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Monitoring System to Help an e-Learning Institution to Manage Tutors and Student Data Retrieved from Moodle

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Abstract: E-learning has become an excellent alternative for those who want to align studies, professional qualification, and career. Several courses offered in this modality use the Virtual Learning Environment (VLE) known as Moodle to support the process of teaching and learning. However, some managerial needs are not optimized in this VLE, especially regarding the administration of students and tutors information. Because of this, the monitoring process carried out by the work teams in the educational institutions might become expensive and time-consuming. Although the data is in a single database in Moodle, it is not a practical activity retrieving the information. Therefore, in face of this reality, the Open University of Brazilian National Health System in partnership with the Federal University of Maranhão (UNA-SUS/UFMA) and other higher education institutions developed the Monitoring System, a tool that makes easier the decision-making and the didactic strategies elaboration using data from Moodle. This paper aims to present the Monitoring System, that enabled data management in a faster and online way, requiring less effort of the monitoring team to generate useful information for a satisfactory course control and progress, resulting in a significant reduction in the time spent by UNA-SUS/UFMA monitoring team to manage students and tutors data

Keywords: Virtual learning environment, Moodle, Monitoring System.

1. Introduction

With the worldwide advancement of technology, the openness to create educational alternatives and new forms of learning has become possible, such as e-Learning modality. This educational model has arisen as an appropriate and essential alternative for a part of the population who cannot participate in face-to-face courses due to distance limitations or lack of time (Frota et al., 2015).

According to Groenwold & Knol (2013), the number of e-Learning courses is likely to increase over the coming years, as well as it is expected an equal rise in the development of Virtual Learning Environments (VLE) that are aimed at providing support during the teaching learning process in e-Learning initiatives (Maciel, 2013). Currently, Moodle is one of the most used VLE. Considering this context, this paper presents a solution for problems related to the administration of data retrieved from Moodle.

In the Northeast of Brazil, the Open University of Brazilian National Health System that works in partnership with the Federal University of Maranhão (UNA-SUS/UFMA) has experienced some difficulties in managing information retrieved from Moodle. To solve the problems, the institution has created a Monitoring System that enables professionals to process tutors and students' data collected at the Moodle in a faster and easier manner. This paper aims to present this Monitoring System as an alternative to improve the monitoring of students and tutors in e-learning courses that use Moodle as VLE, helping to prevent evasion.

2. Theoretical Background

Educational processes in distance learning when based on Information and Communication Technologies (ICT) use - educational modality known as e-Learning - are facilitated and improved through VLE, such as Moodle (Tobase, Guareschi & Frias, 2013; Hannel, Lima & Descalço, 2016).

Moodle (Modular Object-Oriented Distance Learning) is a learning platform developed for teachers and/or tutors, students and administrators as a tool for interaction, with a focus on creating personalized learning environments (Serra et al., 2016).

It is composed of several tools that enable the publication, interaction and evaluation of resources and activities in the learning process, such as Online Books, Labels, Wikis, Chats, Forums, Diaries, Questionnaires, Tasks, among others (Kraemer, 2015).

It also allows the extraction of data for electronic monitoring of the student, from the manual survey of quantitative data, such as student time in the virtual environment, what was accessed and the frequency with which an element was accessed (Schneider, Mallmann & Franco, 2015). This information, however, is diffuse in the Moodle pages, demanding more time and work from a technical team to monitor them during the courses.

According to the latest analytical report of Distance Education in Brazil, the dropout rate is approximately 25% in authorized courses (Brazilian Association for Distance Education, 2015). To reduce this indicator, it is necessary to implement monitoring strategies in a continuous way, with systematic use of prior planning, allowing the development of skills through the resolution of problematic situations in the teaching-learning process (Schneider, Mallmann & Franco, 2015; Serra et al., 2016). Monitoring is an essential task to investigate the limiting situations and the advances of teaching-learning in the distance modality.

3. Monitoring System for Moodle VLE

The Monitoring System is a complement to the academic management of UNA-SUS/UFMA Moodle, which generates detailed reports, according to the needs of the institutions of higher education. Using it makes possible the monitoring of student's notes, access time in Moodle, postings of activities, the percentage of messages exchanged between students and tutors, participations in forums, etc., qualifying the information that is relevant to the evaluation and satisfactory progress of the courses, in a faster and more accurate way.

The user accesses the system, visualizes all available courses and modules and when choosing a course or module, several types of reports are presented containing: information about students' and tutor's journals, quizzes, discussion forums, reports of student participation in the Final Paper stage, frequency of access, messages exchanged between students and tutors, general report, an area to view students' notes similar to an academic record, among others.

4. Technical View of the Monitoring System

The system was developed using PHP 5.x, HMTL, CSS, JavaScript and the JQuery libraries for the interface. The database manager used is MySQL, the same manager used by Moodle. In the current version of the Monitoring System, versions 1.9 to 2.9 of Moodle are supported, and there are changes of business rules between these versions.

In addition to supporting the various versions of Moodle, it allows the integration of the data obtained from the versions in a single environment, so it is possible to consult data from several environments in a single application. This justification can best be visualized in figure 1. All access to the database query used is shared with Moodle, thus facilitating the integration of information.

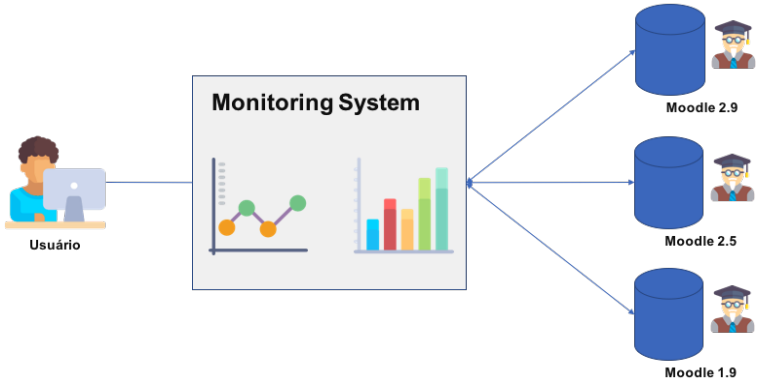

Figure 1. Integration with Moodle

5. Final Considerations

Moodle has been widely used in distance education since it enables interaction among those involved in the learning process (tutors, professors and students). It also allows the follow-up of students through educational indicators. However, it provides important data in different areas, and when it is necessary to have an overview of students this view takes twice as long, because all data extraction is done manually.

The Monitoring System integrated to Moodle, developed by UNA-SUS/UFMA in partnership with other higher education institutions, is an efficient tool for controlling the performance of students and tutors. It provides the possibility to monitor students and tutors in Moodle version 1.9 and 2.9, in a faster and online manner, requiring less effort by the monitoring team to generate useful information for satisfactory course control and progress.

With the Monitoring System the information is presented in a general overview of students and teachers, with minimal effort, compared to directly consulting in moodle. The implementation of this system resulted in a significant reduction of the time spent by the UNA-SUS/UFMA monitoring team to generate useful data. It also allowed a better and greater monitoring of the access and performance of the students and tutors in the graduate courses offered by the institution.

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