Learning didactic of the use of the computer
as a teaching tool

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Extended Abstract

People often discuss about the importance of the use of computers in education. We realize that there is a consensus that the several agents involved in the teaching process (like as school directors, teachers, researchers and students) have to prepare themselves to implement a new educational paradigm. This educational paradigm must be based on the association between teaching strategies and the different available technological resources. This new paradigm certainly will require the teacher to integrate computer science into his practical classes. In function of this, the teacher has to be trained in the use of the new technologies, more specifically, in the use of new teaching strategies using computers. Distance education is an alternative to people qualification since it facilitates teachers' training without significant damage of their diary activities.

Authority tools are a way to provide distance learning since they allow to the teacher to prepare his classes, and to the student of following them when available in a network. However, in most of these tools, teaching is conceived as a mere act of " passing " information and the teacher's knowledge for the student, through repetitive exercises. We agree with [1] who considers learning a constructive process where it is fundamental the concept of problem solving. To teach through the solution of problems is the most natural, more adapted to the way as the people learn [2].

It is inside of this context of urgent needs of development of distance learning methodologies based on the cooperative solution of problems, that we developed a learning environment for teaching didactics of the use of computers as an educational tool (the CADI system : Cooperative and Adaptative Learning of Didactic). This environment is inserted in the ambit of the project of research *TeleAmbiente*, financed by National Research Council (CNPq) from Brazil. The user of our system is a *teacher-student*: a teacher who is student of a course in didatic where the computer is a tool for teaching. In particular, our work consists in developing a learning system, which is focus on collaborative problem solving among *teacher-students*.

Human factors related to the *teacher-student´s* reflexive attitude have motivated our work through the use of scenarios as a representation language during problem solving. In our system, scenarios represent prototype situations and they are used to help the *teacher-student* both to identify and formalize a problem he faces to and to express a possible solution. During the identification of a problem, the *teacher-student* can access a set of scenarios that describe situations of similar problems in order to induce him to ask himself questions like "what caused this problem?", "how can I prevent a problem from occurring again?" and "how can I break down this problem into simpler problems?". When we ask ourselves questions, we integrate new information into our memory, tie old information together in new ways and correct our faulty generalization [5]. Scenarios are also used to express a possible solution. When building a solution, the *teacher-student* focus on what scenarios are associated to this solution. CADI offers him a scenario editor to build these scenarios. During a scenario creation, the *teacher-student* can collaborate with other *teacher-student*s, asking questions, suggestions or implications about his solution. In addition, the *teacher-student* can access a set of scenarios that describe situations of similar solutions in order to induce him to ask himself questions like "what are the motivations of the students in this scenario?" and "how the students behave themselves with this solution?". The scenarios are represented in agreement with UML [3], [4].

CADI is based on intelligent agents, which are responsible for making good questions to the *teacher-student*, searching interesting scenarios to show, suggesting assistance, like collaboration, texts and so on. Such suggestions are based on *teacher-student*´s interaction in cooperative problem solving situations.

The multidisciplinary dimension of this work is characterized by the studies done in divers area of knowledge, from pedagogy and cognitive ergonomics to information systems and artificial intelligence, we are searching for solutions that fit the new educational paradigm we believe is raising nowadays.

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