Experience feedback : merging distance education ICT with collaborative learning scenarios.

Fabrice Papy
Laboratoire Paragraphe
Université Paris VIII
2, rue de la Liberté F-93526 Saint-Denis
FRANCE
fabrice.papy@univ-paris8.fr

Mohamed Sidir
Laboratoire Savoirs et Socialisations
Université de Picardie Jules Vernes
10 rue Frédéric Petit F-80048 Amiens
FRANCE
sidir@u-picardie.fr

Abstract **– In this paper we try to highlight how in the context of e-learning in the university of Picardy Jules Verne, it was planned to propose activities based on collaborative work between learners. We will show how E-learning environment has move from a vision of the training considered as a process based on confrontation of an isolated cognitive system (learner's one) and of a knowledge and a know-how related to on line contents, with a teaching strategy centered on the division of knowledge. We thus wish to share our experiment and its consequences as for the practices of the tutors and the learners' training.**

I. INTRODUCTION

ICT Integration into human activities transform progressively and inescapably our society in a "Knowledge Society" more than an "Information Society". Obviously, this mutation needs new skills where the information management takes a place as important as the ability to collaborate by means of information and communication networks.

In distance education and e-learning environments, teachers and learners have to develop respectively the abilities which respond to the new needs of such society. Being able to provide dedicated teaching methods are now imperative and appears clearly in the scope of distance education.

Elaborating courses not inherited from conventional courses (e.g "frontal teaching situations"), modifying the teachers' behaviors constitute one of numerous significative stakes. One other, and not the least, is the essentiel intellectual affiliation of the e-students (and more generally the learners implied into learning environnements)..This intellectual affiliation consists of the specific cognitive signature of an effective "trade of student" well known in the field of french higher education works. This suggests, prior to any new attempts of knowledge acquisition, that the subjects (learners) have fully identified their own mental strategies which are the foundations to any teaching situation. Effectively, this mental position appears essential in distance education and determines often giving up or symptomatic difficulties of learners to undestand the role and the activities of "e-learners" mediated by ICT.

The software environments (INES, HyWebMap, K-WebOrganizer) designed and implemented into our laboratories are surely necessary as technological stones for preparing teachers and learners in distance education and more generally to the preparation of lifelong learning.

The INES (INtearctive E-learning System) system is used (and not only experimented) in some universities (Université de Picardie Jules Verne, Université Paris 8, Université de Polynésie) and has demonstrated its efficiency and its complete adequation with the goals of e-learning [20][21].

Nowadays, HyWebMap an oriented software to build personal spaces of knowledge, freely downloadable, is frequently used by teachers, students in the context of research assistance, technological watch or in order to collect and organize information extracted from the Web.

The electronic documents produced by users are shareable by the means of the collaborative system K-WebOrganizer [25] K-Web Organizer allows users to store, search and download HyWebMap documents [26][27].

But the technological responses may not be the major contribution to extremely large education problems. Indeed, the learners' cognitive behavior cannot be underestimated and the experiences we have led last year, highlight the importance of teaching scenarios adapted to the context of e-learning. These scenarios suggest elementary tasks proposed to the e-learners where e-teachers and e-tutors' interaction, digital documents, software (chat, public and private forums, knowledges bases,...) and education progression are totally scenarised where each step of interaction are clearly defined. It's the results of an original experience we propose in our paper.

Now, E-learning an e-training softwares, teaching digital environment systems know a constant growth. Nowadays, knowledges mediated by ICT are accessible whenever and wherever. The e-learning approach, more and more, impose an obvious adaptation of the methods of teaching used in conventional education in order to adapt them to the process of mutation that our society is living.

For a long time, the cognitive tasks in learners' groups is an important object in the field of learning experimentations. Today, ICT based networks propose of course, similar situations but also original ones which demand specific analyses. Our article presents the collaborative strategies deployed in teaching scenarios focuses on the co-building of knowledges by the means of mediated interactive processes. We describe an original experience based upon teaching scenarios focused on the collaborative activities determined by a fully oriented collaboration project that the e-learners had to execute (project specification). Through this experience, we have completely revised our initial position according to which we considered that the teaching in an e-learning environment was essentially a confrontation among the individual cognitive system of the e-learning and

knowledge (and know-how) related to on line content and individual tutoring.

A pedagogical design based upon a constructivist model, places the learner in the center from the process of training taking into account his personal characterics [14], and the importance of the context of knowledge acquisition [12] [15]. This constructivist approach argues that the learners have a decisive role into the different processes implied by the construction of his knowledges [6].

The learning exists because a permanent interaction exists between the learners and their cognitive environment. New knowledges are tested through creation, collaboration and share cognitive activities [2] which participate to social interaction [10][22][23].

In such context, Vygotsky in the 30's have highlighted that the learning "in situation" reveals the guide role played by teachers. The teachers have a decisive place in the learning process because they allow the learners to become aware of his own cognitive processes [5].

From there, it seemed useful to us to test these collaborative activities where the technologies are means before all to design an activity where a learning environment similar to the expectations' learners.

II. E-LEARNING ENVIRONMENT IN UNIVERSITY OF PICARDIE JULES VERNE

2.1 Context

The E-learning environment used at the University of Picardy Jules Verne (UPJV) was set up since 1995 [20]. It proposes on line pedagogical content dedicated to a progressive self-training [1] and tutoring services which constitutes the major part. Currently, this environment proposes height degrees for more than 700 e-learners (in and out of France).

The tutoring mission is defined as an assistance for the e-learner when he meets various difficulties. But such pedagogical model, implies an unidirectional knowledge transmission : from the tutor to the e-learner and the time for analyzing each e-learner's activity is prohibitive. [Cochard, 03] et [Peccoud, 00] have highlighted the cost of this personalized follow-up. Moreover, the evaluation results have shown that the exchanges of "questions-answers" between e-learners and tutors are a very restrictive learning process approach.

From there, it seems useful to propose the e-learners some collaborative pedagogical scenarios. We choose an activities approach which replaces the traditional approach based upon the content and objectives model. An objective, contents, communication (forum, chat) and coordination tools (task list, postit, diary) are associated to each collaborative activity. A specific environment dedicatet to each e-elearner's group was developed and integrated to our INES application [20].

2.2 Communities of Practices and Collaborative pedagogical scenarios

The question of the e-elearner isolation, frequently discussed in literature doesn't appear in our e-trainings.

Indeed, the analysis of INES forums logs showed that e-learners have produced a kind of self-tutoring generated by e-learners themselves. At the beginning of the e-training, the e-learners don't know each other but organize themselves in learning communities of practice. Of course, they use the assistance of the tutors but practice simultaneously a kind of mutual assistance. The e-learner may be a tutor for another e-learner or can ask some advises from another circonstancial "e-learner-tutor". This process develops an obvious self-confidence [11]. It allows to increase the learning ability by the development of their teaching ability [3]. So, the forum logs show friendly relations among the e-learners. Despite few studies about such relationships, it appears that such inter-individual relationships are extremely important [19]. This idea of a mutual aid and more generally the emergence of social relationships appears as fundamental in this new dynamics of learnings acquisition (Winger et al. 2000).

This fact allows the tutors to transform their pedagogical in a "reactive tutoring" [7]. This reactive tutoring consists of regular interventions into the forums and spontaneous virtual grouping by chats. In other words, the initial role of the tutor was transformed to become a e-learner support to build new learnings.

Our experience reveals that these spontaneous communities of practice have a positive effect on the learning of each individual when the role of the tutor is limited to catalyse and regulate knowledge exchanges and sharings.

The existence of such communities have facilitated the installation of our pedagogical scenarios based upon collaborative activites among e-learners.

III. SCENARIOS

3.1 Our fully on-line «Multimedia Information System» graduate school

This graduate school exists since 1998. This training proposes two multimedia specializations to learners with a identified professional goal :
- multimedia projects management,
- multimedia applications developers.

Our experimentation was concerned only by the "Interface" module where the pedagogical scenarios were elaborated specifically for cooperation and collaboration.

3. 2. The E-learners public

The e-learners concerned by this experimentation where geographically located in different places in France (22 learners) and abroad (7 learners). They were from 25 years old to 47 years old and prepare the graduate school simultaneously to professional activities. It's globally their first e-training experience but they are familiar with the INES platform and standard ICT (cf. table 1).

Table 1 :Experimentation 1	
Training	MIS Graduate School
Duration	June – Dec 2003
Groups	10
E-learners	29 (9 women, 20 men)

Most of the e-learners knows each others because they use INES forums. They have developed friendly relations and very fastly 10 groups were created.

3.2 Activities in the center of the environment

We have use a pedagogical model inspired from Rope Koper's works (Koper, 2001). His works place the activities and not the learning objects in the center of the learning environment. Current works in EML framework (Educational Modelling Languages) proposes models to design such environments.

Our "interface" module used for the experimentation is built around a project where the main object consists of elaborating a dynamic environment with a client/server architecture. to manage an online information center. This project is subdivided in several activities planified on 6 months where collaboration is obligatory.

The described activities are characterized by some invariants :
-    each activity is associated with pedagogical resources specifically developed for this activity and available from the INES platform.
-    Each activity available is described and associated with a pedagogical goal. At the issue of this activity "you wil be able to…"
-    Each activity is characterized by a guide to planify collectives elaborations and by tools to realize it.
-    each activity ends with a collective analysis of the production of the group through mails, chats and forums among the e-learners and the tutors. This analysis determine the next activity.

- Activity 1 : collective writing of the project specifications. After a brainstorming step, several draft versions are produced to result in the final version of the specification. The document is written in a collaborative mode (tasks division). The forum (collaborative writing) and the chats (drafts writing) where IC tools used by the e-learners. The role of the tutor is important, he takes place in the forum to augment exchanges among members of a same group, regulate e-learners' actions and stimulate motivations.

- Activity 2 : Relational Schema and implementation with the MySQL DBMS (on line).

- Activity 3 : Web site design, development (PHP) and on line tests.

In the first and the second activities, the e-learners use their own knowledges (frequently professional). When they request the tutor, it is often for technical advises.

The time distribution of the 3 activities are clearly scheduled. The activities are distant and each one is validated on line.

IV. WHAT DO THE E-LEARNERS THINK ABOUT THE EXPERIMENTATION ?

Many comments found into the forums before and after the experimentation show the positive impact of these pedagogical scenarios :

« Salut XXX, je viens de prendre connaissance des nouvelles modalités du module T4, je trouve ça assez intéressant de faire ça par équipe mais ça demande pas mal d'organisation, ….»
« …le principe de travailler à plusieurs est intéressant à développer au sein de cette plate-forme car il correspond à la réalité du monde du travail… ».
« …c'est intéressant qu'on travaille ensemble, j'ai pu voir ton site personnel, tu es très doué côté design. Moi je débute tu pourras me donner des conseils ! A + »
The collaboration and the communication have confirmed e-learners' motivation essential to realize distant tasks. No e-learner have given up during the duration of the e-training.
E-learner evaluation have showed a level better than previous years despite some disparities. We have constated that e-learners who obtained best results are those which were well engaged in the collaborative process.
The interviews have clearly revealed that some e-learners have learned the group working bases. They agree that implication and emotional relationships are decisive into the group.
It's an obvious to consider the e-learners as autonomous but the social presence brought by the tutor is highly recommended. The E-learners appreciate his interventions when they are regular. They participate to a good level of exchanges into the group and maintain a stimulating knowledge sharings [8].

V. CONCLUSION

Collaborative learning consists of pedagogical methods which lead learners to work together through tasks elaborated in such goal. There is Collaborative learning for a subject when the knowledge acquisition results from the internalization of another person's point of view [9].
Despite certains limits, our experimentation reveals effective advantages related to the methodology of e-learning focused on activities. Of course, the experimentation was globally positive (for the whole e-learners' group) and allow the tutors to re-evaluate their pedagogical approach strongly attached to "presential learning". Nevertheless, the tutors have understood that the e-learning trainings require dedicated communicational and pedagogical efforts and a permanent vigilance, because collaborative e-learning doesn't mean effective collaboration. Creating e-learners' groups lead to unwanted effects [17] : tasks division without interaction nor conformation, the predominance of a leader who organizes the delegation (delegation logic), emotional relationships are often more visible than learning. communicative demotivation, constant opposition during collaboration process,…

A consistent mediation by experimented tutors is essential to avoid such "group's side effects" during collaboration processes.

Our experimentation's context and its duration are a bit short to elaborate a massive collaborative learning project (with higher education public). Now, our work is in progress with 12 groups of 3 e-learners each one. We try to identify the collaboration conditions of an initial pedagogical scenario which will provide the frame of the whole effort. How coordonate collaboration effort and define interchance processes among tutor-learner and learner-learner ? What are the evaluation and analysis methods in this learning process ? What are the contributions of ICT in this collaborative e-learning framework ?

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