



Scholarship 2.0: Analyzing scholars' use of Web 2.0 tools in research and teaching activity

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Abstract

Over the past 15 years the Web has transformed the ways in which we search for information and use it. In more recent years, we have seen the emergence of a new array of innovative tools that collectively go under the name of 'Web 2.0', in which the information user is also increasingly an information producer (i.e., prosumer), by sharing or creating content.

The success of Web 2.0 tools for personal use is only partially replicated in the professional sphere and, particularly, in the academic environment in relation with research and teaching.

To date, very few studies have explored the level of adoption of Web 2.0 among academic researchers in their research and teaching activity. It is not known in what way how and how much Web 2.0 is currently used within research communities, and we are not aware of the drivers and the drawbacks of the use of Web 2.0 tools in academia, where the majority of people is focused either on research or on teaching activities.

To analyse these issues, i.e. the combined adoption of Web 2.0 tools in teaching and research, the authors carried out a survey among teaching and

researching staff of the University of Breda in The Netherlands. This country was chosen mainly because it is on the cutting edge as far as innovation is concerned. An important driver in choosing the Breda University's academic community was the fact that one of the two authors of this survey works as senior researcher at this university.

The purpose of our survey was to explore the level of adoption of Web 2.0 tools among the academic communities. We were interested in investigating how they were using these tools in the creation of scientific knowledge both in their research and teaching activity. We were also interested in analysing differences in the level of adoption of Web 2.0 tools with regard to researchers' position, age, gender, and research field.

Finally, in our study we explored the issue of peer reviewing in the Web 2.0 setting. In particular, we investigated whether social peer review is regarded by researchers as a viable alternative to the current closed peer review system (single-blind or double blind).

We approached about 60 staff members, but only 12 faculty members completed the survey fully. This means that our results can only be regarded as exploratory, but we still believe that they represent a complementary perspective with respect to previous studies.

Key Words: research activity; social tools; teaching; user behaviour; Web 2.0

Introduction

Seven years after its birth, the Web 2.0 has become a consolidated virtual "reality". Due to their ease of use, social media have become pervasive and extremely popular among web users. This social phenomenon is mainly fueled by personal needs and motivations, but Web 2.0 tools are now also beginning to devolve their communicative power in people's professional lives.

In the academic context, it is extremely interesting to explore how social tools support science research and teaching and how the adoption of these tools is affecting the traditional four phases of the scholarly communication system: creation, certification, dissemination and preservation. The broad adoption of Web 2.0 technologies by research communities is also a big challenge both for publishers and libraries. They may feel threatened in their respective roles by

the disintermediation brought along with the adoption of these technologies. As a consequence they should find strategies to cope with this phenomenon. Particularly, the main challenge for libraries is learning to use social tools not only to develop new services in the environment of social media and to “connect with researchers, but also to enhance the research process” (McMahon et al., 2012).

In this paper we will explore how the research communities are using Web 2.0 tools in their research and teaching activities, whether there are any relevant disciplinary or generational differences in their use, what tools they adopt more willingly, what contents they are trying to convey through the use of social tools, what benefits they derive from their use, and what the main obstacles are to their adoption. We will analyze the results of a survey carried out in April 2012 among the university lecturers of two departments within the Academy of Digital Entertainment, i.e., the Media and the Game departments of a University of Applied Sciences in The Netherlands, the University of Breda.

Scholarly Communication in the Web

Since the beginning of the 1990s, Internet has deeply innovated the way in which scientists do research. The innovative tools of communication and network sharing (such as e-mail, discussion forums, newsletters and, most recently, digital repositories — e.g., the physics preprint ArXiv or the biologists' database GenBank) and *collaboratories* (Finholt, 2003) have strongly reconfigured the different phases of scholarly communication (i.e., creation, certification, dissemination, preservation and research evaluation). The Web as a platform acts as a glue for the scholarly communication phases, reduces barriers to entry, speeds up scientific communication and collaboration, fosters the interdisciplinarity and cross-fertilization of science, and increases the democratization of knowledge by offering new tools and models for the dissemination of science (i.e., the open access paradigm which advocates for an open and seamless dissemination of knowledge).

The Web 2.0 has empowered all the above-mentioned innovations. Not all scholarly communication phases and functions are affected in the same way by the Web revolution. The two phases which show major changes are the creation of scientific knowledge (Bukvova, 2010; Ponte & Simon, 2011) and

research dissemination. Preservation, certification and evaluation are less deeply affected by the Web changes as more formal elements predominate in these phases, particularly in the latter two. Nevertheless, some interesting experiments are showing the path to a more innovative approach both in research certification and evaluation. With regard to certification, experiments of open peer-review are being carried out by some e-journals (e.g., PLoS ONE, Atmospheric Chemistry and Physics) or have been performed in the past years (Nature's 2006 trial of open commentary) and are challenging the consolidated single-blind and double-blind peer-review system. With regard to the research evaluation, new approaches are based on usage metrics (Journal Usage Factor). These innovative measures integrate with the more traditional citation based ones (i.e., the Impact Factor, H-index). Yet "these initiatives still lack the necessary institutional awareness" (Ponte & Simon, 2011, p. 150) and do not substitute the citation metrics.

The full potential and the innovative communication models offered by the technology, particularly the combination of the Open Access/Open Data paradigm with the most advanced tools of the Web 2.0, are also reconfiguring the traditional relationship between science and society and provide new impetus to the concept of "citizen science". Although this collaborative model has a long history and is certainly more suitable for some domains and types of research (Lyon, 2009), some consolidated and successful examples of citizen science can be given in different disciplines, e.g., in astronomy ([GalaxyZoo](#)¹ and [Stardust@home](#)²), meteorology ([ClimateWatch](#)³) and biology ([Rosetta@home](#)⁴).

Notwithstanding this increasing consolidation of Web 2.0 technologies in the scholarly communication, it is still difficult to understand whether or not this remains a niche phenomenon with generational and disciplinary biases. It is also important to know whether social media bring some benefits to the research and teaching workflow, and if so, what kind of benefits.

Web 2.0 technologies in research and teaching workflow: a literature review

To date, many articles have generically dealt with the topic of Web 2.0 in the scholarly communication and research workflow (Kalb et al., 2009;

Mahapatra, 2010; McMahon et al., 2012). More specifically, the topic of the adoption of the Web 2.0 tools by academic research communities has already been explored in a few surveys conducted in different countries. One of the first studies on the way in which researchers are making use of Web 2.0 tools in the course of their researches was carried out by the Research Information Network in the UK in 2009 (RIN, 2010). The study developed a composite methodology combining an online survey with an in-depth, semi-structured interview with a sample of 56 survey respondents, including a total of fifteen semi-structured interviews with service developers and twenty interviews with Web users. 1,282 valid responses were obtained from the online survey. Findings show that 45% of the respondents are occasional users of Web 2.0 tools. Researchers tend to use mostly well-known generic tools such as Google Scholar (73%) and Wikipedia (69%) while a significant minority also use social networking services such as YouTube (29%), Facebook (24%) and Twitter (10%). Overall, however, the RIN study highlights a low level of uptake among the UK research community of Web 2.0-based services.

In 2010, another relevant study on the use and impact of Web 2.0 tools on research workflows was carried out by CIBER at UCL and funded by the Emerald Publishing Group. The CIBER study was carried out internationally online and received 1,923 complete answers from academics. Findings are aligned with the RIN study as the results show that the most established Web 2.0 tools are also the most popular ones: tools of collaborative authoring (e.g., Google Docs) are by far the most popular (62.7%), followed by social conferencing tools (e.g., Skype, 48.3%) and by scheduling and meeting tools (e.g., Google Calendar and Doodle). In order to share images and videos, 69% of respondents used YouTube, 14% used SlideShare and 12% Flickr. The preferred bookmarking service was Delicious. The most used social bookmarking platform was Facebook. The CIBER study also highlights subject differences in the use of the Web 2.0 technologies: natural and computer scientists were the most frequent users of social media, while social scientists and humanities researchers, albeit attracted by the new communicative tools, stay behind. With regard to age, there is a statistically clear distinction between researchers under- and over-35 years old. Yet "it is very difficult to detect any general overall pattern" (Rowlands et al., 2011, p. 188).

A third survey on the adoption of Web 2.0 technologies in the research workflow was carried out by Ponte and Simon (2011) among researchers of different disciplines in Europe from May to August 2010. The authors obtained 345

full responses. Findings show that researchers massively used search engines (Google Scholar was used by 99.7% of respondents). Among Web 2.0 tools, wikis (42%), blogs (38.6%) and social networks (34.8%) are fairly popular. Social bookmarking (25.8%) and micro-blogging (17.7%) are less used.

A similar Web survey was conducted in Finland in November 2009 by Gu and Widen-Wulff (2011) among a targeted sample of Abo Akademi University academic staff. Findings show that researchers are well-acquainted with Web 2.0 tools. However, “respondents use more multimedia sharing and social networks in everyday life than in research or teaching work” (Gu & Widen-Wulff, 2011, p. 768). Researchers tend to use different social tools according to their scope in research.

Scholars from educational, social and behavioural sciences such as Alexander (2006), Anderson (2007), Churchill (2009) and later Churchill, Wong, Law, Salter, and Tai (2009) and Grosbeck (2009) started analyzing the use of Web 2.0 technologies in educational activities. All the above-mentioned researches stress the potential of the Web 2.0 to promote a deeper learning and foster the responsible adoption of social technologies in teaching activities. In particular, Churchill et al. describe the experience of the Repository of Interactive Social Assets for Learning (RISAL), the social platform implemented in 2009 at the University of Hong Kong which integrates social bookmarking, repository and networking and supports students and teachers in managing, sharing and reusing learning and teaching resources.

In 2008, in order to gauge the level of acceptance of Web 2.0 applications in learning to “inform educators in higher education for engaging and effective learning experiences”, Yoo and Huang (2011) conducted a survey among American and Korean college students. Their results show that Korean students massively use blogs and online social communities but suffer from a high level of anxiety in using online conferencing tools (e.g., Skype) and social virtual environments (e.g., Second Life), while American students do not use as many Web 2.0 tools as Korean students do but find themselves at ease in online social communities. Korean students also feel less at ease in using Web 2.0 tools for learning; they admit that Web 2.0 technologies are useful in learning, but in comparison with American students they do not use them. These results are aligned with Cavalli (2012) who gives evidence to the fact that for digital natives a high level of use of Web 2.0 technologies for personal needs is not necessarily predictive of a high use of the same technologies for learning activities.

Another stream in the literature focuses more directly on the application of a single Web 2.0 technology in the education environment, in particular wikis (Chao, 2007; Parker & Chao, 2007), blogs and microblogs (Churchill, 2009; Ebner & Maurer, 2009).

To date, no survey has explored the use of social media in both research and teaching activity. This was the first goal of our study. Moreover, we were intrigued by the rapid change in the modes of communication and in the use of Web 2.0 technologies. It was, therefore, interesting for us to explore if, two years after the last survey, there had been relevant changes in the adoption of Web 2.0 technologies in research and learning activities. Finally, as impact of learning and using the technology is influenced by culture-related aspects⁵ (Collis, 1999), we decided it was interesting to us to conduct a survey on the use of social media in a well-developed and technology-oriented country like The Netherlands.

Methodology and findings

Many definitions of Web 2.0 can be found in the literature (O'Reilly, 2008; Siemens, 2008). For the purpose of our survey, we decided to adopt Anderson's Web 2.0 definition: "Web 2.0 encompasses a variety of different meanings that include an increased emphasis on user-generated content, data and content sharing and collaborative effort, together with the use of various kinds of social software, new ways of interacting with web-based applications, and the use of the web as a platform for generating, re-purposing and consuming content" (Anderson, 2007).

The survey was conducted in April 2012 through an online questionnaire, which was divided in three sections:

1. personal information
2. Web 2.0 tools and their adoption in research activities
3. Web 2.0 tools and their adoption in teaching activities.

The questionnaire was sent by internal mail to university lecturers of the Media and the Game departments of the Breda University of Applied Sciences in The Netherlands. Out of approximately 60 addressees, 29 accessed the online survey and 12 completed it. Six addressees started but did not finish it. Most of them stopped after completing the first demographics questions,

right before the survey started to ask more specific details about their social media usage. As a result, only 12 questionnaires were analysed.

The final respondents were either at the level of junior and senior lecturer/researcher and, in terms of research discipline, they were heterogeneously and not evenly distributed among the fields of arts and humanities (2 respondents), social sciences (4 respondents), computer science (5 respondents) and business, marketing and management (1 respondent). Age varied considerably, with the majority being between 41 and 45 years.

The survey questions can be found in Appendix A. Below, replies are grouped according to the two main topics that were addressed by the enquiry and will be discussed in detail in the following two subsections.

The adoption of Web 2.0 tools for research activities

For research activities, most respondents (n=8) use Web 2.0 tools regularly for their professional activities, 3 respondents use them, but only rarely, and only 1 respondent stated to use them solely for personal, private purposes. The most used social networking platform is LinkedIn as indicated by almost all respondents (n = 10), while Facebook is used only by 6 respondents. For this question multiple answers were possible: this explains why the total amount of answers exceeds the number of accepted respondents (that is those who completed the questionnaire), although 2 of the registered 12 did not indicate any social platform. Because the survey was filled out anonymously online, we were not able to investigate further how and for which research activities such social platforms are actually used. Besides these platforms, Wikis and blogs seem to be rather popular: 9 respondents declare to be using Wikipedia and 5 use institutional Wikis, whereas scientific blogs are used by 5 of the respondents, with 3 of them using their personal blog and only 1 the personal blog of one of their colleagues. These were also questions for which multiple answers were possible. Microblogging platforms are used by a very restricted number of respondents who are all using Twitter, with one respondent indicating specifically to be using the Twitter account of the university.

Social bookmarking or reference management tools are not that well known, according to the number of answers received to this question. Only 3

respondents replied, each of whom indicating a different answer: one using Mendeley, one Zotero and one CiteULike.

Collaborative project platforms are not used at all, maybe even not known, given that only one person filled out this question. We fear that the term was not recognised. This single reply, in fact, marked "Others" specifying that the platforms used are Dropbox and N@tschool, which is the e-learning platform developed by the University of Breda. Other kinds of collaborative platforms include all Google-related products, i.e., Google Calendar, Google Docs, GTalk, along with Skype and YouTube as indicated in Figure 1.

When we look at the reasons why adopting Web 2.0 tools is considered positive from a research point of view, respondents indicate that such tools:

- are free to use (mentions: 100%);
- are easy to use as there is only a minimum set of skills required to be able to use them (11 mentions);
- help them keep in touch with their colleagues (9 mentions);
- help them work in a collaborative way (8 mentions), with only 1 respondent not agreeing with this statement;
- help them share and disseminate fast ideas and research results (6 mentions);
- help them to keep updated in their own research field (6 mentions); however, four respondents claim that Web 2.0 tools do not help them at all in remaining up-to-date in their research;

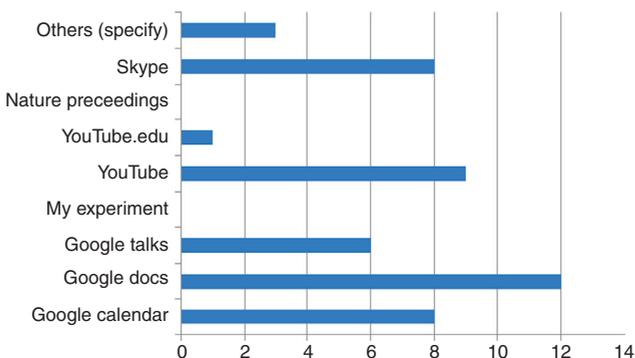


Figure 1: Collaborative platforms and tools used.

- help them save time and costs (i.e., travelling is less necessary....). 6 respondents find that Web 2.0 can be used as a replacement for personal travels because of the possibility to have conference calls, of sharing resources remotely as indicated earlier, or of communicating synchronously. However, 3 respondents do not see these possibilities.

At the other side of the spectrum, the reasons for not adopting Web 2.0 tools in their research activity are:

- the fact that the use of Web 2.0 tools conceals a sum of technologies and concepts which are still insufficiently defined; however, the majority of the respondents (8 mentions = 67%) disagree with this statement;
- being very busy and finding that using these tools takes too much time; this answer was indicated by only 3 respondents; most respondents (9 mentions) disagree with this statement;
- the low quality of the content shared; only 2 respondents agree with this statement;
- privacy concern: only indicated by 1 respondent;
- the fact that Web 2.0 tools promote amateurishness by opening contents to non-academic users was not claimed by anybody: no single respondent believes that the democratic character of the Web has opened up the doors to non-professionalism;
- not trusting Web 2.0 tools and platforms: all respondents do not agree with this statement;
- the fact that in their own research field collaboration is not a *modus operandi* (so researchers mainly work by themselves); all respondents disagreed.

The adoption of Web 2.0 tools for teaching activities

The situation is somewhat similar when we look at the teaching activity. Nine of our respondents declare to use Web 2.0 tools regularly in their teaching activities, and only 3 use them seldom. No one among our respondents states not to use them at all, neither for professional nor for personal goals, or to use them only for personal goals.

Among the tools that are mentioned, we find many Google products, Dropbox, blogs, YouTube, CiteUlike and Moodle. Surprisingly, also Skype and Twitter are used as a teaching tool.

When asked for the purpose of use, the respondents indicated:

- for communication and information sharing;
- for giving, submitting and grading of assignments;
- for collaboration and discussion with and among students;
- for polls, examples, networking, presentations and viewing of streaming videos such as tedtalks6, film clips;
- for referencing to Web sites or any other study material that are used as showcases for students' projects.

Table 1 shows how the respondents assessed the main advantages of Web 2.0 tools for teaching. As can be seen, the possibility of posting teaching resources (videos, slides, etc.) received most positive mentions (definitely agree – 2, agree – 9, neutral – 1). The immediate feedback from students is regarded nearly as positive. Nine respondents agree or definitely agree with this statement.

	Totally disagree	Disagree	Neutral	Agree	Definitely agree
Immediate feedback from students	0	1	2	8	1
Posting of teaching resources (video, slides, etc.)	0	0	1	9	2
Creation and sharing of bibliography with students	1	1	4	5	1
Creating a more accessible, portable, durable and interactive educational portfolio	0	1	3	7	1
Creating a very good classroom environment	0	1	4	7	0
Better identifying students' interests and the use of teaching resources	0	2	6	4	0
Helping students to develop capabilities in communication and collaborative works	0	0	3	9	0

Table 1: Advantages of Web 2.0 tools for teaching.

With regard to the main reasons for not adopting Web 2.0 tools in their teaching activity, respondents indicate:

- lack of time (5 mentions),
- lack of expertise (3 mentions),
- nobody finds that there are privacy concerns involved in the use of Web 2.0 tools.

Discussion of the results

According to the results of our survey, full awareness of the benefits of Web 2.0 tools in research activity is still to be acquired while the use of Web 2.0 technologies in teaching activities appears to be consolidating.

Social networks

LinkedIn is increasing its popularity and has become the most used social networking platform for professional activities, even exceeding the popularity of Facebook. This result highlights a change in the researchers' use of social media as they are beginning to use Web 2.0 tools that are more professional-tailored at least in the category of social networks. This is in contrast with what was reported by CIBER: "Researchers seem to be largely appropriating generic tools rather than using specialist or custom-built solutions" (CIBER & Emerald Group Publishing, 2010). Still Facebook is by far the most popular social network among students. This should be kept in mind by educators when choosing a platform to reach out to their students. In particular, they should consider the impact of the Network Effect. This is a generic term "used to describe the increase in value to the existing users of a service in which there is some form of interaction with others, as more and more people start to use it. [...] This network effect is driving the continual improvement of Web 2.0 services and applications as part of the architecture of participation" (Anderson, 2007, p. 20)⁷. The network effect has both social and economic implications. It explains why faculty find it easier and more effective to interact with students on Facebook rather than to aggregate them in the institutional Virtual Learning Environment (Anderson, 2007, p. 21).

Wikis

Wikipedia is by now a well-established and reputed reference resource. Park (2011) also gives evidence to the fact that citations to Wikipedia are increasing quickly in scholarly publications. Overall, wiki-style technology is becoming very popular in the research workflow and more and more integrated in the institutional research environment as 50% of our respondents declared to be using institutional wikis for research purposes.

Wikis in education can be used to accomplish different objectives. According to Parker and Chao (2007), educational wikis support two learning approaches: the constructivist paradigm and the cooperative/collaborative learning paradigm. The latter is particularly effective if the wiki refers to a community of practice.

Although wikis can have manifold applications in education, they are particularly well-suited to support collaborative writing: "a wiki as a writing tool maximizes the advantages of reflection, reviewing and publication, and of observing cumulative written results as they unfold" (Parker & Chao, 2007, p. 61). Wikis are also frequently used for project based learning and documentation and for building collaborative bibliographies.

Unfortunately, as the scope of our survey was general, we were not able to investigate deeper how and for which learning activities wikis are actually used at the University of Breda.

Blogs

Blogs are used for different purposes in the research lifecycle: to disseminate research results, to identify research opportunities and collaboration, to review the literature, to collect research data. (CIBER & Emerald Group Publishing, 2010.)

Blogs were originally designed to support personal diaries. They differed hugely from wikis as wikis were conceived as multiple collaborative tools. Notwithstanding this, only 3 out of 12 respondents publish a personal blog while 42% of respondents declared to post comments on scientific blogs (e.g., ScienceBlog.com, Nature.com Blogs, Research Blogging, RealClimate). It can be a very time-consuming task indeed for researchers to publish regularly in

a blog, but we presume that this result can be better explained by the fact that the blogosphere is increasingly becoming a relevant tool in the dissemination of new ideas, and blogs increasingly form a powerful social community-building tool. As a matter of fact, “blogs provide considerable scope to widen the audience for scientific papers and to assist in the process of public understanding of science and research” (Anderson, 2007, p. 35).

Blogs are also more and more integrated in scholarly publishing (Nature.com Blogs, the PLoS ONE blog’s EveryONE, BioMed Central blogs) and, therefore, they are more naturally conceived by researchers as a collaborative tool for disseminating ideas.

Microblogging platforms (mainly Twitter) are still used by a very restricted number of respondents. This result is aligned with the CIBER UCL study findings and can be explained by the fact that microblogging tools are really a new kind of social media and have yet to reach their full take up among researchers. Recently, Twitter is increasingly used to disseminate comments during conferences and seminars.

Blogs in education are also widely used. As a matter of fact, blogging facilitates and contributes to students’ learning. However, the extensive use of blogs by students requires facilitator’s figures to stimulate them to take part in the coursework (Churchill, 2009). Hence, educators’ personality and their capacity to involve students in the teaching and learning activities appear strategic.

Drivers

Ease of use and openness of Web 2.0 technologies⁸ are the two main reasons for adopting such tools in the research process. Keeping in touch with colleagues is the third important driver to the adoption of social media for research purposes. To date, these tools do not substitute but complement the more traditional ones (journals, repositories, search engines) for keeping up-to-date in the profession (50% stated that Web 2.0 tools supports their professional awareness).

The possibility to receive an immediate feedback from students, to share coursework and teaching resources and to help students develop capabilities in communication and collaborative works are the main drivers in the adoption of the Web 2.0 tools. Indeed, the importance of feedback to and from

students for learning in progress has been emphasized as a relevant pedagogical intervention (Salter, 2008).

Obstacles

Respondents declared to trust social media; trust is one of the main characteristics of Web 2.0 and one of the key components of its success. To our surprise, respondents declared that they are not concerned about privacy. However, privacy and Intellectual Property Right are both relevant issues in Web 2.0. Zimmer (2008), for example, by citing Elmer (2004), warns about the dangers of such an environment: "where the collection of personal information is a prerequisite of participation inevitably entrenches power in the hands of the technology designers". Privacy issues related to the Web 2.0, however, are much more complex, and boundaries between concern and not-concern are blurred. Kate Raynes-Goldie (2010), for example, gives evidence of the fact that students are more worried about controlling access to personal information (social privacy) rather than about how social networks might use that information (institutional privacy).

Lack of time is also not considered to be an obstacle when the use of social technologies refers to the research activity, but it may represent a drawback for their adoption in teaching and learning activities.

Conclusions

The concepts, projects, and practices of Web 2.0 as a whole, insofar as we have surveyed them, are extremely fluid.

In research activities, frequent use of social media is rare; only the use of LinkedIn is significant. The selection and uptake of Web 2.0 tools is mainly dominated by the Network Effect, and technologies are subject to alternating dooms.

In teaching and learning, the use of Web 2.0 technologies is consolidating, both at the personal and institutional level, and it presents interesting perspectives. Nevertheless, educators should choose Web 2.0 tools very carefully according to their teaching needs, course aims and personal attitudes. In

teaching activities much more than in research, the adoption of social media should always be subject to a more general teaching planning to support the development of young people's skills in creativity and innovation and life-long learning.

Although the majority of our respondents disagree with the statement that Web 2.0 technologies are not clearly defined, we derived the impression that terminology and differences among the Web 2.0 technologies and tools are neither clear nor consistent. Moodle or Dropbox are not *stricto sensu* Web 2.0 technologies, but they were cited by our respondents. This terminology confusion is also a logical consequence of the fact that Web 2.0 technologies are mainly in beta version and open source and are extremely innovative.

Finally, further and deeper studies are necessary to explore if and how social media support the critical thinking and conscious selection of information.

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Notes

¹ <http://www.galaxyzoo.org/>

² <http://stardustathome.ssl.berkeley.edu/>

³ <http://www.climatewatch.org.au/>

⁴ <http://boinc.bakerlab.org/rosetta/>

⁵ Cultural aspects to be taken into account occur at different levels: societal, personal, organizational and disciplinary.

⁶<http://www.ted.com/talks>

⁷ The drawback of the Network Effect is the risk to become 'locked in' to a product.

⁸ Openness is indeed one of the main characteristics of the Web 2.0 and is a prerequisite of the collaborative paradigm.

Appendix

Questionnaire on the level of adoption of the Web 2.0 tools among research communities

Premise

The purpose of this survey is to explore the level of adoption of Web 2.0 tools among research communities for the creation of scientific knowledge in their research activity, how and how much Web 2.0 is currently used among research communities, the benefits and the disadvantages perceived in utilizing these innovative tools. The survey intends also to explore the level of adoption of Web 2.0 tools in teaching activities, the benefits and the disadvantages perceived.

There are many definitions of Web 2.0 which however do not exclude each other. To the purpose of our survey we will adopt the Anderson's Web 2.0 definition (Anderson, 2007): "Web 2.0 encompasses a variety of different meanings that include an increased emphasis on user-generated content, data and content sharing and collaborative effort, together with the use of various kinds of social software, new ways of interacting with web-based applications, and the use of the web as a platform for generating, re-purposing and consuming content". Therefore, we propose a broad concept of the term Web 2.0 by including in it a variety of generic tools which facilitate knowledge sharing (i.e., Google Docs, Google Calendar, Skype etc).

The questionnaire is divided in 3 sections:

1. Personal information
2. Web 2.0 tools and their adoption in research activities

3. Web 2.0 tools and their adoption in teaching activities

It will take you about ten minutes to fill it out. We thank you for your collaboration.

Licia Calvi, Maria Cassella

1. First section: Personal information

1.1 Position

Full Professor
Senior Researcher/Senior Lecturer/Associate Professor
Junior Researcher/Lecturer/Assistant Professor
PhD student

1.2 Discipline/field of research:

Arts and Humanities
Social sciences
Computer sciences
Mathematics
Health
Life sciences
Earth sciences
Physical sciences
Engineering
Business, Marketing and Management
Library and Information Sciences

1.3 Age

25–35
36–40
41–45

46–50

51–60

Section 2: Web 2.0 tools and their adoption in research activities

2.1 Do you use Web 2.0 tools (microblogging platforms, social networks, software for collaborative reference management (e.g., Mendeley, Zotero and so on)) for sharing information and knowledge creation in your research activity?

1. Yes, I use them regularly
2. Yes, I use them, but seldom
3. No, I use them only for personal goals
4. No, I never use them neither for professional nor for personal goals

2.2. What are the most common Web 2.0 tools you adopt in your research activity?

1. Social networking platforms
 - Facebook
 - LinkedIn
 - Academia.edu
 - Others (specify)
2. Wikis
 - Wikipedia
 - Institutional wikis
 - My colleagues' personal wikis
 - Other scientific wikis (specify)
3. Blogs
 - My personal blog
 - Other scientific blogs (e.g., ScienceBlog.com, Nature.com Blogs)
 - My colleagues' personal blogs
4. Microblogging platforms (e.g., Twitter)

5. Social bookmarking and reference management tools
 - Delicious
 - Connotea
 - CiteULike
 - Mendeley
 - Zotero
6. Collaborative project platforms
 - Mavenlink
 - Others (specify)
7. Other kind of collaborative platforms and tools
 - Google Calendar
 - Google Docs
 - Google Talks
 - My Experiment
 - YouTube
 - YouTube.edu
 - Nature Precedings
 - Skype
 - Others (specify)

2.3 What are the main advantages in adopting Web 2.0 tools in your research activity?

(For each item the respondent should choose between “I totally disagree”, “I disagree”, “Neutral”, “I agree” and “I definitely agree”)

1. They help me work in a collaborative way
2. They help me share and disseminate fast ideas and research results
3. They help me keep in touch with my colleagues
4. They are easy to use (minimum skills required in using them)
5. They are free to use
6. They help me keep updated in my research field
7. They help me save time and costs (i.e., travelling is less necessary....)

2.4 What are the main reasons for not adopting Web 2.0 tools in your research activity?

(For each item the respondent should choose between “I totally disagree”, “I disagree”, “Neutral”, “I agree” and “I definitely agree”)

1. I am very busy and it takes me too much time to use these tools
2. I do not trust Web 2.0 tools and platforms
3. Privacy concern
4. Web 2.0 tools promote amateurishness by opening contents to non academic users
5. It hides behind it a sum of technologies and concepts which are still insufficiently defined
6. Low quality of shared contents
7. In my research field collaboration is not a modus operandi (I work by myself)

Section 3: Web 2.0 tools and their adoption in teaching activities

3.1 Do you use Web 2.0 tools in your teaching activity?

1. Yes, I use them regularly
2. Yes, I use them, but seldom
3. I use them only for personal goals
4. I never use them neither for professional nor for personal goals

3.2 What Web 2.0 tools do use in your teaching activity?

3.3 List some examples of the use you make of it.

3.4 What are the main advantages in adopting Web 2.0 tools in your teaching activity?

(For each item the respondent should choose between "I totally disagree", "I disagree", "Neutral", "I agree" and "I definitely agree")

1. They help me have an immediate feedback from my students
2. I use them to post my teaching resources (video, slides etc)
3. I use them to create and share bibliography with my students
4. I use them to create a more accessible, portable, durable, and interactive educational portfolio
5. They help me create a very good classroom environment
6. They help me better identify students' interests and use of teaching resources

7. They help my students to develop capabilities in communication and collaborative works

3.5 What are the main reasons for not adopting Web 2.0 tools in your teaching activity?

1. Lack of time
2. Lack of expertise
3. Privacy concern

4. Do you think the use of social tools will increase in the next five years in your research and teaching activity?

5. Comments