Tutoring support structure, community, content and collaboration management systems and the role of distributed cognition

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Abstract
Performing distant teaching with constructivist scenarios means having an adequate learning environment that allows rich communication exchanges, integrates both support tools for learners and tutors (e.g. portfolio, journal) as well as knowledge management tools. Constructivist learning is demanding in terms of human tutoring since tutors have to guide the learner in his/her knowledge construction. An appropriate Tutoring Support Structure (TSS) is thus also a requirement for tutors to work in efficient conditions. The first analysis of a constructivist teaching experience using both an adequate learning environment and a Tutoring Support Structure reveals the important role distributed cognition plays in such teaching and learning strategies.

Reference
TUTORING SUPPORT STRUCTURE,
COMMUNITY, CONTENT AND COLLABORATION MANAGEMENT SYSTEMS
AND THE ROLE OF DISTRIBUTED COGNITION

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ABSTRACT
Performing distant teaching with constructivist scenarios means having an adequate learning environment that allows rich communication exchanges, integrates both support tools for learners and tutors (e.g. portfolio, journal) as well as knowledge management tools. Constructivist learning is demanding in terms of human tutoring since tutors have to guide the learner in his/her knowledge construction. An appropriate Tutoring Support Structure (TSS) is thus also a requirement for tutors to work in efficient conditions. The first analysis of a constructivist teaching experience using both an adequate learning environment and a Tutoring Support Structure reveals the important role distributed cognition plays in such teaching and learning strategies.

CONTEXT
This paper reflects a teaching experience within a master diploma (UTICEF: Utilisation des Technologies de l’Information et de la Communication pour l’Education et la Formation) addressed to university teachers who aim to introduce Internet in their teaching. The actual course represents approximately thirty working hours for students, is taught on a complete distant basis as a virtual seminar and lasts three weeks. The seminar splits into two phases: the first consists in reading and synthesizing theoretical documents according to guidelines (e.g. what is your personal position towards the author’s position?) related to course content. The second phase consists in a collaborative activity in which learners are asked to analyse and find solutions to a concrete case. Synchronous meetings and daily permanences are scheduled for regulation as well as students’ questions.

THEORETICAL ELEMENTS SURVEY
We will try now to define rapidly theoretical elements underlying this paper: C3MS, TSS and Distributed cognition.

What do C3MS consist in?
Community, Content and Collaboration Management Systems (C3MS) are “systems (a form of web portals) that support communities by giving them the possibility to interact (with tools like news exchange) and be aware of the rest of the community (through awareness tools), promote collaboration and that include also functionalities to manage dynamic and static content” (Schneider et al. 2002).

What does the TSS consist in?
Our personal experience as a tutor revealed the importance of elaborating a real structure to support the tutor in his/her tutoring. We thus developed a Tutoring Support Structure composed of seven modules organised on three levels. This TSS has been elaborated to deal
with the whole range of questions tutors may come up with during their tutoring: institutional, material and cognitive questions. 1) The institutional level deals with modules directly related to the institution’s responsibility: human resources, tutor training, tutor roles definition; 2) the material level deals with the learning environment’s choice, elaboration of practical tools (e.g. tutor and learner guides) and knowledge management issues; and finally, 3) the cognitive level provides learners with activity scaffolding tools (e.g. grammar to elaborate a pedagogical scenario).

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<tr>
<th>Levels</th>
<th>Modules</th>
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<td>Institutional</td>
<td>Human Resources</td>
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<td>Material</td>
<td>Choice of learning environment</td>
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<td>Cognitive</td>
<td>Activity scaffolding tools</td>
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Fig 1: The TSS developed, levels and modules

Distributed cognition: basic elements
Three key dimensions quoted by Schneider et al. (2002) in their definition of Community, Content and Collaboration Management Systems are: communicating, sharing, participating. These three dimensions are also identified by Hutchins (1995) as distributed cognition key dimensions. As a matter of fact, he notes that 1) communicating is the *sine qua non* to interact with someone, 2) “shared information is pooled information” (Bell & Winn, 2000), and 3) the “component of a distributed system must rely on each other to get the job done” (Bell & Winn, 2000).

PRACTICAL APPLICATION

In a web based learning environment, writing and reading play a central role both for learners and teachers (voice still being very seldom used). This written step being unavoidable, the community has, as a result, a written object – a cognitive artefact- that can be manipulated and will evolve from the beginning of the seminar to the end thanks to comments and rebuilding of the initial thought. As a matter of fact, the learner has to verbalise his/her thought in order to produce the easy-to-manipulate artefact. Can this knowledge co-construction effectively occur? If the answer is yes, is it at the crossroads of learning environment’s capacities and TSS implementation that it occurs?

How does distributed cognition intervene?
Distributed cognition intervenes in several places. First in the actual publishing of the individual thought rendering it accessible to the community. Second in the learning community commenting this initial thought. Third in the result: the outcome is neither the initial thought, neither the comments but both. Hutchins (1991: 306) has demonstrated that “cognitive properties of groups are produced by an interaction between structures internal to individuals and structures external to individuals. All human societies face cognitive tasks that are beyond the capabilities of any individual member”.
How does the learning environment intervene?

The learning environment intervenes also in several places. We shall first explain how the Community, Content and Collaboration Management System was practically implemented. This was done with a simple PostNuke portal organised in three sections:

- in the centre, news which consist in long term knowledge manageable information (activity scaffolding tools, general feedback, any information relevant to the community e.g. evaluation criteria);
- on the left side, blocs dealing with production (learner deliveries, personal feedbacks, authentic collaborative writing and communication tools);
- on the right side, blocs related to organisation (calendar, news management), practical guides (tutor guide) and metacognitive reflexion (journal).

Fig 2: A PostNuke portal for the C3MS

In our constructivist scenario, the learning environment’s fundamental places are the forum and the news engine since both are the tools conceived to structure initial posting and attached comments. The personal journal each member of the community keeps plays also a determinant role. It is very interesting when journal entries are open to the community, that any member has access to both the individual’s thought and his/her metacognitive process – the journal being usually used to reflect on one’s learning processes.

How does the TSS intervene?

Starting from the seven modules the TSS offers, human resources are organized in a helpdesk-like structure with three fronts – tutors, super-tutors and content provider- and two “external” actors: the teacher - responsible, strategically speaking, for the teaching - and the tutor manager – responsible for any tutor issue (e.g. adapting tutor guides according to field feedbacks). Roles attributed to tutors in the context of virtual seminar experienced are following:
- Animating synchronous regulation sessions;
- Guiding individual learner in his/her activity;
- Providing learners with regular feedbacks;
- Synthesizing and making available any information relevant to the community;
- Motivating learners when necessary;
- Discussing the learner’s learning on the basis of his/her journal entries;
- Evaluating final production and reflections on process.

The super-tutor being more expert than tutors in terms of content issues, tutoring strategies and learning and teaching strategies, his/her role will be to stimulate learners, coach novice tutors and identify recyclable information.

The Tutoring Support Structure thus also intervenes in several ways and places. We experienced a structure complementing tutors, super-tutors and content experts – teacher and content provider. While tutors act in the sense of helping learners to elaborate on their initial thought, the super-tutor suggests appropriate discussions to guide learners in their learning process. The super-tutor may stimulate appropriate discussions based on learners’ contributions he/she will have read in the forum and in the personal journal (e.g. provoke cognitive conflicts based on learners diverging positions, questioning issues that seem acquired, etc.).

Since such a learning strategy focuses on the learner’s production as well as on his/her reading and commenting the community’s productions, peers’ comments constitute a third point of view on a learner’s cognitive artefact.

So what?
When both – TSS actors – and learners play the game and do their part of the job, interactions are extremely rich for learners as well as for tutors, super-tutors or teachers. We have observed that if a TSS actor does not do his/her job a part of the richness of interactions is definitely lost. But at the same time, the learning environment and peer-learners assume great part of the process of knowledge co-construction thus complementing the tutor, super-tutor and teacher’s role. We thus observed that if a TSS actor does not do his/her job, richness is definitively lost but learners will be able to survive correctly contrary to what happens in closed platforms where learners do not have access to peers’ productions.

C3MS AND TSS: TOWARDS A CONSTRUCTIVIST APPROACH
Implementing both C3MS and a TSS in an appropriate learning environment makes constructivist learning reachable and affordable, particularly regarding human resources investments. According to the “Constructivist guide to software evaluation” elaborated at the University of Illinois, a constructivist learning environment should:
- Allow multiple entry points into the learning process;
- Provide some means of scaffolding for the learner to pass from exploration to knowledge construction;
- Activity should be motivating;
- Possibility of personalizing the platform;
- Provide meaningful feedback to user input;
- Criteria of evaluation are to be presented at the beginning of the activity;
- Provide the learner with metacognitive scaffolding tools;
- Participate in the realm of the domain;
- Connect to the user’s prior knowledge and experience;
- Engage in authentic activities;
- Offer collaboration support structure.
Constructivist learning should also engage the learner in a process of active construction, guide him/her not only in the knowledge and skill acquisition but also in the process of metacognitive reflexion about his/her way of learning. Finally, the discussion about the process of learning is as important as the final production itself (Jonassen 1991, Bednar 1991).

The first analysis of written questionnaires and oral interviews with learners reveals the Tutoring Support Structure implemented in a Community, Content and Collaboration Management System-like learning environment can really be constructivist. C3MS complements TSS: the first bringing the technical infrastructure for the second to develop human intelligence and conceptual infrastructure: both to the learner’s benefit. A C3MS learning environment together with a TSS can give a real constructivist environment that offers learners the possibility to experiment distributed cognition through active engagement in their knowledge construction process.

REFERENCES


Uticef Portal: http://tecfaseed.unige.ch/uticef