Facebook *vs* Moodle

Surveying university students on the use of learning management systems to support learning activities outside the classroom

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Abstract — **Learning management systems and social networks on Web have been tools most used by students in higher education institutions as learning support tools outside of the classroom. In this paper, we present the results from a survey conducted at a Portuguese university to 159 students in Computer Science and Psychology about the purposes and reasons for the use of Moodle and Facebook. We conclude, among other conclusions, that they complement each other: while the first is mostly used for formal communication with teachers, the second is mostly used for informal communication with peers.**

Keywords – social networks; learning manangement systems; e-learning; Moodle; Facebook.

I. INTRODUCTION

The presence of social media in our daily lives takes an increasingly important role in the way we communicate and, hence, we learn. In higher education institutions, a wide variety of information sources in the learning processes are involved and the students, as digital natives, use a vast set of tools to communicate. Based on our experience as teachers in higher education, we could realize, empirically, that the interest and experience of our students about the use of these tools is diverse.

Higher education institutions tend to use learning management systems (LMS), organized as a course-based mode and linked with course enrollment, to develop e-learning programs but also to support the learning activities of regular students outside the classroom.

Following the increasing use of Web 2.0 technologies is their adoption for educational purposes through online social networks. Currently, there are hundreds of social networking sites available, being the Facebook the most used, even in academic contexts. It was born in academia and has become so popular among university students that it has formed an important part of their social life.

In this paper, we aim to contribute to better understand the role of Facebook and Moodle, as tools of the learning management systems, to support learning activities outside the classroom. To do this, we submit a survey, considering a sample of IT and psychology BSc students, to characterize the use of IT tools, especially Facebook and Moodle.

We choose the computer science and psychology courses in view of the expected differences in the use and the frequency of usage of tools (software and hardware) for the learning activities in higher education system.

In this article we begin by presenting a short review of literature on the role of Facebook as a tool to support learning activities in higher education system. Next we introduce our goals and the respective research questions and describe the research method adopted in the study. Finally, we discuss the results, draw some conclusions and make suggestions for further work.

II. LITERATURE REVIEW

The use of learning management systems is a current reality in higher education institutions. The main role of them is to provide support to b-learning programs and support the pedagogical and didactic activities of classroom teaching.

Some pedagogical practices in higher education have undergone a significant move toward student-centered and community-based modes of learning [1,2].

The Web 2.0 technologies, which include the so popular social networks on the Web, have incorporate many aspects that enhance the collaboration and the active participation of students in the learning process, assuming a perspective of community-based modes [3].

Generally, students reported positive reaction about the knowledge- and information-sharing benefits of social networks on the Web for educational purposes [4,5,6].

III. RESEARCH QUESTIONS

Our main goal is to understand the role and relevance of Facebook and Moodle as tools to support learning activities outside the classroom in two courses offered by a small Portuguese higher education institution. The role is associated for what and how they use, and relevance are associated with the frequency for which they use and why.

Based on objectives established above, we identified the following research questions:

Q1: Do the students use LMS to support learning activities outside the classroom?

Q2: How often do students use LMS to support learning activities outside the classroom?

Q3 What are the purposes of using LMS tools in learning activities outside the classroom?

Q4 Why do students use learning management systems (LMS) tools in learning activities outside the classroom?

Some hypotheses arising from these research questions are presented in the discussion of results section below.

IV. METHODOLOGY

A. Participants

Participants in the research were undergraduate students (1st, 2nd and 3rd year) majoring in Computer Science (CS) and Psychology (Psy) at the University of the Azores. 24 students (one female and 13 males from CS, and 10 females from Psy) participated in the first phase of the research (discussion groups). Participants in the second phase (questionnaire) of the study were 159 students: 92 males and 62 females, where 5 were invalid; 76 majoring in CS and 83 in Psy; ages ranging from 17 to 57, with a mode of 25. One hundred and thirty one participants were regular students, twenty were worker students and eight did not answer.

B. Instrument

A questionnaire was constructed to collect data on students' perspectives and uses of information and communication tools and technology in university learning. Based on the literature in the field and the information derived from students' discussion groups, a set of twelve questions was developed and organized into a preliminary version of the questionnaire. After a test of its face validity and the introduction of some corrections a final version was reached containing multi type items organized into two sections pertaining to *i)* sociodemographic data (major degree; year in the program degree; year of first enrollment; type of student; sex; age) and to *ii)* students' uses and views of technology (use of technological tools; importance attributed to technological tools; use of technological devices; use of Facebook, Moodle or other tools in different learning activities; reasons for using the Facebook, the Moodle or other tools in learning activities, and preference regarding Facebook and Moodle).

C. Procedure

The process of data collection was conducted in two phases. In the first, students volunteered to be part of one of the four discussion groups – 1st year Psy students; 1st year CS students; 2nd and 3rd year Psy students; and 2nd and 3rd year CS students – created to allow students to freely talk about their daily experiences with communication tools and technology in university learning activities. The research team was present in the sessions, prompted students with some questions, helped moderating the discussion and registered the information provided by the group. In the second phase of the data gathering process students of each year of both major degree programs completed the questionnaire in a group session with a mean duration of 15 minutes.

A descriptive statistical analysis of data was performed using the RStudio of the R package.

V. RESULTS

In this section we present and discuss results from the statistical analysis of data gathered to answered the research questions Q1 to Q4, through the hypotheses shown in the table just below.

TABLE I. HYPOTHESIS FOR RESEARCH QUESTIONS

Question	Hypothesis	Description
Q1	H1.1	Students do use the Moodle to support learning activities outside the classroom
	H1.2	Students do use other LMS tools beyond the Moodle.
	H1.3	Students do use other electronic devices beyond the desktop computer as a hardware tool to learning activities outside the classroom.
	H1.4	If the students had to choose one tool to support the learning activities outside the classroom, they would choose.
Q2	H2.1	Students do use often the software tools to support the learning activities outside the classroom.
	H2.2	Students do use often the hardware tools to support the learning activities outside the classroom
Q3	H3.1	The Moodle and the Facebook do complement each other in supporting learning activities outside the classroom
	H3.2	The Facebook is used to communicate with peers and the Moodle is used to communicate with teachers.
	H3.3	Students sharing and collaboration are transported to the virtual environment.
Q4	H4.1	The Moodle is used because it allows formal communication with the teacher.
	H4.2	The Facebook is used because it allows informal communication among students.
	H4.3	The Facebook is used because its members can be easily found there.
	H4.4	Students do use the Facebook because it allows flexibility in the organization and the presentation of content materials.
	H4.5	Students do use the Facebook because it allows a synchronous connection with mobile technology.

In this paper, our analysis is mainly focused on two aspects: the purposes for the use of LMS tools and the reasons why students use them.

Concerning the purposes, students use the tools to ask questions to teachers, to consult materials (*e.g.*, slides, links, text, etc.) provided by teachers, to contribute to the preparation of documents at different times, to develop documents collaboratively, to send assignments to teachers, to clarify doubts with peers, to share materials (e.g., notes, videos, links) with peers and to receive notifications from teachers.
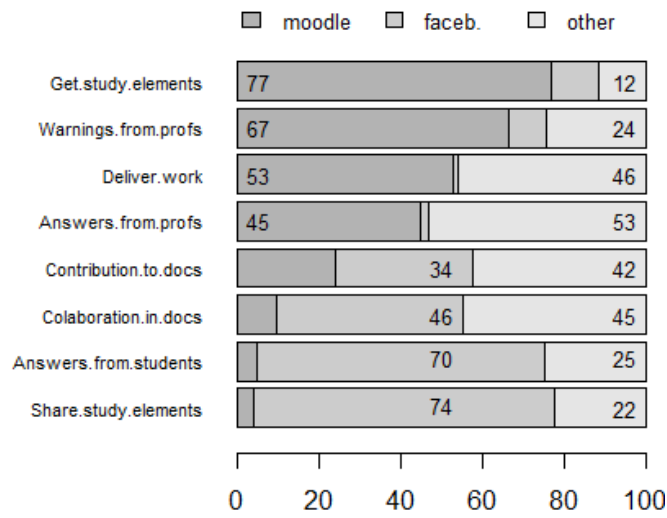
Figure 1.   Relative frequency of different activities.

Thus, we can see that the Moodle favors collaboration in tasks involving students and teachers, while the Facebook favors collaboration among students. However, when the tasks pertain to building learning materials (*e.g.*, group projects, paper writing), students prefer other tools (*e.g.*, a collaboration tool in the Cloud such as Google Drive).
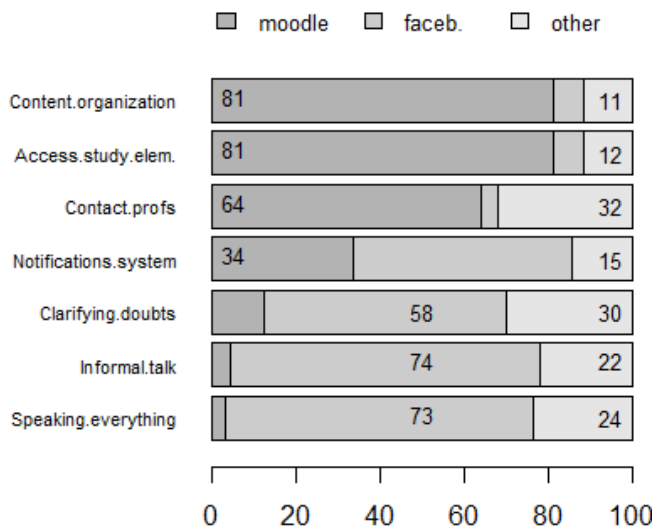

Figure 2.   Relative frequencey of the motives to use of the two main tools moodle and facebook.

Observing this chart, we can see that the organization and provision of materials or access to them, and communication with teachers, is favored by the use of the Moodle. On the other hand, informal communication, where there is an opportunity to answer questions and to engage in other types of conversations (*e.g.*, on classes, provision of teachers) is favored by the Facebook.

In Table II we present a summary of the validation results for the assumptions taken from Q1.

TABLE II.   HYPOTHESIS FOR Q1

Hypothesis	Results
H1.1	99.4%
H1.2	100% non-institutional email; 95.0% Facebook; 90.6% institutional email. The least used tools: 13.8% Office 365, and 35.3% knows but does not use; 16.4% OneDrive and 48.4% knows but does not use; 3.8% Google Drive, and 40.9% knows but does not use.
H1.3	97.5% Notebook PC; 54.7% do not use the Desktop PC; 19.5% of students not using Cellphone; 58.5% do not use the Tablet.
H1.4	50,3% Moodle; 31,6% Facebook; 9,7% NA; 8,4% other.

From the results on Table II we can see that the answer for Q1 is clearly, yes. Tools like Moodle, Facebook and email are used by almost all students. For these tools the atypical behaviors are the most interesting. From discussion groups we noticed that some students accuse the institutional email of having too much spam, some of them originated by the Moodle notifications. Reasons for not using the Facebook range from it having too many distractions to security. Information technologies are clearly shifting from desktop to notebooks, being other technologies much less used in this sample. Smartphones are also an important tool, but some prefer to reserve it for communication not related to study activities. So, the answers to H1.1, H1.2 and H1.3 are clearly yes. Choosing Moodle, if they could use only one tool, is the most frequent answer for H1.4 but it is important to notice that almost one third choose Facebook and 8% choose others, which are also relevant.

TABLE III.   HYPOTHESIS FOR Q2

Hypothesis	Results
H2.1	17% institutional email at least 6-7 days, and 30.8% institutional email at least 1 day a week or less. 61.6% non-institutional email at least 6-7 days, and 5% non-institutional e-mail 1 or less days a week. 73% Facebook at least 6-7 days a week, and 5% Facebook 1 or less days per week. 26.4% Moodle at least 6-7 days a week, and 9.4% Moodle 1 or less days per week, the remaining 61% at least 2-3 days and 4-5 days
H2.2	79.2% notebook PC at least 6-7 days a week; 23.3% desktop PC at least 6-7 days a week; 15.7% Tablet at least 6-7 days a week; 59.7% Cellphone at least 6-7 days a week.

Non-institutional email is used with much more frequency than the institutional one. The Moodle is also much less frequently used than the Facebook. These are expected results since students use the institutional email and the Moodle only when they want to find something related to the university work. In fact, their regular communication tools are non-institutional email and Facebook. We can also confirm that the hardware used are notebooks and smartphones.

TABLE IV.   HYPOTHESIS FOR Q3

Hypothesis	Results
H3.1	See Figure 1
H3.2	(communication with peers): 72.1% Facebook; 23.7% Other; 4.2% Moodle. (communication with teachers): 60.8% Moodle; 33.1% Other; Facebook 6.0%.
H3.3	23.7% use the computer tools for the processes of sharing and collaboration.

H3.1 seems to be a clear yes because activities like getting course notes, feedback from teachers, submitting assignments and getting notifications from teachers are done in the Moodle. Other activities, more related with communication with peers, like getting answers from students and sharing course notes are done in the Facebook. Thus, the Moodle and the Facebook complement each other. For H3.3 only 24% use information tools to develop collaborative work. Face-to-face is still the preferred way for group work.

TABLE V.   HYPOTHESIS FOR Q4

Hypothesis	Results
H4.1	63.8% Moodle; 31.9% Another; 4.2% Facebook
H4.2	73.7% Facebook; 22.8% Another; 3.5% Moodle
H4.3	57.8% Facebook; 30% Another; 12.2% Moodle
H4.4	81.3% Moodle; 11.5% Another; 7.2% Facebook
H4.5	51.8% Facebook; 33.7% Moodle; 14.6% Another

Hypotheses H4.1 to H4.3 are confirmed by the results obtained by the initial study groups and they confirmed that these are the most important reasons to use the Moodle or the Facebook (see also Figure 2). H4.4 was not confirmed. In fact, flexibility is not favored. Students clearly prefer more traditional ways of organizing information like those used in the Moodle. For H4.5 the answers collected are not conclusive. Some of the comments to the question about which tool to choose, if they could use only one, say, in fact, that the mobile technology is linked to the Facebook, but they are too few to allow drawing a sound conclusion.

VI.   CONCLUSIONS AND FURTHER WORK

We consider a sample of 159 surveys, out of 200 students majoring in Computer Science and Psychology at the University of the Azores. Through a descriptive analysis of the survey results we conclude that: (a) students heavily use LMS tools (software) to support learning activities outside the classroom; (b) the Moodle and the Facebook complement each other in supporting learning activities outside the classroom: while the first is mostly used for formal communication with teachers, the second is mostly used for informal communication with peers; (c) the Moodle is used because it allows students to communicate with teachers; contents are organized by week, modules or theme; they access to materials provided by teachers; the Facebook allows them to talk about everything in a relaxed way; to answers questions quickly; has a notification system.

We are preparing an analysis of correlations between several questionnaire variables such as courses and the use of Facebook. We plan to continue this survey in several directions: to extend it to degree programs in other scientific areas; to carry out a similar survey but considering teachers perspective for the role of Facebook and Moodle; to analyze the role of Facebook when compared with alternative Moodle in particular commercial products such as WebCT and Blackboard.

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