

STUDENTS AS ACTIVE AND NON ACTIVE IN VIRTUAL LEARNING ENVIRONMENT

Recife – PE – May 2011

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Higher Education

Research methods in distance education and knowledge transfer

Management and organization

Learner characteristics

Research report

Scientific investigation

ABSTRACT

The Virtual Learning Environment (VLE) allows the monitoring of the actors involved in the educational process. The aim of this study was to quantify and qualify the student's time as active or non active in VLE. Classification as 'active' was when the student was logged-in, and attending a forum, chat, or evaluation; and 'not active' when they were logged-in, but not participating in the activities. We analyzed 388 students in 10 semi-presential classes of Forest Research Methodology discipline, from 2005 to 2009. The data confirmed the hypothesis that students that stay longer in contact with the discipline, as active in the VLE, had improved their final grade. The amount of downloads (when the student was not active) carried out by the students also had a positive influence in their final grade.

Key words: Educational management; Moodle; e-learning

1- Introduction

The virtual learning environments (VLE) has emerged as a computer program to aid distance and semi-presential education, primarily as a repository of learning objects, with a synchronous and asynchronous interaction through forums and chats, respectively, and with evaluation activities of knowledge ^[1]. Currently the VLE, beyond these tools, provide others with the intention of management and monitoring of implemented course, allowing monitoring all actors involved in the educational process, students, teachers, managers, tutors, and others, using the data as part of final evaluation of the teaching-learning process by managers in education ^[2].

The educational managers through the VLE began to accompany the students and observe the variables that could influence the acquisition of knowledge and affirmation of this in the final grades ^[3]. A main variable for this was the presence of the student in VLE, suggesting that the longer a student at VLE remains connected, the greater the contact with the discipline or course, and consequently, the higher would be the final grade ^[4].

However, the VLEs in their log records showed the moment when the student accessed the system (logged-in) and left it (logged-out) ^[5]. This is necessary to find the division between the time the student is actually in the system "under study", from the time that they are only logged-in ^[6]. For this, differentiating this time when the student is active in VLE, at forum, chat or assessments, from the time when the student is downloading or simply accessing a topic, it is important in order to verify the relationship of this time with the final grade obtained by the students.

The objective of this study was to evaluate the time that the student spent as active and non active in a virtual learning environment, and compare with the final grades obtained by the students from 10 classes of the semi-presential discipline Forest Research Methodology, of the Forest Engineering course, University of Brasília.

2- Material and methods

The research was conducted in 10 classes of the mandatory discipline of Forest Research Methodology (code 165379) of the Forest Engineering course, University of Brasília. All classes had a teaching/learning semi-presential

method, being 16 hours of physical classroom, and 44 virtual hours, totaling 60 hours/semester. During the virtual learning environment (VLE) Moodle, the students used the web address <http://aprender.unb.br>.

The 10 classes periods were the first and second semesters from 2005 to 2009, with 388 students enrolled (Table 1). These students when using the VLE were classified as: i) active, when logged into the forum, chat, or evaluation, and ii) non active when they were logged-in, but not participating in the activities of the first item, or just downloading files or accessing files of the discipline.

The forum was an asynchronous collaborative environment in which questions were raised by teachers about current issues of the content and general questions. Students could also start a new forum with any questions about the desired content. The chat is a synchronous collaborative environment, which was not evaluative, and the student could post any subject, regardless of the discipline content. The scores (100% of final grade) were totaled for each student, made up by 55% of presential evaluation, 35% virtual evaluation, and 10% of forum participation.

Class period	Number of student
01/05	41
02/05	36
01/06	42
02/06	42
01/07	40
02/07	40
01/08	30
02/08	31
01/09	29

Table 1. Classes period and number of students evaluated in the virtual environment of learning of the Forest Research Methodology discipline.

The virtual evaluations were all performed with 17 closed questions, multiple choice, and answers associations, and three open questions, with objective and subjective responses, in which the student had at most 60 minutes to conclude the evaluation. For comparison all assessments between the semesters were similar in content. We evaluated the time (minutes per week) that each student had spent on forum, chat and evaluations activities.

At the moment when these students were not active, we measured the total clicks performed on topics that had generated files download or on other topics. The discipline was organized in 15 weeks, and each week was arranged into 11 topics, of which 10 were in extension pdf, xls, doc, mpeg, exe or swf files, and one with a virtual evaluation.

Nonparametric Mann-Whitney (between two groups) and Kruskal-Wallis (for three or more groups) statistical tests were performed with the time data (min / week) between the groups: i) students as active and non active and ii) participation in forums, chats and evaluations, and the number of clicks on topics that generated downloads, and the other topics. Regression analysis was performed between the dependent variable (y) the grades obtained by the students, and independent variables (x) time (min / week) of the student as active and non active. All statistical analyses, mean values and standard deviations (between students) were undertaken by the software SigmaPlot 9.0.

3- Results and Discussion

The time percentage that the student of the discipline of Forest Research Methodology remained as non active was higher (69.5%) than active (30.5%), significant in all evaluated semesters ($p < 0.001$, Figure 1). This result was expected because the student while logged-in, could be: i) waiting for a download file, ii) with the speed of connection and data transmission from the internet slow ($< 1\text{Mb}$), or iii) performing other extra VLE activity. This showed the importance of separating these two periods by the activity of students, when accessing the VLE, for real comparison and serve as an independent variable to validate other dependent variables, such as knowledge acquisition ^[4].

Students as active spent more time, on average, per semester with evaluations (52.26%) than in interactive activities: forums (31.36%) and chat (16.38%). These significant differences ($p < 0.05$) showed that students interacted less per week, on average, 37.65 minutes per student (12.76 ± 2.38 min / week to chat, and 24.89 ± 5.14 min / week to forum), and spent 41.88 ± 10.31 min / week to conclude the evaluations. This was evident, because at each week the students had a mandatory virtual evaluation of maximum 60 minutes, and forums were evaluated with grades.

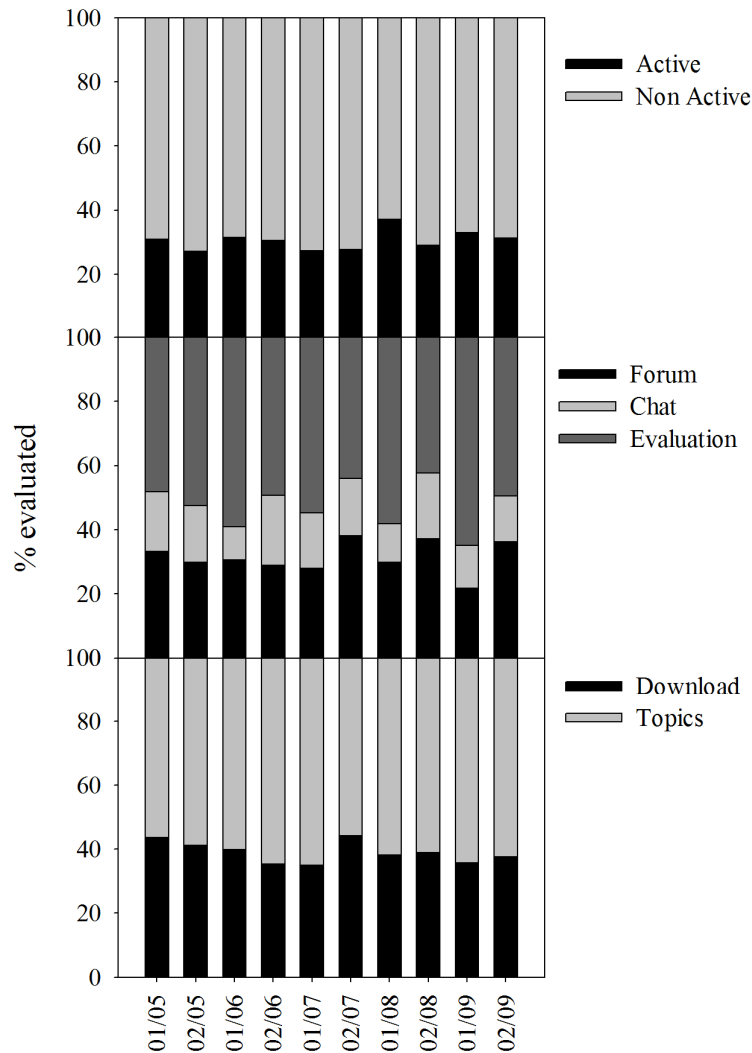


Figure 1. Percentage of time used by students classified as active and non active in forums, chats and evaluations, and percentage of clicks on topics that generate download files or on other topics, of the discipline Forest Research Methodology, of the Forest Engineering Course at the University of Brasília, during the first and second semesters from 2005 to 2009.

The monitoring of forums during the study period (2005 to 2009) showed that students interacted more due to the grade of activity, than due to its importance in building knowledge, since by the statements in the forums, some were referenced copies of the internet, and other questions had already been made by other students, showing the student's inattention with the forums, as observed by [7]. This environment had been little collaborative, only 3% of the shares and claims in the forums were exchange of information about the

content between student-student. The chat, as non mandatory, and without grade, was less significant (16.38%) of interactive participation, students had avoided the issue of discipline, 93% of issues had been distinct content, or about another discipline.

The time of the evaluations accomplished by the students in the studied semesters presented the highest deviation from the mean value ($\pm 24.61\%$) of the activities where students had been classified as active. According to [8], the differentiation of the way and time the student takes an exam is more a matter of cognition and behavior than the own acquired knowledge.

When students were classified as non active, on average per semester, they had clicked more on topics that did not generate downloads (61.05%) than those that had generated (38.95%), a total of 1,191 clicks per semester and 757, respectively.

The result of the parameters from the regression analysis evidenced that students' grades in all semesters were influenced mainly by the time of the student as active, the participation in the forum, and the clicks that had generated downloads (Table 2). All these relationships had a significant relationship ($R^2 > 0.7$, $p < 0.001$, error < 0.05) and directly proportional (Figure 2), i.e., the greater the time participation of the student as active in forum, and of the clicks on topics that had generated downloads, the higher the grades of the students in the evaluated semesters.

Relationship		Unity	Function	R ²	p	error
x	y					
Grade vs.	Active	min/week	$y = 4.94 + 0.03 \cdot x$	0.71	< 0.001	0.021*
	Non Active	min/week	-	0.32	0.427	0.563
	Forum	min/week	$y = 4.94 + 0.03 \cdot x$	0.89	< 0.001	0.015
	Chat	min/week	-	0.21	0.504	0.744
	Evaluation	min/week	-	0.17	0.172	0.353
	Downloads	clicks	$y = 4.94 + 0.03 \cdot x$	0.93	< 0.001	0.051
	Topics	clicks	-	0.06	0.329	0.487

Table 2. Results of the parameters from the regression analysis.

* Significant relationships highlighted.

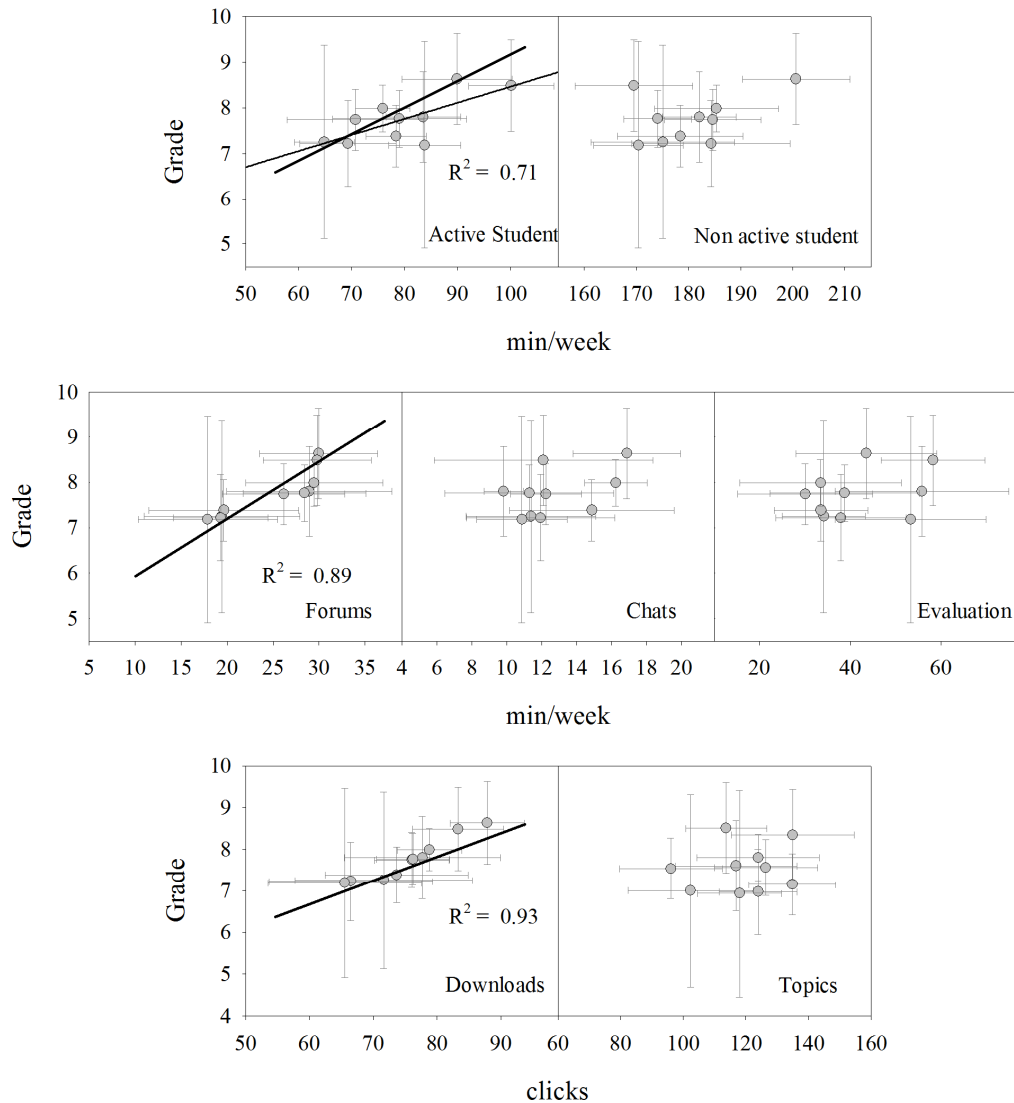


Figure 2. Relationship of the grades obtained by students of the discipline Forest Research Methodology, of the Forest Engineering course at the University of Brasília, with the use of time in virtual learning environment, classified as active and non active; in the forums, chats and evaluations, and clicks on the topics that had generated download files or on other topics. Points represent the ten semesters, which were the first and second semesters from 2005 to 2009, and bars, respective standard deviations.

The data confirmed the hypothesis that students that stay longer as active in the VLE actually achieved higher final grades. Although the students have participated in the forum in a little collaborative and interactive way, the contact with the discipline led the students to improve their final grade. Another important factor was the number of downloads made by the students, i.e., they got higher grades in semesters when they performed more downloads of files. These statements corroborated the data from ^[4], ^[9], ^[10] that showed the role of

the contact (in time) of the student with the discipline, causing the significant increase ($p < 0.05$) of the grades between semesters evaluated in the discipline Forest Research Methodology.

4 - Conclusions

The data confirmed the hypothesis that students that stay longer in contact with the discipline, as active in the VLE, had improved their final grade. The amount of downloads (when the student was not active) carried out by the students also had a positive influence in their final grade.

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