

WEB 2.0 Technologies Supporting Students and Scholars in Higher Education

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Abstract. As computers, notebooks and mobile phones update Facebook's statuses, search and contribute to different themes for Wikipedia and tweet the latest news, a generation and a unique manner of communication are born from this new terminology and philosophy of open and flexible access, shared knowledge, user-generated content and media richness. As many trends, Web 2.0 started by being an exclusivity of certain type of users and then a snowball-like effect made it one of the most popular techno-social phenomena of the 21st century. Word of mouth, user recommendation and the technology itself turned an innovation into a routine. Soon it was disseminated through the different sectors of society, reaching business, health and also education. This paper will examine the benefits that both students and scholars experience in using Web 2.0 in the higher education context.

Keywords: Web 2.0 technologies, higher education, teachers, students.

1 Introduction

Education is a central concern for any society. The responsibility to promote the dissemination of knowledge and to provide the highest quality curricula possible lies on universities. Despite this recognised role, universities and other higher education institutions are no longer the sole information providers particularly due to the exponential development of information and communication technology, namely the World Wide Web. The central role of education inside a society, leads to a constant need for improvement. Educators continuously seek for new methodologies to improve the educational experience, with a growing focus on social technologies [21].

The education sector has experimented with many different technologies with pedagogical value. Nonetheless, not all of these technologies have proven their actual learning benefits. In terms of Web 2.0 tools, the ambiguity felt by education is sometimes attributed to the central notion of user-as-author. This main concept of the Social Web means that everyone is encouraged to voice their opinions and contribute actively, independently of their knowledge in the subject [5].

Although students and teachers are partners in the academic setting and depend of one another to achieve their goals, their roles place them at different ends of the education system. They experience the learning process differently and when examining the advantages of any type of educational technology it is paramount to analyse both sides. Hence, the consideration of Web 2.0 advantages in higher education is not completed without an assessment of the benefits that students and scholars may experience. This paper will examine Web 2.0's role as an educational resource in higher education from the perspective of both students and teachers. It will begin by providing an overview of the enthusiasm surrounding the implementation of Web 2.0 in higher education and it will then analyse its perks for teachers and students. To conclude it will provide a brief discussion on the shortcomings of the alliance between Web 2.0 and higher education.

2 Web 2.0 and Higher Education: Enthusiasm

Students and teachers stand as the two key elements of the education system. They each represent a different set of interests, objectives and obligations. Thus, it is evident that they experience the advantages that Web 2.0 brings to higher education in a significantly disparate manner. Since Web 2.0 has started to spread its influence in the several areas of society, more than a few new terms have emerged. It is common to use 2.0 as the suffix that indicates Web 2.0's influence or usage. Concepts such as Business 2.0, Health 2.0, and Education 2.0 have become common denominations for the implementation of Web 2.0's tools in each of these sectors. In this paper, both teachers 2.0 and students 2.0 are labels that stand for the teachers and students who use Web 2.0 tools. Both terms are to be understood under this general and extensive meaning.

In general, Web 2.0 potential advantages for higher education subsume the facilitation of collaboration, peer participation, promotion of an independent and autonomous manner of learning and teaching and serves as a connection between formal and informal methods of education delivery [15]. Web 2.0 allows access to open educational material and software. Furthermore, most of these resources are free of charge, which represents an advantage over conventional resources. Web 2.0 also benefits the higher education sector because it reduces bureaucracy and paperwork in the student-teacher relationship; it offers flexibility to the learning and teaching processes; it foments interactivity and collaboration both internally and externally; it liberates the learning community from any space and time restraints; and as a precursor of new technology, it brings the academia up to date with the more recent trends and news [3]. Jadu [11] reports that blogging and online forums are the two most used Web 2.0 tools by higher education entities internally. With regard to external resources, Twitter, Youtube and social networks (Facebook and MySpace) are the most popular among academic institutions.

3 The Teaching Process: Teachers 2.0

Research has shown that, despite their remaining scepticism with regard to the adoption of Web 2.0 tools and services in higher education institutions, there is an increasing number of scholars that are investing in the implementation of Web 2.0 as a valuable pedagogical resource. Table 1 shows the how higher education teachers are using the social media in their professional and personal lives.

Table 1. Teachers’ preferred Social media platforms [13]

| Social Media Platform | Professional Reasons | Personal Reasons |
|-----------------------|----------------------|------------------|
| Facebook | 30% | 57% |
| YouTube | 40% | 49% |
| LinkedIn | 17% | 22% |
| Blogs | 24% | 21% |
| Wikis | 17% | 15% |
| Twitter | 7% | 11% |
| Flickr | 5% | 7% |
| Slideshare | 3% | 3% |
| MySpace | 2% | 3% |

The table above demonstrates that by now social media has reached an acceptable level of confidence. Teachers seem to be widely adopting Web 2.0 tools both in their private and professional arenas. It is also possible to observe that Facebook and YouTube are the favourite Web 2.0 websites for personal and professional usage, which confirms their overall popularity. Also, only Blogs and Wikis had a higher percentage in the professional arena than in the personal, meaning that professionally speaking teacher give prevalence to Facebook, YouTube and Blogs. These three types of social media are the elected for educational purposes.

From scholars’ point of view, the benefits of using social technology to assist the teaching process are manifold. The Social Web allows for an improvement of their teaching methodology, diversifying not only their approach but also their knowledge. Moreover, by promoting the exchange of information, Web 2.0 gives educators an important opportunity to share their teaching materials and benefit from their peers’ resources as well. Also the reach of Web 2.0 means that this cooperation can take place in the same institution or between different institutions from different parts of the world [6]. The widespread use of Web 2.0 facilitates the communication and exchange of ideas and resources between scholars that can be as close as the department on the next building or be teaching in a university in a different continent. Web 2.0 has presented teachers with the opportunity to develop their own material more easily and also to share that material with their peers. The ease of use that characterises Web 2.0 tools facilitates the creation of content either by one teacher alone or by several teachers’ collaboration [5]. The fact that content can be produced and manipulated constitutes an important tool as teachers can take the material that already exists and adapt it to suit the specific educational requirements of their students.

An immediate advantage that emerged from the use of Web 2.0 in education was the enhancement of cooperation between academic institutions. This collaboration has come as far as co-authoring. It is increasingly easy for academic educators to share their unique material for teaching and also to benefit from the material created by others [6]. In the case that the scholars prefer not to create their own material, there are unlimited resources online, that others have generated. This material is also available in a wide range of formats and has, therefore the flexibility to be incorporated with the other traditional materials that are used in lectures [14].

Since the application of Web 2.0 tools in higher education benefits scholars at many levels of the teaching process it is important to understand how they benefit the teacher's preparation for that process. The fact that more and more universities are adopting Web 2.0 tools as pedagogical instruments, places a considerable pressure on the higher education teaching community. Teachers are expected to be aware of these new technologies and they are being required to master them so they can be used in their classes. This situation leads to questions regarding teachers' preparation to do so. Web 2.0 has its own peculiar traits and if on the one hand it may constitute a problem for teachers who are less prepared for these social tools, it can, on the other hand, be a solution for the challenge of having to keep up with new technological trends. Albion [1] argues that the answer to the recent challenges emerging from the need to master Web 2.0 tools is the use of these tools to create learning communities. These communities would have the twofold purpose of enhancing teachers' preparation for the adoption of Web 2.0 and of providing actual experience. By engaging in these communities, scholars would be participating directly in a Web 2.0 platform and, by experiencing it firsthand, they would be able to derive knowledge from this practice. This knowledge could then assist them in the moment of incorporating Web 2.0 in their own lessons. This is crucial for professionals that will/are being required to implement them in their teaching practice.

There are also financial prerequisites in using Web 2.0 as an auxiliary. Teachers using Web 2.0 to prepare their classes have the opportunity to benefit from a cost efficient tool. Some of the more conventional technologies used in education are expensive and require constant pricey updates. Web 2.0 provides services and tools which are, in their majority, free and independent of costly upgrades [14]. Moreover, they provide teachers with the support they require in order to make their teaching methods more adequate to the existing and dominant student-centric approaches. They become, therefore, empowered to recycle their lectures into more appealing, varied and encouraging lessons, with new ways of exposing the course content and developing their own professional aptitudes [15]. They benefit from new ways of delivering information and are able to support the evolution of their academic careers, by fomenting a diverse set of digital skills.

A great part of a teacher's work has to do with evaluation, with providing feedback on students work. Web 2.0 hosts a variety of services that helps to simplify this otherwise time consuming task. There are systems of voice recording, for example, that allow for a swift feedback from the teachers, minimizing the time spent on writing their assessments on students projects [14]. The interactivity that characterizes Web 2.0, not only helps to reach a wider audience and to be able to ask for advice from

people from all over the world. The interactivity that most tools allow, grants the tutors with instruments that cultivate interaction almost on their own, this will free the teacher to do other important tasks. Also, it relieves a significant part of the strain that the tutors feel when trying to assure that interaction in their lessons reaches a high level of satisfaction for students [14].

4 Learning in the Social Web Age: Students 2.0

Students 2.0 are mainly characterized for their use of Web 2.0 in education. They are a new generation of learners that extend the social use of Web 2.0 in their private lives to the public domain of education. Huang & Yoo [9] conducted a survey on students’ acceptance of Web 2.0 tools and one of the variables that they measured was the frequency with which different social media applications were used by students. Table 2 illustrates the differences between social media applications in terms of their frequency of use.

Table 2. Students’ frequency of use of Web 2.0 applications (adapted from [9])

| Web 2.0 applications \ Frequency of use | Never used | Less than once a week | 2-5 times per week | More than 5 times per week | Total respondents |
|--|------------|-----------------------|--------------------|----------------------------|-------------------|
| Blog | 79 | 28 | 2 | 1 | 110 |
| Wiki | 138 | 18 | 2 | 2 | 160 |
| Instant messengers | 7 | 25 | 25 | 31 | 88 |
| Social networks (ex. Facebook) | 7 | 8 | 13 | 72 | 100 |
| Video sharing (ex. YouTube) | 39 | 39 | 21 | 9 | 108 |
| Online games | 126 | 30 | 6 | 7 | 169 |
| Virtual environment (ex. Second Life) | 239 | 3 | 0 | 2 | 244 |

Table 3. Students’ utilization levels in Web 2.0 applications (adapted from [9])

| | Blogs | Wikis | Instant messengers | Social networking | Online video sharing | Online games | Online virtual com. |
|-------------------------|-------|-------|--------------------|-------------------|----------------------|--------------|---------------------|
| Performance | 4.30 | 4.79 | 4.43 | 4.93 | 5.08 | 4.09 | 4.54 |
| Effort | 4.98 | 4.88 | 6.95 | 7.18 | 5.63 | 5.09 | 4.64 |
| Attitude | 4.63 | 4.80 | 5.43 | 5.91 | 5.85 | 4.80 | 4.64 |
| Social influence | 4.27 | 4.65 | 5.16 | 5.40 | 5.30 | 4.53 | 4.55 |
| Anxiety | 4.85 | 4.84 | 3.00 | 3.02 | 4.19 | 4.36 | 4.97 |

Table 2 shows that wikis, social virtual environments and online games had the lowest frequency rates and social networks and instant messaging were rated as the most frequently used. This data shows a cleavage between the levels of familiarity that students have with the various social technologies. Their acceptance of the technology and the frequency with which they use it will also contribute to the benefits

they can harvest. In the same way, how they perform in a technology equally dictates the profit they can take from them. Using a 9-point Likert scale, table 3, illustrates the results of Huang & Yoo [9] survey concerning students' utilization level in the aforementioned web 2.0 applications. There was nearly no effort put into the technology that students use more frequently and the anxiety they feel when using them is low. When compared with the anxiety that platforms such as Second Life provoke, it becomes evident that these are the tools they least use and are less comfortable with.

Web 2.0 offers a variety of platforms and services and its application in education varies accordingly. There are tools to accommodate a significant number of academic demands. The existing platforms allow students to create and share media. YouTube is an example of a host of media content, in this case video, that students can share among themselves. Also, communication and discussion can be easily facilitated by forums and discussion boards, which can also be a valuable resource in terms of searching for information and assignment material. Another way to connect is through social networks, where communities of students and teachers are assuming significant contours and asserting their presence. Web based games and virtual worlds can also be a way of connecting with other and another added benefit is the fact that sometimes these environments are designed according to certain historical realities, hence combining entertainment with knowledge. Text is an option that was not left behind, despite the multiplicity of formats available. Wikis and blogs are two technologies that permit extensive text content. Students can use them to search for information and to add information. They have the technology to allow students to write extensively on different types of subjects. Wikis allow for co-creation and blogs are an advantageous tool for writing and receiving feedback on that writing [7].

With Web 2.0, learners assume a much more active part in the entirety of the learning course of action. They are more able to interact with each other and be active participants at all levels and phases of their learning path. The peculiar features of Web 2.0 allows them to be editors of their own material, to share that material with their peers and even to evaluate their own content as well as their peers contributions. The options of contributing with original material, to edit existing content and to provide feedback are unlimited and allow for a great latitude in terms of educational practices [2]. Authoring content and sharing it with their peers is one of the advantages that teachers and students have in common. The students have as well the power to produce their own content and share what they have created with others. Pedagogically speaking this is a very effective manner of increasing the amount of information that a student learns. In order to create content for a project or task in the context of their course, students have to learn about what they are going to present and this is a valuable strategy to increase engagement with the curricula [5]. The content creation tools developed by Web 2.0 allow students to be at the origin new information. They have at their disposal, the tools to contribute with their own information and also to edit the information that is already available online. They are no longer dependent on conventional publishers. They can publish their own material or reprocess someone else's material and they can do that in a variety of formats. They are not solely limited to words, they can produce images, audio, video [4].

The around-the-clock availability of Web 2.0 is very important for the possibility it grants students to access information at anytime that they require it. This is particularly important for students who cannot attend classes or study only in a part-time re-

game. Additionally it provides a suitable alternative to conventional libraries, which operate on standard working hours and therefore limit access to publications needed to accomplish academic tasks. This flexibility equally applies to space. There are no space constraints with Web 2.0, since it can be accessed anywhere with an internet connection. Students have the possibility to work in the university or outside of its borders. This dynamic access promotes the creation of a learning community unbound by the academic campus [3].

The particular facets of Web 2.0 encourage students to be more focused in an open learning environment, where communities of practice can be created to potentiate learning and engage in more practical skills acquirement. Students have a less passive behavior and adopt, in most cases, a more participatory attitude. The Social Web also prepares them better for the reality of professional life by emphasizing problem solving approaches [2]. Moreover, students are already familiarized with Web 2.0 technologies and they can easily and swiftly adjust to them [3]. Unlike some educational technology, Web 2.0 tools are not time consuming in terms of training, not only because they are intuitive, but also due to their popularity among the younger generations. Web 2.0 is a valuable source of collaborative technologies. Research has shown that students tend to use these social tools to engage with their peers outside the classroom and to perform group work. These tools are basically used to share files between the members of the group and to assist the communication among members [18]. Web 2.0 is an empowering tool that provides students with both the opportunity and the means to develop a more independent form of study and also of doing research. The learner has new avenues of information and a wide range of tools to question and interact with them [7]. The learner finds new ways of posing questions and innovative methods of finding the answers.

5 Web 2.0 and Higher Education: Caution

The consideration of deploying any type of technology must be coupled with a meticulous reflexion about its potential demerits [12]. Despite the positive aspects that have been highlighted in the previous sections, it is imperative to analyse the elements of Web 2.0's application in higher education. Also, the in-depth knowledge of its shortcomings is important to the full enjoyment of its benefits. By weighting both the advantages and the tensions associated with the use of Web 2.0 in higher education it is possible to have a more complete depiction of this phenomenon.

As an endless source of information, the internet contains certain perils that have been exacerbated by the openness of Web 2.0, namely the many faces of cyberbullying and the widespread availability of all types of improper content [7]. Another aspect to consider in terms of content is copyright and the protection of the data that users generate. There are two main challenges here, on the one side, there is the perceived intricacy of assessing what content is reliable and on the other side, there is the insufficient control in protecting original material [17]. Finally, it is important to highlight the fact that, since everyone can contribute, there is an increasing difficulty in distinguishing the voices of the experts from those of the amateurs [6]. In light of this amalgamation of opinions an information flow, it has become fundamental for students to cultivate a critical sense. Web 2.0 does not require editorial vetting and

not all learners have developed the necessary aptitudes to select the most pertinent content. The same type of triage is necessary when choosing which platforms, services and tools to use for educational purpose. The rate, at which they emerge, makes the task of assessing their pedagogical potential a very complex one [17]. The adoption of technology that was initially created for social purposes implies that its application for other uses might be compromised by its entertaining nature. The overuse of Web 2.0 tools in education can constitute a distraction from the main point of learning [19]. The incapacity that the current assessment strategies have demonstrated in terms of providing a complete account of what the students have accomplished in using Web 2.0 tools remains an often cited argument for those who continue to doubt the pedagogical benefits of the Social Web [8].

The higher education sector is in terms of culture and organisation a very unique entity, with characteristics that are often divergent from the precepts of Web 2.0: academic hierarchy vs. a democratic bottom up viewpoint; scrupulous triage of academic material and curriculum vs. the lack of editorial control of Web 2.0; academic orientation vs. social and entertainment direction [20]. Also, some of the tools that are adopted inside the higher education entities are developed only for internal, which clearly contradicts the basic Web 2.0 precept of everyone, everywhere, anytime knowledge [17]. The widespread use of Web 2.0 does not necessarily translate into a universal use of these tools. The digital divide is still a contemporary challenge, since not all students have the same access to these platforms [16] and variables such as user's aptitudes and technology capability help to dictate the existing digital divide [10].

The impulsive character of Web 2.0 platforms means that sometimes certain tools and services are regarded as important pedagogical instruments and employed in academic practices, but they can abruptly change in format, content and/or purpose, rendering them ineffective in terms of their educational application. The rate at which Web 2.0 changes is much faster than the rate at which the universities can incorporate them [17]. This changeability is also a hindrance when attempting to create a coherent list of the required skills that students should have in order to thrive in the digital era. Since an agreement cannot be reached in terms of what these competences should be, it is very complicated to embody them in the curricula [12].

6 Conclusion

Students and scholars play important yet different roles in higher education. They seem to be positioned at opposite ends of the learning process. Nonetheless, the teaching and learning roles attributed to teachers and students respectively, seemed very clear in the past, but are nowadays more blended as a result of the increasing control of students over the learning process. Scholars have to teach, but they also have to learn. If this was true before, it is even more real now, that technology changes at a fast pace. Teachers are being faced with the need to keep an updated record of and to practice new educational technologies.

Despite that fact that this paper was organized to highlight the different perspectives of students and scholar when it comes to the profits of deploying Web 2.0 tools in higher education, it also becomes clear that there many similarities. Interaction, collaboration, user-generated content, editorial features, format variety and flexibility,

openness, free services and worldwide reach are some of the core definitions, characterizing the Social Web and they are simultaneously the main advantages, common to students and teachers, for incorporating it in higher education. Since these concepts are more liberal than the conventional structure of formal academic institutions there are still some difficulties that prevent the full acceptance of Web 2.0's pedagogical value. Also, and more importantly, Web 2.0 in itself will not bring a magical solution for the challenges that today's education face, but depending on how it is implemented, it may be a valuable help in addressing them.

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