E-mediation: a proposal of a miner tool for virtual learning environment

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Abstract: the application of data mining techniques on educational systems has received increased attention on research community. The data from courses management systems are a rich source for knowledge discovery, where data mining techniques can be applied, such as: classification, clustering, association rules and mining of text patterns. The results may be useful for evaluation and development educational systems features and analysis of students learning profile. This way, the present paper proposes the development of a data mining tool aim to aid the teacher mediation process in e-learning environments.

Keywords: e-learning, educational data mining, e-mediation, text mining.

1. Introduction

The education systems have been innovative with the use of new technologies, especially those based on Web. E-learning is a reality, however monitoring the profile of individual student's learning is impaired in relation to the traditional model of education (Romero, 2007). In the traditional model of education the teacher get a feedback of the student learning through a face to face interaction process (Sheard, 2003). Already in the virtual model that is not possible, so the course managers systems should offer some technique to monitoring of student learning. The feedback about student learning comportment are essential for the teacher actions definition during your mediation process. The learning mediation is a fundamental concept on any education activity. From a pedagogical view the role of the mediator is important not only for the development of knowledge but also for the autonomy of the student.

1 Support by CNPQ.
Thus, this work presents a proposal for a tool to extract learning evidences from courses management systems environments, with the application of data mining techniques (Feldman, 2006). In the next sections, we shall present some theoretical concepts adopted in the work.

2. Learning mediation

Learning mediation is a dynamic process consisting of tools and signs which are able to model actions that are used by learners in their learning behavior. The mediation process aim to internalization of knowledge (Wertsch, 1998), internalization indicates knowledge aquisition that comes from outside to inside of the person.

The knowledge aquisition is followed by a transformation and meaning, not simply a literal transmission of content (Smolka, 2000). This activity includes three processes: control, auto control and auto regulation, the internalization occurs between the stages auto control and auto regulation. The original study of Diaz (1993) identified the categories through empirical research that involved the observation of children in the resolution of a specific task, focusing on two main categories: auto control and auto regulation.

The present study is based on Social Development Theory (Vygotsky, 1978), where historical and social interaction play a fundamental role in the development of cognition. Moreover, this work is based on studies of Wertsch (1998), Diaz (1993) and Passerino (2000).

3. Educational Data Mining

Web-based educational systems storing datasets generated from users interactions which contain relevant and useful information for educators and students. Therefore, the application of data mining techniques on education systems can bring benefits to the improvement of various aspects of these systems (Romero, 2007). The automatic analysis of learner interaction through data mining techniques can to provide environments of courses management systems more effective (Dringus, 2005). The useful information extracted can be used to aid teachers to improve or evaluate your teaching approaches.

The actually researchs on educational data mining have been oriented to provide information for educators, students or administrators of educational institutions. The students have interest in recommendations about learning process. For educators and administrators the interest is in discovery knowledge, each one with especific objective.
4. e-Mediation tool

The tool proposed in this paper uses data mining techniques, especially text mining techniques (Feldman, 2006) on chat sessions of the course management systems environments. The text mining techniques aim to find concepts that characterize the processes of control, auto control and auto regulation activities during the learning mediation.

The tool will be applied on data obtained from Moodle (Dougiamas, 2003) data sources courses. The objective of this study is finding learning mediation evidences in the Moodle environment.

5. Conclusions

In this paper we propose the development of a tool for automatic extraction of concepts from chats in courses management systems through the application of text mining techniques. Educational Data Mining – EDM, is an emerging research area that help educators in developing educational material and in the learning mediation process.

References

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