysis, see Ashworth & Lucas, 2000; Åkerlind, 2005; Ashwin, 2006; Bowden, 2006; Trigwell, 2006):

1. There was an inclusive hierarchical relation between the categories of description *within* each of the columns of table 2.
2. That the smallest number of categories of description was used *within* each column, in order to describe the qualitative variation constituted.
3. There was a clear relation *between* each of the columns in table 2.
4. The variation between the categories of description was supported by the accounts of CoP members.

Based on this the following outcome space was developed:

Variation in reasons for participating in CoPs	Variation in perceptions of how learning occurs in CoPs	Variation in outcomes
1. To gain information about the domain of the CoP 2. To gain an insight into the knowledge/practices of others; 3. To share or exchange knowledge/practices; 4. To change individual knowledge/practices; 5. To change communal knowledge/practices.	1. Individual knowledge/practices are developed by learning from experts; 2. Individual knowledge/practices are developed by learning from others; 3. Individual knowledge/practices are developed by participating in collective activities; 4. Communal knowledge/practices are developed by participating in collective activities.	1. Individual Information; 2. Consolidation of individual knowledge; 3a. Change in individual knowledge/practices; 3b. Consolidation of communal knowledge/practices 4. Change in communal knowledge/practices. 5. Change in practices outside the CoP

Table 3: Analysis of the qualitative variation in CoP members' accounts of knowledge development within their CoPs

Following discussions between the researchers on the table 3, more specific outcome spaces related to learning in CoPs were proposed. They are generated through variation across two axes: a referential axis (which focuses on the meaning of the categories) and a structural axis (which focuses on what is in the foreground and background of each category).

1. Variation in reasons for participating in CoPs

1. To gain information about the domain of the CoP
2. To gain an insight into the knowledge/practices of others;
3. To share or exchange knowledge/practices;
4. To change individual knowledge/practices;
5. To change communal knowledge/practices.

As illustrations, here are some excerpts from transcripts of interviews. For example, the experience of a member of CoPeL comes within the first category: *“For me that was really the occasion to acquaint myself with what’s going on, whatever the different training methodologies, in the sense of, I mean, I needed to acquaint myself with what existed, about every mean to do training courses”*. Another member of CoPeL aimed at exchanging practices with other members: *“The main objectives were the exchanges of practices, trainings realisation, e-learning trainings conception and animation to exchange as much as possible knowledge and know-how, as tutor, for example. It is mainly about all these elements... mainly exchanges with other members who also develop e-learning trainings”*. This corresponds to the third category. Another member expressed her willingness to “evolve” thanks to feedbacks from other members: *“My objective is also to present what I’ve done, my work, and to get in return some critical comments that could make my work, my reasoning evolve”*. This corresponds to the fourth category.

Table 4 illustrates the structural and referential aspects of the variation in reasons for participating in a CoP. The structural variation focuses on what is in the foreground of the conception. This shifts from a focus on information about the CoP domain, to a focus on individual knowledge and/or practices, to a focus on communal knowledge and/or practices. This represents an inclusive hierarchy because a focus on communal knowledge/practices includes a focus on individual knowledge/practices and information about the CoP domain. However, information about the CoP domain does not include a focus on individual or communal knowledge practices. The referential aspect of variation focuses on the meaning of a conception. In Table 4 this shifts from a focus on receiving, to a focus on sharing, to a focus on changing. Again this represents an inclusive hierarchy.

The numbers in Table 4 show how each conception is situated in relation to its structural and referential aspects. For example, conception 1 is focused on *receiving information about the CoP Domain*, whereas conception 4 is focused on *changing communal knowledge/practices* (text in italics indicating the referential aspect of the variation and text in bold indicating the structural aspects of variation). Tables 5 and 6 can be read in the same way.

Structural Aspects	Referential Aspects		
	Receive	Share	Change
Information about the CoP Domain	1		
Individual knowledge/practices	2	3	4
Communal knowledge/practices			5

Table 4: The referential and structural aspects of the categories of reasons for engaging in CoPs

2. Variation in perceptions of how learning occurs in CoPs

1. Individual knowledge/practices are developed by learning from experts;
2. Individual knowledge/practices are developed by learning from others;
3. Individual knowledge/practices are developed by participating in collective activities;
4. Communal knowledge/practices are developed by participating in collective activities.

Members sometimes learn from experts of the domain (first category), as in the following example (from the Doctoral Programme CoP): *“I produced a research paper for my doctorate which was part of a bigger research project being conducted into the student experience. I had not been involved in the prior research, but showed my paper to the reader who was leading the project. He has now invited me to co-write the proposed journal article with him, based on both his research and mine. He is also using the theoretical framework which I used in my research as the framework for the whole paper, and has re-written his analysis around it”*. In the CoP Learn-Nett, a member felt to learn through discussions with peers during online discussions organised by the coordination (third category): *“And another thing that I think I’ve learned or another moment, it was the forum and the questions from the other tutors because anyway, as it was my first experience, I was asking myself questions but I didn’t know if it was on time or if because I was too stressed or I had too much expectations,*

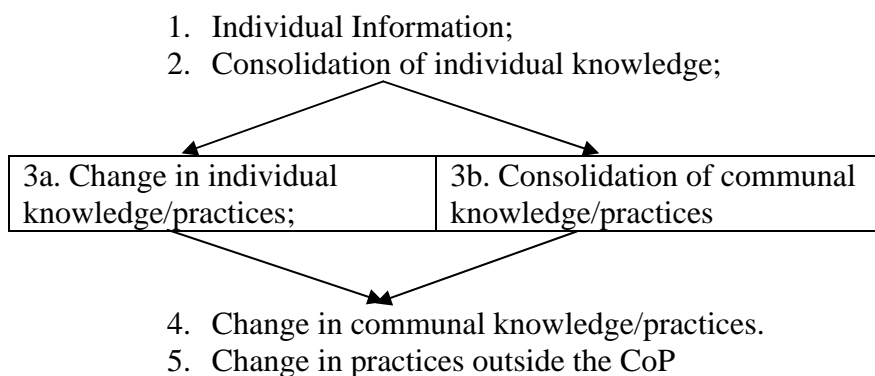
or if they were stupid questions... Anyway I had difficulties to evaluate my questioning, in what extent, so when I read the forum, the other questions that were close to mine, they were answering my own questions, it was very interesting because I could say “ok, I’m in the target, I’ve got the same kind of questions”, so it is reassuring, and that then allows to continue to evolve, you know, regarding the functioning”. Finally, as illustration of the fourth category, we can mention the example of a teaching nurse involved in the CoP TFT: “Meeting with colleagues (teachers in a Nurses School) for discussing the structure of the reports that the students write after periods of practice in the field. The meeting is organised with specific activities: exercise of correction of student’s reports, discussion on evaluation criteria, and collaborative elaboration of an evaluation scale”. The use of the common evaluation scale can be considered as a communal practice.

The structural and referential aspects of the variation in this outcome space could be expressed in the following form:

Structural Aspects	Referential Aspects		
	Learning from experts	Learning from others	Participating in collective activities
Individual knowledge/practices	1	2	3
Communal knowledge/practices			4

Table 5: The referential and structural aspects of the categories of perceptions of how learning occurs in CoPs

3. Variation in outcomes from learning in CoPs



As example of increase of individual information, members of the ePrep CoP explained to have learned how to use the web tools used by their CoP. Regarding the consolidation of individual knowledge, a member of the Doctoral Programme CoP said: “I am not sure my knowledge or skills have changed. It is more about the fact that I felt more confident in what I was saying, and that I was probably able to communicate it more succinctly. I also found it useful to say that this was something that had been explained to me from an experienced researcher – therefore giving it wider credibility”. The third category suggests that there are individual and communal knowledge and practices that can be changed or consolidated. This

shows through in the following example already mentioned earlier. In the CoP TFT, after many discussions on how to evaluate their students, nurses felt to have changed their individual practice of evaluation. But in the same time, they reified together their practices by elaborating a common evaluation framework. Then they produced a document aiming at giving a common frame to their individual evaluation practices. This document could finally be circulated outside the CoP as possible resource for other nurses. Thus, the possible impact of the document created may be considered as an example of the fifth category.

The structural and referential aspects of the variation in this outcome space could be expressed in the following form:

Structural Aspects	Referential Aspects		
	Information	Consolidation	Change
Personal knowledge/practices	1	2	3a
Communal knowledge/practices		3b	4
Knowledge/practices outside the CoP			5

Table 6: The referential and structural aspects of the categories of perceptions of learning outcomes from CoPs

Based on this outcome space, we now are developing resources for understanding and evaluating learning of those involved in CoPs. These resources will take the form of lists of relevant questions that moderators or members could address for situating the learning processes occurring within their CoP and suggestions of activities to set up for enabling learning. In this respect, we will develop case studies of individual CoP members 'profiles' in relation to the three outcome spaces. This would help to illustrate the outcome spaces and their significance for those involved in the development of CoPs. We will also identify contextual factors that appear to be related to the way in which CoP members are positioned in relation to each outcome space. For example, do particular types of on-line environments appear to be related to CoP members seeing their reasons for engaging with CoPs, the learning process in CoPs, or the learning outcomes from CoPs, in certain ways? Finding relations between the CoP environment and CoP members' perceptions of learning within CoPs will be certainly helpful in developing learning resources.

5. Discussion and perspectives

The main objective of our project is to develop useful learning resources for moderators and members of CoPs. From this point of view, the phenomenography approach has been very interesting and conducted to the elaboration of fruitful models of learning. However, we faced some issues regarding the fulfilment of the research:

1. Most of the researchers were not familiar with phenomenography. It is a methodological approach that seems not well known. Especially its epistemological approach is not well known as well as its management in practical terms. In addition, there is practically no literature resource in French on phenomenography while most of the researchers of our team are francophone. To address this issue, we planned a two hours face-to-face presentation of

the phenomenography basics with examples of studies. This is certainly too weak for the researchers to appropriate the research approach. A one or two day workshop would have maybe been more appropriate.

2. Our team and the studied CoPs are mainly francophone. This led us to translate transcripts of interviews and other research materials. The translations have maybe conducted to misrepresentations of some texts and thus to loss of sense. To address this issue we organised email discussions for the elaboration of the outcome spaces and debates that occurred. Writing often allows more reflection on what is expressed than oral debates. However, this means the discussion is rather slow and that misunderstandings could not be quickly resolved. We organised two oral meetings in six months, one face-to-face and one online, but more regular videoconference meetings would probably have enabled more debates and reflections.

3. Our team was also international (UK, Belgium, France, Luxembourg, Canada and Switzerland) and multidisciplinary (educational sciences, psychology, information management). Cohesion and agreement are not always easy to reach, even with partners who know each other from a long time. Again, there is a strong need to organise discussions and debates about how to conduct the research and the form of the results and models produced.

Otherwise, from the point of view of research on learning in CoPs, we addressed some of the questions of research identified by Johnson (2001): the understanding of learning within distributed communities and the moderators techniques to enable learning within such communities. In the next months, we will focus on the exploitation of the outcomes spaces for developing resources for those involved in CoPs and those who intend to set up CoPs in different domains. One of our main challenges will be to evaluate the possibility to generalise our results to other domains than teaching and training, as most of our CoPs come from these fields.

6. References

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Appendix 1 – Suggested Questions for Eliciting CoP Members’ Accounts

These questions are designed to elicit responses via email or an on-line discussion forum. If face-to-face interviews are preferred the questions can be used to guide the interview, with follow-up questions based upon the CoP members’ responses.

As part of the PALETTE project [give a formal introduction to the project if necessary], we are interested in examining whether your involvement in [name of CoP] has resulted in your professional development. To investigate this, we would like you to respond to the statement below. Whilst you will be identified in order to facilitate the collection of additional data, in the reporting the outcomes of this research the anonymity of all respondents will be preserved.

What are your objectives in participating in [name of CoP]? What are you trying to achieve by participating?

Please describe an actual situation in which your involvement in [name of CoP] has led to you developing your professional knowledge and/or skills in some way. The following questions may help you to generate your description but please ignore any questions that seem irrelevant and include any relevant details that are not covered by the questions.

Where did the situation occur (on-line, in a meeting, in a classroom, in a work context)?

What did you do in the situation?

Who else was involved in the situation? What role did they play?

How did your professional knowledge and/or skills change as a result of the situation?

What was it about the situation that made you feel that you had developed your professional knowledge and/or skills?

Appendix 2 – Common guide for the analysis of the learning accounts

The steps for the initial analysis we suggested are from the process suggested by Åkerlind (2005):

1. Select a number of the learning accounts to analyse. We would suggest that you start with five accounts from two or three different CoPs and then conduct further analysis if you are able.
2. Read through these accounts and familiarise yourself with the different accounts.
3. After familiarising yourself with the accounts, for each account answer the following questions:
 - a. When and where is the learning taking place?
 - b. Who is learning (an individual? a group? what is their role in the CoP?)
 - c. What is being learnt? (new knowledge? a skill? a new way of approaching a problem?)

- d. How does the learning environment support or hinder the learning (who else is involved? are any tools used to support the learning?)
 - e. What are the learning outcomes? (what has changed because of what has been learned?)
4. Compare the answer to each question that you have generated from the different accounts. What appear to be the key differences across the accounts in terms of each of the questions you have answered?
5. Bring your initial analysis to the meeting for the second stage of the process.