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Web 2.0 in Portuguese Academic Community: An Exploratory Survey

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Abstract: Web 2.0 relates to a number of web-based services and applications that, though relatively mature, can be explored for educational uses in a myriad of new and innovative ways. In this paper we will begin by establishing: a) why we consider Web 2.0 is more than a set of "cool" new technologies and services; b) why we believe in the capacities of this new web generation to explore collaborative teaching and learning strategies, c) in order to advocate for its integration in our higher education classroom activities. We will then present a recent survey conducted in main Portuguese universities in order to verify if our academic community (students and teachers) were aware of this new web paradigm and believed on its potential for changing educational and communicational processes. The results show up that the Portuguese academic community is unaware of this new philosophy and that is necessary to develop strategies for an effective integration of Web 2.0 tools in our teaching and learning practices.
Key Words: web 2.0; paradigm; higher education; questionnaire

1. Introduction

We live times of fast changes and transformations where the access to information is important because, as Alvin Toffler previewed in the 90`s, who has information has power (Toffler, 1990). We move from a social context where the information was a scarce resource, to another where the information is huge but precarious and highly volatile. In the global society of the twenty-first century, the Internet is not a simple technology of communication, but the epicenter of many areas of social activity and economic policy, and according to Manuel Castells it can be seen "*as the technological tool and organizational form that delivers the power of information, the creation of knowledge and the ability to connect to a network in any area of human activity* " (Castells, 2004: 311). These changes in society demand appropriate adjustments by the school and teachers, because "*a school that closes itself to the outside world it's not able to learn and to develop."* (Guerra, 2000: 60).

The term Web 2.0, used for the first time in 2004 by Tim O'Reilly, is defined by Hayman's (2007, p.1) as *" a cluster of web-based technologies services with a social collaboration and sharing component, where the community as a whole contributes, takes control, votes and ranks contents and contributions"*. In fact, Web 2.0 changed dramatically the way we use the Internet, as it offers us several tools and services that allow easy interaction and participation to all users, from novices to experts, to applications and services in real-time.

In Portugal, the educational policies have already noticed the importance of using these new social software tools in the teaching and learning processes. Some recent studies conducted in our country show the educational potentiality of using some Web 2.0 tools, namely blogs in primary and secondary education schools (Lopes, 2005; Silva & Miranda, 2005; Cruz e Carvalho, 2006; Eça, 2007) as well as in higher education (Coutinho, 2006; Coutinho 2007; Baltazar e Germano, 2006; Coutinho & Bottentuit Junior, 2007a; Coutinho & Bottentuit Junior 2007b).

However, this is just the edge of a huge issue. As teachers in education programs and researchers in a higher education institution, we need to know if web based learning is still a myth or a reality in our academic communities. What does the Portuguese university community know about this new paradigm of the Internet? Is (or not) the Web being used in our universities? Which Web 2.0 tools are used and for what purposes: personal uses or in pedagogical activities? The search for the answers were the basis for conducting the survey we present in this paper.

2. A change of paradigm: from Web 1.0 to Web 2.0

The first generation of the Internet, also known as Web 1.0, had, as main attribute, the enormous amount of information available and that everyone could access. However, at that time, the users were just spectators of the action that was happening on the webpage that they visited, and, in most cases, they did not have permission to make changes in the page contents. The Web 1.0 was also very expensive for the users; the big majority of the services were paid and controlled through licenses, the systems were restricted to who had power and money to support the transactions online and to buy the software for design and maintenance of the websites.

With the change of paradigm, new communication scenarios in the internet were set up and different roles were offered to the web users. In the new generation of the Internet called Web 2.0, terms as Blog, Podcast, Hi5 or Del.icio.us, are just some examples of tools that are part of the variety of systems available on the global network (Richardson, 2006). But more important that the quantity and versability of the tools is the new attitude that is now available for each user: they can produce their own documents and publish them on the web automatically, without need of large knowledge of programming environments and sophisticated computer systems.

According to O'Reilly (2005), the term "Web 2.0" emerged in a conference brainstorming session between O'Reilly and MediaLive International. Far from having "crashed", the web was more important than ever, with exciting new applications and sites popping up with surprising regularity; O'Reilly said then that "*Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform. Chief among those rules is this to build applications that harness network effects to get better the more people use them*" (O'Reilly, 2005, online).

Each day increases the usage of tools, such as blogs, wikis, podcasts and RSS feeds, among others that are generally called *social software* (cf. Hayman, 2007), that represent the new paradigm of this social and collaborative Internet. Although many of us haven't realized that something has changed in Web, - "*Web 2.0? I didn't know there was a 1.0*?" (D´Sousa, 2007, p. 6) – the fact is that the "*Read Only*" Internet changed to a "*Read Write"* model. The advantages to the users are many and some still have to be discovered: a) the content that used to be static, can now be divided and reunited in different ways to fulfill the interests and needs of each individual; b) the contents are created online in a collaborative way and according to the most dominant interests of a huge number of users; c) a new a social community emerges, a space where "*the web surfer negotiates the connections within a social or idea network, exchanges bits of content, creates something new, and then the cycle begins again*" (D´Sousa, 2007, p. 6).

For Alexander (2006, p.33) the social web *"emerged as one of the most relevant thing in web 2.0",* it is a way to make the use of the global network in a collaborative way, decentralized of authority and with freedom. Interpreting the ideas of O'Reilly (2005), Alexander (2006) believes that the main features of the Web 2.0 are: a) the web as platform; b) the end of the Software Release Cycle; c) Rich interfaces easy to use and handle; d) The success of the software depends on the number of users who can help to make the system better; e) Many users can access the same page and edit information; f) Users must be treated as co-developers. The tools of the Web 2.0 can be classified into two categories

- The first category includes the applications that can only exist on the Internet and whose effectiveness increases with the number of registered users, such as: Google Docs & Spreadsheets, navigation, del.icio.us, YouTube, Skype, eBay, Hi5, and so on.
- The second category integrates applications that can work offline, but have great advantages when used online such as: Picasa Pictures, Google Maps, MapQuest, iTunes, etc.

3. Method

Babbie (1997) states that the survey is a data collection method that allows obtaining information by questioning persons and it is the most appropriate process to sound large samples. In our case, since we weren't aware of the population dimension and structure, we have used a non probabilistic, purposeful sampling method known in literature as *snowball sampling* (cf. Charles, 1998, Schutt, 1999). In fact we considered specific criteria to i) select the inquired persons (students, professors or researchers of the Portuguese higher education institutions, ii) to access the respondents (official e-mailing lists), iii) to access participants from other institutions (we used participants as informers for new contacts). Having in mind that the results of a survey conducted with a non-representative sample limits the scope of a study in terms of external validity (Schutt, 1999), we believed that, though limited and partial, our findings could sensibilize educational policies for the importance of developing a larger scale study that could provide more robust results.

The electronic questionnaires (developed in surveymonkey.com) were sent on the beginning of May 2007 to the e-mailing lists of the author`s institutions (Universities of Minho and Porto). Besides these two main Portuguese universities, questionnaires were also sent to colleagues of other higher education institutions where the authors have personal/professional relationships and they were asked to re-send them to the e-mailing lists of their own institution. This method allowed us to collect data from other universities and schools of education but these only represent a small contribution if compared to the number of questionnaires filled-in in by the academic communities of the universities of Minho and Porto.

The 31st June was considered the limit date to receive the filled-in questionnaires. A total of 1811 valid questionnaires were returned and considered for the analysis. Many questionnaires were sent back without reaching the addressees, but we knew this was due to the fact that most students did not use the institutional emails provided by the institution.

3.1 Questionnaire for data collection

The electronic questionnaire named "Web 2.0: Personal Use versus Classroom Use" was used in the survey. It was developed by the authors upon a similar instrument fulfilled by the attendants of the SITE Conference in 2007. It consisted of eight questions organized according to four major goals:

1. Personal data (dichotomy/multiple choice): gender, age, affiliation, area of study/research´
2. Acknowledgement of the Web 2.0 concept (dichotomy Y/N)
3. Familiarity with Web 2.0 tools/services (multiple choice: I know/I use for personal purposes/I use in the classroom
4. Opinion/perception of Web 2.0 potential for education uses (5 points Likert Scale of agreement: Strongly agree/Agree/ Neither agree nor disagree/Disagree/Strongly Disagree).

The statistical treatment of data was performed on the Excel program of Microsoft Office. Data was treated with descriptive statistics techniques, which as Wiersma (1995) says, aim to provide the researcher a first result capable of giving indications a set of scores on specific variables. To present data we have used tables and/or bar graphs in order to make data interpretation easier.

3.2 Data analysis and discussion

3.2.1 Sample characterization (items 1 to 5)

From the 1811 persons that have answered to the electronic questionnaire, 55% were male and 45% were female. The distribution of situation in the institution was 44% undergraduate students, 5% graduate students, 20% enrolled in a integrated master course (Bologna Process), 5% enrolled in a Ph.D. course, 23% were professors and 1% were researchers or grant holders.

Twenty four Portuguese higher education institutions entered the study. As it was already expected, the Universities of Minho and Porto (where the authors are affiliated and accessed the official e-mailing lists) represent 77% of the total sample. The study/teaching area of the sample members was mainly of Exact Sciences/Technology/Engineering (54,5%), followed by Education and Psychology (12,6%), Arts and Human Sciences (11,6%), Health Sciences (4,2%) Management and Economy (4,4%), Chemistry, Physics and Biology (3,9), Social Sciences and Law (3,7) area and Earth Sciences (1,2%).

3.2.2 Did you already know the Web 2.0 concept?

The answers to this question revealed that the participants could be divided in equal parts regarding their knowledge of the concept; this means that 56% did already know the term Web 2.0 and 44% didn't know the concept. The result didn't surprise us because, as the literature says (Anderson, 2007), many Internet users use Web 2.0 tools and services but are not aware of their designation.

3.2.3 Web 2.0 tools that you are familiar with and use for personal purposes and/or in the classroom

Table 3 presents the answers, in absolut values, for each of the four multiple-choice options: I) I Know, ii) I use for personal purposes, iii) I use/have already used in the classroom and iv) Didn't answer.

CATEGORIES	I know	Personal Uses	Use/used in the classroom	Didn't answer
Blogs for publishing contents and materials	**905**	434	211	99
Digital Audio (Podcast)	**759**	321	75	543
Teaching Platforms (Blackboard, Webct)	420	133	**829**	316
Social Bookmarking Tools	**527**	161	34	977
Tools for Publishing Photos	**641**	432	58	546
Tools for Publishing Videos	568	**838**	169	153
Virtual Reality Environments	**802**	144	46	694
Collaborative Writing Tools	453	**492**	404	353
Search Tools	375	**993**	256	77

Table 2: Web 2.0 tools that you know and use

Once the person could only choose one option, it was easier to analyse the results for the sample set. From our point of view, those who have chosen the option "I Know" only know that the tool exists, but those who have chosen "I use for personal purposes" or "I use/have already used in the classroom" not only know but also use the tools for specific purposes. The last option "Didn't answer" integrates the persons that neither know nor use these tools.

We can then verify web 2.0 tools most "acknowledged" by the persons of the sample are the blogs (n=905), the virtual reality environments (n=802), podcasts (n=759) and tools for publishing photos (n=641). The "search tools" are the most used for personal ends (n=993) - more than a half of the respondents uses this tool – followed by the "tools for publishing videos" (n=839), the "collaborative writing tools" (n=492) and "podcasts" (n=321).

However, it was surprising to verify the low values obtained when it cames to consider Web 2.0 uses for pedagogical purposes! All tools Web 2.0 were rarely used in the classroom, with two only exceptions. The first one is the "teaching platforms" (n=829); this fact didn't surprise us because most of the Portuguese universities introduced in the last years plaftorms for supporting teaching and learning activities. Nonetheless, the registered value (this option was chosen by 829 respondents) didn't come up to our expectations, because from 1811 students/professors of higher education institutions, less than half still haven't used teaching platforms in the classrooms activities! The second exception is related to "collaborative writing tools" (n=404) as this high number was a big surprise to us. We can explain this fact if we consider that these tools are used in the classroom not to create information data (e.g. to create a wiki group/class), but to search information on the web, such as Wikipedia. Another "negative" cue was to verify that "search tools" and "blogs" are very used by sample members for personal purposes, but as we can evaluate through the answers, they are much less used in the classroom (n=256 and n=221). "Social bookmarking", "podcasts" and tools for "publishing photos" are (almost) absent from our higher education classrooms contexts.

3.2.4 Web 2.0 tools educational potentiality

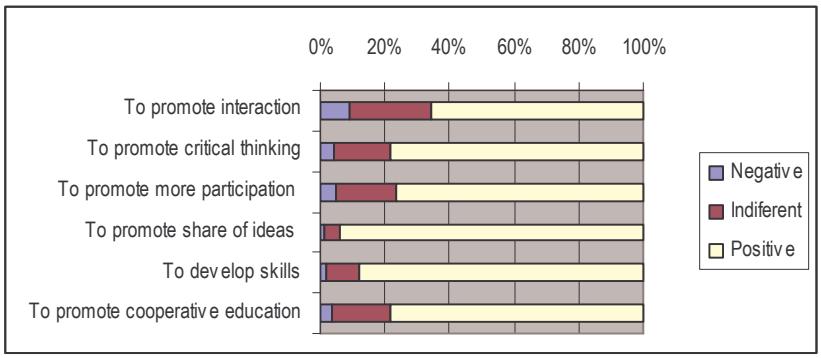
In this last question, the persons were asked to give their opinion about six aspects related to the educational potentiality of Web 2.0 applications. Table 4 presents the results, in total values and %, for the set of persons of the sample.

Categories	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Did Not Answer
To develop communication	28	124	416	**897**	191	11
To develop critical thinking	12	61	284	**972**	328	9
To promote more participation	17	64	310	**881**	383	12
To promote share	8	7	89	764	**787**	11
To develop skills	6	25	168	**818**	638	12
To promote cooperative education	13	47	298	**842**	456	11

Table 4: Web 2.0 educational potentiality

By analysing table 2, where the total prevalent values are highlighted, we can conclude that the general opinion of the persons of the sample about Web 2.0 tools educational potentiality is very positive.

We have then decided to readapt the "agreement degrees" to make the data evaluation and interpretation easier. Therefore, we have joined "Strongly Disagree" and "Disagree" in a new category, which expressed a "Negative" opinion; the items "Agree" and "Strongly Agree" were joined in a new category that represented a "Positive" opinion. The category "Neither agree nor disagree" was renamed "Indifferent". The graphic 1 presents the results for the total sample.



Graphic 1: Web 2.0 educational potentiality

The positive opinions prevail in all aspects, with values that fluctuate between 65% and 93%. When analysing the graphic it is possible to see that the most positive opinion regarding Web 2.0 tools is "To promote share of knowledge", followed by "To develop skills in a globalized world" and "To promote cooperative education". On the other hand, the least positive aspects are: "To develop communication" and "To promote more participation of students in the educational process".

4. Final remarks

The results of the survey confirm a reality that we had foreseen: i) although the academic community generally knows the Web 2.0 concept, they are not aware of several tools that are part of and define it; ii) there are several Web 2.0 tools well known and others (such as social bookmarking tools) that are (almost) unknown; iii) it is possible to perceive that some tools are quite used but mainly for personal purposes (e.g. search tools and blogs); iv) relative to classroom uses, results reveal that an important part of our higher education community is still very distant from this new web paradigm; v) Despite not using web 2.0 tools in pedgogical contexts, the academic community represented in the sample believes in its educational potentiality.

We believe that the results speak for themselves. The research shows that an integration of ITC and the Internet in learning processes helps to develop skills, values and attitude, as the ones mentioned by Lam (2004:2): "*Technology in the classroom can help students became capable users, information seekers, problem solvers and decision-makers*". The Internet makes it possible to access information sources that otherwise are very difficult to obtain, allows the access to pedagogical materials and makes them available as well as electronic forums that support cooperative learning and *"reinforces the concept of learners as active persons in the learning process and not passive listeners to knowledge"* (Souza, 2005:130). How to explain the distance that prevails between formal and informal education contexts? Confronted with the constant technological changes of our world, how can the higher education academic community still ignore the need to evolve in a way that learners develop skills that allow them to adapt to new demands of the job market and to the need of lifelong learning?

Web 2.0 represents a challenge to teachers and students, especially in higher education. Important skills can be developed in our students with Web 2.0 tools: information retrieval and communication, socialization, group collaboration, personal expression, creativity, text production, knowledge construction and dissemination. Web 2.0 challenges teachers to embrace new cooperative/collaborative methods that prepare students to have an active role in a new web focused on interactions, groups and social development of knowledge. We can´t info-exclude learners from that "new" global society where, as Tim Berners-Lee foresaw a few years ago, everyone can be producer and not just an information consumer: "*I have always imagined the information space as something to which everyone has immediate and intuitive access, and not just to browse, but to CREATE*" (Berners-Lee, 1999, p.169).

5. Limitations

The number of participants in the study was relatively large but the sampling method limits the scope of the study. The data presented in this paper are only an initial feedback from the higher education community awareness and expectations regarding the new social Web, so future research with more representative samples will certainly lead to more robust results. The second limitation had to do with free software used to fill in the questionnaire and to analyse data (surveymonkey.com). When we were already developing the study, we verified that the free version had a maximum limited number of questionnaires to storage data. We have tried to recover the individual records but software didn't allow it. Therefore, we had to download all data separately and progressively. The fact of being impossible to recover an important part of the individual records of the persons had prevented an analysis relating different variables of the study, which could brought more value to it. We could have checked if Web 2.0 tools were more used by professors or students or in which institutions are these tools more or less used, among other aspects that could have been studied.

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