Supporting the Reification Process within a Community of Practice

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Abstract—This paper focuses on Did@cTIC, a CoP of university teachers, and addresses the issue of capitalizing their teaching experience as well as that of reifying their practices in the form of structured documents. This paper first presents the theoretical framework describing the reification process along with the instrumental approach for tool development. Then, the contextual background and the reification scenario with its tailored tools are presented. In the third and final part, the results from the reification scenario trial and the tools used in the trial are discussed.

Keywords—Community of practice, practice description, reification, instrumental approach, structured document

I. INTRODUCTION

Organizations have been implementing, even "cultivating" communities of practice (CoPs) to capitalize on information sharing and increase their members' experience and knowledge. In this context, it is crucial to support the process of reification. This implies managing collective knowledge, supporting collaborative activities and choosing the appropriate technological tools. These issues are addressed by the PALETTE project [2]. In this project, the points of view of both developers and CoPs’ members are interrelated through a distributed participatory design methodology to develop tools and Web services to support the needs of CoPs in terms of information sharing, learning, knowledge management, and collaboration.

The PALETTE project comprises 10 CoPs and some 50 researchers and developers. This paper focuses on a specific CoP, Did@cTIC, which is made up of university teachers. The issue of capitalizing their teaching experience is addressed herein, as well as that of reifying their practices in the form of structured documents.

This paper first examines the theoretical background. It describes the reification process along with the instrumental approach for tool development. In the second part, the contextual background presents the Did@cTIC CoP and the reification scenario with associated tools tailored to support its activity. The third and final part presents the results obtained from the trial of the reification scenario and the template tool.

II. THEORETICAL FRAMEWORK

A. Reification as part of CoP’s social learning process

Wenger [2] suggests that reification is central to every practice and crucial to social learning and production of meaning as it builds up in a community of practice. He defines reification as “the process of giving form to our experience by producing objects that conceal this experience into thingness” (p. 58). Reification is not just objectification and it does not end in an object. It covers “a wide range of processes that include making, designing, representing, naming, encoding, and describing, as well as perceiving, interpreting, using, reusing, decoding, and recasting” (p. 59). It is a process that can change our experience of the world by focussing our attention in a particular way and enabling new kinds of understanding. At the same time, reification refers to a process and its product. “Properly speaking, the products of reification are (...) reflections of these practices, tokens of vast expanses of human meanings” (p.61).

In this context, the questions are: How can CoP members convey their teaching practices, formalize them, and extract transferable knowledge from them? What is the suitable format to render teaching practices descriptions accessible? Which tools can support reification and how can CoP members appropriate these tools?

B. Rabardel’s instrumental approach

Instrumental genesis provides a theoretical framework to understand and assist the tool appropriation process. This approach is based on a fundamental concept: the instrument [3]. An instrument is not only an object, an artefact – or a tool – that is used by an actor in order to carry out an activity. It is a mediator between the actor and his/her activity [4]. According to Rabardel, an instrument is composed of two facets: an object and the actor’s mental schema that defines the use of the object in a certain context for a certain purpose (use schema). “An artefact only becomes an instrument through the subject’s activity. In this light, while an instrument is clearly a mediator between the...
subject and the object, it is also made up of the subject and the artefact.” [4]. As a mediator, the instrument is not neutral. Depending on its use, it can change the activity as well as the actor him/herself. In return, the actor may adapt or change the instrument if it is not suitable for its activity.

According to the instrumental approach the following questions have been formulated to guide the observation of the instrumental genesis within Did@cTIC. How does a CoP transform reification tools into instruments and change its activities? Are the reification tools used by Did@cTIC efficient instruments to support the reification of practices?

III. CONTEXTUAL BACKGROUND

Did@cTIC is composed of university teachers, a moderator and its assistant. Members aim to develop their professional teaching competence. They meet face to face on a regular basis to share and analyse their practices, develop common references and learn from each other. Before the CoP’s participation to the PALETTE project, reification was not systematic within Did@cTIC. No specific reification tool was used either.

A four stage participatory design methodology was elaborated by the PALETTE team to ensure close collaboration between developers and CoPs members in the design of tools. In the first stage, the CoPs context, needs and activity were analyzed and modelled. The tools were then characterized. In the second stage, tools were developed with related scenarios of use. In the third stage, the trialling of the tools and of the scenarios provided field information to pursue the development of the tools’ functionalities. The fourth stage concerns the dissemination of the services and scenarios to other CoPs. During the first stage, it was agreed that Didactic’s reification process should materialize in the form of structured documents presenting systematic and detailed teaching practices descriptions. A chain of tools was identified to support the reification process: the reification scenario, Amaya editor, Amaya templates, and DocReuse software.

A. Reification scenario: actions, operations and tools

The reification scenario includes two main actions with related operations: 1) Expression and sharing of practice: description of event; choice of significant event; 2) Seeking practice renewal: description of practice; analysis of practice; description of modified or new practice. The scenario also specifies the use of the tools to support or perform each operation. Three principles guided the design of this scenario. 1) Representation and reification of the teaching practices must allow for capitalization of shared practices. 2) The reification products must be transferable, accessible, and adaptable. 3) To facilitate reuse, teaching practices must be adaptable to new contexts.

B. Amaya templates for structured documents generation

The structured document refers to a document conforming to a pre-defined grammar or schema that describes its components and logical organisation. The structure is separated from its presentation which automates several issues such as document authoring, document publishing, and document querying and browsing. Did@cTIC used a template-based editing approach for generating structured documents. Two types of Amalya templates were generated with the Amaya editor to comply with the actions and operations of the reification scenario.

IV. TRIALLING THE REIFICATION SCENARIO AND THE AMAYA TEMPLATES

The reification scenario and the templates were trialled over nine months. Templates were used to take notes during Did@cTIC meetings. Data were collected through direct observation. Semi-directed interviews were conducted with the moderator, its assistant and the teachers.

A. Evolution of the templates

Two types of templates with specific structures were designed to comply with the reification scenario: 1) to describe and share problematic pedagogical situations, and 2) to analyse practices and make suggestions to improve them.

During the trial, collaboration between software developers, Did@cTIC moderator and her assistant led to the development of three versions of the templates. The first version of the templates was rapidly discarded because their structures were not detailed enough. In the second version, theoretical concepts were used to attain deeper analysis of practices. In the third version, the structures were revised to match daily pedagogical situations. This evolution eased note taking since the new structures followed the account of the CoP members more closely.

B. The ergonomics of note taking practice

Note taking practice consists in writing of information, often in an informal or unstructured manner. In a meeting, note taking aims at giving an account of the chronological development of the discussion. In order to follow the flow of conversation, the note taker uses abbreviations. After the meeting, notes are revised and formatted to summarize and organize the content in an intelligible document. The intention behind the note taking activity is not to provide a verbatim but to convey the meaning of the words.

According to the use of templates suggested in the reification scenario, the note taking activity was deeply modified. The intention and the practice of note taking were transformed. The intent was to capture only the ideas directly related to the teaching practices that can fit the structure of the template. Thus note taking became a content selection process. In terms of note taking practice, the
templates were not productive. Despite the effort made to match their structure with daily pedagogical situations, the verbal account of teaching practices didn’t follow the structure. The assistant had to find out the heading matching with the expressed ideas, inducing an important cognitive load to be managed concurrently with high speed typing skills and skillful file manipulation.

C. Moderation of meetings

Despite the fact that templates turned out to be difficult to handle by the assistant, their use by the CoP moderator was very productive. The templates’ structures had noticeable and positive effects on the preparation work before meetings, on the richness of her interventions during meetings, on the quality of the practices’ descriptions and analysis obtained. Templates’ structures helped her to prop up discussions, to orient debates, and to seek for the expression of deeper ideas, explicit thinking and refined analysis. During meetings, participants were not forced to decline their teaching practices according to the structures of the templates. They were used as a reference to ensure that all points were covered. For the moderators, it became an efficient instrument to obtain rigorous and systematic descriptions and analysis of teaching practices, which can be used for capitalization of new knowledge and knowledge management.

D. CoPs members point of view

Interviews with 10 teachers, members of Did@cTIC, showed that the use of the templates was efficient. Sharing of practices reassured them. They realised that they were all experiencing the same problems, they discovered new ways of “doing things” and felt that they had expanded their reflexive thinking on their practices. Half of them said that they radically changed certain aspects of their practices. Most of them thought that descriptions of practices generated with the templates were precise, matching what they had expressed. All were convinced that they participated in a productive activity.

V. DISCUSSION

The reification scenario, the technological tools and the structured documents were expected to improve the quality of the reification process, augment the efficiency of note taking and save time in preparing systematic practices descriptions and analysis. They were expected to become reification instruments [3] as they can change the practices and points of view. Results show a manifest improvement of meetings’ animation, the enhancement of the quality of the work accomplished by CoP members during meetings and the general satisfaction of the moderator and of the CoP members. But the template as a note taking tool has to be improved. Basically, it seems that an important part of the problem lies in the gap between the oral code of expression and the written one. With the template, note taking practice is confronted with an important challenge: grasping ideas structured according to the oral code of expression, then translating them into the written code and organize them according to a predefined structure. In the reification scenario, these three operations are telescoped. Notes from oral discussion are used as a direct input to obtain a structured document. Intermediary operations seem to be required to edit notes before generating structured documents. The use of dialogue document technology [5] might be an interesting solution to explore. Dialogue document presents an edited version of original conversation transcripts. Dialogue document tries to fill the gap between oral and written words by making accessible knowledge conveyed through to creative conversation. It makes explicit knowledge that underlies the intellectual activity process and it includes additional information to communicate non verbal messages and context elements. This is precisely the type of information needed by Did@cTIC to produce comprehensive and rigorous analysis of teaching practices. The main constraint of dialogue document technology is the cost related to edit conversations. This is why its use is limited to convey creative conversations that comprise creation of ideas, decision making and problem solving.

To summarize, Amaya templates constitute a single artifact used by three actors with three different intentions: the assistant who takes notes, the moderator who mediates the meetings, and the CoP members who share and describe practices guided by the template structure. Thus, templates constitute a different instrument for each of them. They developed three different use schemas in relation with three different intentions and activities. For the assistant, experiencing tensions and contradictions inherent to the gap between oral and written code, the template is a computer file to take notes and to produce structured documents. For the moderator, the template is a structure helping her before, during and after the meetings ensuring more productive work. For the CoP members, the template is a socio-cognitive tool helping them to reflect on their practices and to support the development of a sense of belonging while sharing their problems.

REFERENCES