Assessment of virtual learning environments
Moodle, TelEduc, and Tidia - Ae: a comparative study derived from students’ experiences in distance and traditional teaching

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Abstract: The following paper presents results from an assessment and its application in Moodle, TelEduc and Tidia – Ae environments. The surveys and analyses were conducted by graduate students of the Federal University of Santa Maria. It aimed to use the three distinct environments in order to wide the experiences with virtual learning environments (VLEs) as well as develop conditions to perform critical evaluations. The results were also submitted to DL administrators and IT teams for improvement suggestions in VLEs used in the Institution (Moodle in DL and TelEduc in traditional teaching).

Keywords: Distance learning, virtual learning environments, assessment.

1. Introduction

Throughout the past decades, distance learning (DL) increased, favoring the spread of access to education at different levels and forms of interaction and learning. The processes are more and more articulated through virtual learning environments (VLE). In the academic context, such reality provides new opportunities for educators to share with students the access to information and work in a cooperative way. Thus, the advent of communication and information technologies (CITs) brought new perspectives for DL, leading the Teaching Institutions, companies, and professionals of Instruction Design to dedicate to the development of distance learning courses and VLE. According to (Primo, 2008), In despite of the new technologies offer more and more learning resources, the planning disorganization in presenting multimedia material and the use of
inaccurate tools in a VLE might cause disorientation in the user, even leading to lack of enthusiasm to commit to the proposed activity.

Whenever it is decided for the use of a VLE, it is necessary to set coherent criteria that best fit the educational process. How to assess positive and negative aspects? What must be relevant? What parameters must guide this choice?

These are the variables used to better asses an environment, enabling and promoting learning situations that mobilize the students to produce meanings, improving therefore the autonomous knowledge construction.

The necessity of going deeper in the subject of VLEs assessment defined the objectives of this paper: assess and compare, through survey analyses and observation of the students’ behavior regarding the use of environments. Aspects such as functionality, ergonomics, usability, and VLEs tools: Moodle, TelEduc, and Tidia-Ae; enable considerable improvement in necessary abilities and competencies to conduct critical/technical VLEs assessment.

2. Virtual learning environments

In the current technological panorama it is essential that Education is integrated to knowledge society. One of the ways to perform this task is developing learning strategies mediated by information technology (IT), for instance the use of VLEs.

These environments are in great expansion in many institutions like: academic, industrial, and technological; aiming to be an E-learning tool, enabling professional training for professionals and students.

The concept of Virtual learning Environment, according to Almeida (2004), is related to computational systems used within activities mediated by information and communication technologies. Such environments enable the integration of multiple media and resources, bringing organized information, allowing interactions between people and knowledge objects in order to reach certain goals.

VLEs might be applied as a support for distance learning systems, as well as to support traditional activities in classroom or different environments through internet or intranet.

VLEs Moodle, TelEduc, and Tidia - AE were approached in this paper, presented in the following sections.

2.1 Moodle virtual learning environment

The VLE Modular Object Oriented Distance Learning (Moodle) is an Open Source platform, it means, it might be installed, used, modified, and even distributed. Its development aims the management of learning and cooperative work in a virtual environment, enabling the creation and administration of online courses, working groups, and learning communities (Ribeiro; Mendonça, 2007).
This VLE presents modular structure, wide developer community, easy use, interoperability, stability, and safety (Garcia; Lacleta, 2004).

2.2 TelEduc virtual learning environment

The VLE TelEduc is an Open Source platform, a support environment for DL. Its development is made according to the necessities, both technological and methodological, by developers of the Núcleo de Informática Aplicada à Educação (NIED) of the Universidade Estadual de Campinas (UNICAMP) (Ribeiro; Mendonça, 2007).

Regarding presentation, TelEduc environment is flexible and is divided into two parts: tools and content corresponding to the selected tool.

2.3 Tidia–Ae virtual learning environment

The VLE Tidia–Ae is a cooperative environment that manages courses and learning activities, giving support to traditional and distance learning. The system gathers software tools specially developed to help students, teachers, instructors, and researchers in their actions. Using a web browser, teachers might create a course that puts together the learning necessities through a set of tools. (Projeto Tidia–Ae, 2004).

The tools are part of three groups: management, coordination, and communication – besides contents for specific applications.

Tidia–Ae Project puts together about forty research groups in the state of São Paulo, and is sponsored by (FAPESP), being divided into three subprojects, one of them called Tidia–Ae.

The environment is organized into different working areas with distinct functionalities, allowing users (educators) to create courses, manage them, and participate in a cooperative way of the execution of works, tasks, researches, projects.

3. Assesment of virtual learning environments

Assessing VLEs is a complex task. Besides being in constant research and evolution, they approach technology and learning (Laguardia el al., 2007).

The tools for assessment in VLEs are essential and enable the developer a feedback on the usability, ergonomics, trustworthy, accessibility, interaction, and pedagogical aspects.
The accessibility, the intuit, and the facility of use in a system might be considered as determining aspects for the use or not of an information service, requiring constant feedback for these services to be planned and fulfill user’s necessities (Oliveira, 2001).

3.1 Assessment methods in Virtual Learning Environments

In the assessment of VLEs, it is necessary to get the data on the individual participants’ characteristics (behavior observation), learning environment, participation, communication, materials, and used technology (Benigno; Trentin, 2000).

Following, the presentation of evaluation methods: surveys (quantitative data), observation and interview, (qualitative data). According to Laguardia et al. (2007), the use of surveys is probably the most used method in the many types of courses assessment.

The surveys might be conducted traditional or online, presenting the following advantages: fast data collection, use of great samples, less administration and processing fees, more feedback (Dixon, 2001).

The observation of users might be direct or indirect. In the direct way, the evaluator observes the behavior of the user, like actions sequence. The user may modify the behavior due to the fact that he is being observed. In the indirect way, information is collected automatically, not interfering in the user behavior.

Interview is the used method for collecting user’s opinions, since it is important to know what the user thinks of the use of technology.

For the present paper, the assessment approaches were used as described in section four.

4. Experiment description

The experimental approach of this paper selected one hundred and thirty users, students from the Curso de Especialização em Tecnologias da Informação e da Comunicação Aplicadas a Educação (TIC) – Sistema Universidade Aberta do Brasil (UAB) and from the Programa de Pós-Graduação em Informática (PPGI) - Mestrado em Computação – UFSM.

The experiment consisted in the creation and conduction of an assessment survey and observation of students during the interaction with VLEs Moodle, TelEduc, and Tidia - Ae.

The webpage of the Laboratório de Usabilidade (LabIUtil) has been accessed for the choice of possible questions regarding usability and an assessment was elaborated from the analysis of three evaluation models: Model Schlemmer et al. (2007), Checklist presented by Guedes (2005) and Filatro (2004).
In the created assessment instrument, the following types of evaluation were used: Internal assessment and performance analysis, Ergonomic Assessment, and other evaluation approaches.

The following assessment approaches were used: observation and surveys, following presented.

The assessment survey was built in accordance with the following criteria: authoring tools, interaction tools, administrative tools, usability, didactical-pedagogical perspective, technical data, and general data. They were analyzed through the following factors: learning interface performance, synchrony and asynchrony of the communications, inductive aspect in the use, screen layout, conduction, working load, explicit control, adaptability, errors management, homogeneity/coherence/consistency, meaning of the codes; and denomination and compatibility.

The developed tool consisted of objective questions on the environment in which the answers should be “Yes” (there is a criterion or it fulfills the expectations) and “Not Evaluated” (no knowledge to evaluate the criterion). The evaluators should check only one of the options in all the questions. Open questions were also proposed.

The observation was indirect, not interfering with the students’ behavior, this way, collecting information automatically. It has been performed through the observation of students while doing their activities and interacting with the environment for a period of two months.

5. Results and discussion

From the data collection and analysis, graphic demonstrations were made with the obtained results.

Firstly, it is necessary to notice that researching students’ age group ranges from 31 to 40 years old. It is important to highlight that VLE Tidia–Ae has been assessed only by Master’s Degree students, a group composed by ten members.

Concerning authoring tools (Wiki, Surveys, Agenda, Activities, Exercises, and data repository), VLE Tidia – Ae presented more resources than the other ones. On the other hand, since VLE TelEduc does not have the tool Wiki, it presented a higher number of non existent tools (Figure 1). Another aspect is concerning the tool schedule, which presents limitations when compared to the other VLEs.

Between the synchronic and asynchrony tools, the ones that most contributed were mail with 68% of preference, followed by notice board and discussion board.

Figure 2 presents the evaluation of usability (fast navigation, easy use, feedback, easy task send, nice interface, working links, and coherent presentation pattern). VLEs Moodle and TelEduc reached a high level of satisfaction of the user before the analyzed tools.
Analyzing the administrative tools (use statistics, tools for content reuse, managing tools, and evaluation registration tools); it was observed that due to the inexperience of the students concerning the use of VLEs with an ADMINISTRATOR profile, most of them did not evaluate this resource. The exception was with Master’s degree students, who classified the content reuse and evaluation registration tools as very good for the VLEs TelEduc and Tidia – Ae. The tool statistics of use was also considered as very good for the VLE Moodle.

From the analysis of the didactic-pedagogical characteristics (the environment allows the student to follow the developed activities, and the teacher and student to comment the activities, proposed activities in a proper number), presented in Figure 3, it is noticed that VLE TelEduc was highlighted among the others. One of the reasons is regarding the permission for students to comment criteria evaluated by the teachers.

Analyzing the technical aspects (system safety, expansion capacity, availability of resources for people with special needs), presented in Figure 4, VLE TelEduc fulfills the above-mentioned requirements, followed by VLE Moodle. On the other hand, VLE AVA Tidia – Ae presents a high level of non-evaluated items, being a recently developed VLE with some tools in validation process.

Were evaluated General Data (send files in different formats, pattern support SCORM, hierarchical content availability), highlighting VLE Moodle, followed by VLE TelEduc and Tidia – Ae.
6. Conclusions

The researching instrument that served as an assessment tool showed to be valid and viable. The analysis and assessment of the structure and organization of the VLEs Moodle, TelEduc and Tidia – Ae, used by the Universidade Federal de Santa Maria were made through this tool. It was possible to understand the necessities of the students involved in the process, displaying possible improvements supported in the collected opinions.

Regarding the adequacy and usability assessment, a very relevant point is that in distance learning, the VLEs analyzed enable easy use and learning, are adequate to fully distance teaching-learning process, supporting traditional teaching, being characterized by many supportive tools, highlighting the VLEs Moodle and TelEduc. Concerning authoring tools, AVA Tidia – Ae presented more resources.

The synchronic and asynchrony interaction tools that most contributed were mail, followed by notice board, and discussion board.

Only Master’s Degree students had experience with the administrator profile of VLEs and their analyses concluded that the content reuse tools and assessment registration are classified as very good for VLEs TelEduc and Tidia – Ae. The tool use statistics was also considered as very good for the VLE Moodle.

VLE TelEduc has been highlighted among the others for its characteristics of the didactic-pedagogic and technical aspects mainly in the regarding the option that allows students to comment on the criteria evaluated by the teachers. VLE Moodle has been better in the analysis of general data as support to scorm pattern and hierarchical availability of the contents.

This research aims to contribute with innovations on VLEs, both as an auxiliary element in the complex process of choosing an environment, and in the support for the customization of the environments used in the Institution, always having the objective of improving distance learning process, resulting in environments that contribute for full academic formation.

This paper does not present conclusive results on the three evaluated environments, serving to orient initial papers on VLEs assessment. Following this research, from the obtained results, a new round of evaluations considering necessary changes, perceived during the work. As an example of such changes, it is possible to cite the expansion of the evaluation instrument and more time for interaction and use of VLEs in the evaluation process, mainly using the administrator profile.
References