Foot-Printing E-Learners’ Activity: A First Step to Help their Appropriation of the Training System?

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ABSTRACT

Information and communication technologies have invaded the field of training, though their performances have been judged by companies to be insufficient. Among the origins of this state of affairs, the author considers that the lack of knowledge of what happens in a “real use situation” plays an important role. Indeed, understanding what is involved in learners-system interactions is fundamental to improve the system appropriation and its efficient usage. This appropriation is a dual necessity for learners as they must take over the offered possibilities of interactions and acquire the necessary knowledge. As appropriation is made through offered interactions, the author considers computer interactions traces as potential appropriation facilitators. This conceptual article presents bibliographical research concerning the use of computer interactions traces and proposes a classification of ‘tracing systems’. Additionally, the links between these works and the process of appropriation in an instrumented training situation is provided, while the author also presents an experimental study conducted on the role of traces of interactions in a collaborative mediated task by using a numerical environment.

Keywords: Information Technology, Intelligent Learning Environments, Knowledge Reuse, Learner-Computer Interactions Traces, Numerical Environment

INTRODUCTION

As in innumerable other fields of activity, information and communication technologies have invaded the field of teaching and training. A recent study of Bersin (2006) shows that North American industries’ budget for e-learning and instrumented training amounts to 46.6 billion dollars. The amount spent on external technologies, products and services represents around 14.8 billion dollars. The amount concerned with tele-learning (Learning Management Systems - LMS) represents 3 to 7% of the total expenditure on training in an organisation. In the last few years, a large number of big industrial groups have tried to improve and consolidate the usage that is made of LMSs. According to (Bersin, 2006), in the next 12 months, a third of companies plan to increase the number of systems used within their organisations. Virtual class systems have been adopted in numerous sectors. In Bersin (2006) we can read that 60%...
of the companies listed in the study use virtual classes for company training. In another study from the same group, published in January 2006, the global budget of the LMSs was 480 million dollars.

Moreover, the performances of e-learning solutions have up until now, been judged to be insufficient by the companies. In particular, they do not have a real idea of the results of the implementation of such solutions. Among the reasons for this state of affairs, we think that a lack of knowledge of what happens in a “real use situation” plays an important role. In fact, an understanding of what is involved in the interaction between learner(s) and system(s) is fundamental for improving the appropriation of these systems and for their efficient use. The researchers in the technology enhanced learning field, who study instrumented learning situations, discover flaws in the conceptualization of interactions between learner(s) and system(s), particularly as multiple learners are involved with them: the learner himself, the system designer etc. In this context, it seems to us that the fact of tracing the learner-environment interactions is a very interesting path to follow, so that they can be later used to help learners appropriate the system. Besides, it appears to be both relevant and urgent that a typology is proposed for computer assisted learning situations which already use computer traces of the interactions between learner(s) and system(s). This is precisely what this conceptual article is concerned with.

We will firstly present the context of the intelligent learning environments, followed by a classification of the systems tracing interactions. We will finally explain how traces can facilitate the learner’s appropriation of the environment.

TECHNOLOGY ENHANCED LEARNING

The research field on instrumented learning and digital environments designed with the aim of ‘aiding human learning; that is to say, increasing the learner’s knowledge’ (Tchounikine, 2002, p. 3). This type of environment enables learners to interact with others, to interact with artificial agents, to gain access to all types of teaching elements which are the resources for the learning activity. They aim to facilitate the building up of a sense, in particular through the collective processes where a sense emerges.

We consider that the question of learner’s appropriation of this type of environment is central. In fact, intelligent learning environments are complex environments that are rarely ‘intuitive’ despite the efforts of their designers. The question of their appropriation and their ‘recognition’ as instruments by learners, fundamentally motivated our work.

The learners spontaneously ‘instrument’ their activity via their digital environment, using the possibilities of ‘available interactions’ as a basis. Traces of these interactions should therefore ‘naturally’ reveal this appropriation to ‘provide a sense’ for learners.

In the case of an activity which instruments interactions, as it is the case in a situation where an intelligent learning environment is used, a part of these interactions becomes tangible and likely to be observed both by the human (learner) and by the environment (system). A certain number of digital environments make it possible to retain computer traces of interactions which are tangible for a human observer, whether he is the one observed (learner, person who produces traces) and/or an observer of the activity in progress, for example an analyst of the situation. The use of these traces for the means of analysis is quite common in the field of intelligent learning environments when the observer is a teacher or a designer of educative activities (learner follow-up, tutoring), whereas it is an exception when the observer is himself the producer. Therefore, although the theoretical challenges, in terms of design of ‘user centred’ environments are very important, the research field concerning the ‘re-use’ of experience in the form of a visualization of interaction traces is a field of research that has seldom been
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