E-Learning 2.0: social software for educational use

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Abstract
This paper focuses on the degree of penetration of web2.0 or social software in the educational field. First, the concepts web2.0, social software and e-learning 2.0 are discussed, the term 'social software' is defined, and the strengths of social software are presented. Secondly, a survey was conducted with 355 students and 163 instructors in order to examine to what extent social software is used and which purposes it serves. Our first results show that 'searching information' and 'communicating' seem to be the two main activities the internet is used for, both for instructors and students.

1. Introduction
Online digital information has become ubiquitous and accounts for a major part of the economic and cultural activities in the western hemisphere. Hence, our society calls itself an information or network society. Instant messaging, weblogs or other websites facilitating true user participation, one-to-many or many-to-many asynchronous or synchronous communication are on the rise and appeal to millions of internet users worldwide. This recent shift in terms of content and services available online, is often referred to by phrases such as web2.0 or social software.

In this paper we want to look at the degree of penetration of web2.0 or social software in the educational field [and discuss the potentials for more active participation and collaboration]. The main questions are: (1) What is web2.0 and social software, (2) how can we define social software and E-Learning 2.0, (3) what are the strengths of social software, (4) to what extent do students and instructors use social software, and (5) for which purposes do they use social software?

The first three questions are answered by exploring the literature in this recently emerged [research] field. We briefly shed light on the origin of web2.0 and social software and discuss their conceptual differences. We argue that in educational sciences the phrase social software is more appropriate than web2.0. Furthermore, we provide a functional definition for social software and E-Learning 2.0. Next, we describe some typologies that can be applied to the subject, followed by a description of the strengths of social software.

Secondly, questions 4 and 5 are dealt with. We present some preliminary results of a study conducted with 518 students and instructors in higher education, in which we investigated the use and perceived added value of social software for both of them.

2. A close look at web2.0, social software and E-Learning 2.0
2.1. Three perspectives on web2.0
In 2004 the O'Reilly Media group introduced the phrase web2.0. By analogy with the release numbers assigned to software packages, web2.0 refers to a newer, better version of the world wide web. This new generation of websites places emphasis on interactivity, co-creation and the active role of the website users. Tim O'Reilly describes web2.0 as a platform: "... delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an 'architecture of participation', and going beyond the page metaphor of Web 1.0 to deliver rich user experiences." [1]. However, not everybody adopts the term web2.0 with the same enthusiasm. There is a lot of disagreement about the actual meaning of the phrase [2] but three main perspectives are often taken on the matter.

First, from a sociologic perspective web2.0 can be traced back to the ideas of Tim Berners-Lee [3] who saw the world wide web as a two-way channel, as a read/write web where users are empowered. In this
perspective, web2.0 is all about people and the relations they create through the use of software. Tim O'Reilly [1] describes web2.0 as an architecture of participation: a grassroots user base creates a self-regulating collaborative network. Next, from a technological viewpoint web2.0 is a combination of old programming frameworks and languages which have already proven their value and robustness. JavaScript, the Document Object Model, CSS, XML and other techniques are combined in order to create a rich user experience, delivering applications entirely through a webbrowser. And finally, from an economic viewpoint, web2.0 is characterised by the use of consumer generated content and the revenue generated by the so-called long tail.

2.2. Social software: enabling (personal) goals in a bottom-up social fashion

In his detailed account of the origins of social software, Christopher Allen [4] states that the terminology has moved through a life cycle. He sees social software as the successor to computer supported cooperative work (CSCW) and groupware. Stove Boyd [5] even argues that social software will signify the opposite of what groupware and CSCW-tools stood for. Boyd states that social software departs from a bottom-up approach, supporting the desire of individuals. According to Boyd, social software differs from CSCW because: "Social software is based on supporting the desire of individuals to affiliate, their desire to be pulled into groups to achieve their personal goals. Contrast that with the groupware approach to things where people are placed in groups defined organizationally or functionally."

Although already in use before, the term social software gained general attention thanks to the Social Software Summit held in November 2002 by Clay Shirky [6]. Most definitions for social software seem to have a common ground. They all stress the importance of creating networks and relations between people. In addition, most of them acknowledge the bottom-up approach as described by Boyd. Clay Shirky and Tom Coates [7] provided significant definitions for social software. Shirky describes social software as "software that supports group interaction". Coates defines it as "software which supports, extends, or derives added value from, human social behaviour - message-boards, musical taste-sharing, photo-sharing, instant messaging, mailing lists, social networking."

For the purpose of this paper we define social software as: "software that enables communication through digital technologies during which people connect, converse, collaborate, manage content and form online networks in a social and bottom-up fashion."

2.3. Web2.0 or social software: a semantic discussion?

The biggest advantage of the concept web2.0 is that it emphasizes a turning point for the web by using the postfix 2.0. However, the use of this postfix is at the same time a major disadvantage: it assumes a drastic break with the past but it does not explain were this breakpoint is situated. Furthermore, web-developers, venture capitalists, and analysts use the term web2.0 to underline the technological 'back-end' aspects of web2.0 models, such as data-aggregation, content syndication, and the use of lightweight programming models, often excluding or disregarding the social features. Moreover, the expression web2.0 delimits its range to internet services using the world wide web (a collection of interconnected documents and other resources) and does not take into account other services mediated by the internet (a collection of interconnected computer networks).

The phrase social software is not laden with these restrictions and describes interactive or participative internet models just as well. Its scholarly roots are another advantage in the study of groupware and CSCW and the emphasis on the social processes involved.

Based on these arguments one can look at social software as the discourse of innovators and researchers, while web2.0 has become too popular to be useful as a research concept. Several authors created typologies which can provide further insight in the concept of social software. In the section 2.5, we will summarize the frameworks created by Gorissen, Mayfield, Bydwd and Webb & Smith.

2.4. E-Learning 2.0: from online learning as a medium to online learning as a platform

In 2005 Stephen Downes [8] introduced the term "E-Learning 2.0" to incorporate social software or web2.0 as new components of distance education with the idea of connectivism (making connections among learners and learning resources) as one of the core elements behind E-Learning 2.0. Downes talks about a turnabout: educational content is no longer (solely) produced by courseware authors, but is used and created by the students themselves in a bottom-up fashion. E-Learning 2.0 becomes "(...) a personal learning centre, where content is reused and remixed according to the student's own needs and interests" [8], enabling the creation of learner communities.

2.5. A brief exploration into some typologies for social software

As a typology guarantees a more scientific and comprehensive evaluation of the concept of social software, we studied some of the often cited examples.

Pierre Gorissen [9] uses three main criteria to position social software in a typology: the amount of (supposed) interaction, the amount of (explicit) hierarchical structure and the focus on groups or individuals.
Ross Mayfield [10] has built a typology based on how personal connections are made and fostered. He distinguished social software that targets explicit, physical, conversational or private networks. We added social software that supports virtual networks through the use of avatars to this typology.

An intuitive typology was created by Barb Dybwad [11]. She used two axes where the horizontal axis represents the continuum between personal and social aspects of social software and the vertical axis relates to the continuum between what is familiar and what is not.

A nice way of visualising social software was created by Gene Smith [12] who expanded on the work of Butterfield [13] and Webb [14]. He uses six building blocks to provide a functional definition for social software, centered around the concept of identity: presence, relationships, reputation, groups, conversations and sharing.

2.6. The strengths of social software

In the previous section we looked at the meaning of social software. But what is the explanation for its success and its adoption by millions of internet users worldwide? Literature suggests that two important drivers should be distinguished: social software uses ‘weak ties’ and social software operates in an open environment [15].

Most social software applications target primarily individualistic or personal motivations and goals (e.g. they allow users to store their pictures, bookmarks, or video’s). They facilitate one-to-one or one-to-many communication and the publishing of ideas. As opposed to earlier optimistic community trends the community ideal is less explicitly present. It rarely happens that a person starts using social software with the aim or idea of voluntary or organized cooperation. But social software, while it enables personal motivations, creates a new kind of almost effortless cooperation ‘ex post’. It creates weak ties between casual acquaintances who did not have any cooperative action plan or altruistic intention before: “The success of web2.0 services reveals the user’s hybrid motivation where the individualization of the user’s goals meets the opportunity of sharing personal expression in a public sphere.” [15]

The second driver is the open nature of social software: it does not require the strong involvement of all its users. Most social software services facilitate participation from ‘the edges’. One can participate from the fringes of the group, or not participate at all and merely observe (often these people are called ‘leechers’ or ‘lurkers’). Nevertheless, becoming member of a social software website often means getting access to a stock of social capital. This can widen the experience of community by helping to connect with others who have different beliefs or backgrounds. The aforementioned
concept of 'weak ties' is expected to facilitate this linking between people with different social characteristics and is better in maintaining contact with other social circles [16]. Moreover, it can deepen the experience by reinforcing and strengthening existing social networks.

3. Survey on social software and E-learning

In the previous part we focussed on the differences between web2.0 and social software, on the definition of social software, and on the strengths attributed to social software. In this part we want to answer our other questions: (4) to what extent do students and instructors use social software and (5) for which purposes do they use social software?

3.1. Method

In order to answer these questions, two online surveys were generated. Both surveys contained the same questions, however from a different perspective: one survey focussed on the students, whereas the other one focussed on the instructors. All the students were either students of the Department of Health Care at Hogeschool Gent or students of the Faculty of Medicine and Health Sciences at Ghent University. The instructors were selected based on their participation in different workshops concerning innovative teaching methods. They were all instructors at the Ghen University Association (including Ghent University and Hogeschool Gent). Due to the specific sampling (health sciences students and instructors interested in innovative teaching) we will refrain from generalizing the results to other populations. Approximately 1250 students and 350 instructors were contacted by email and requested to fill out the survey. In total, 355 students and 163 instructors responded.

3.2. Respondents

Concerning the students, 20% of them were male, and 80% were female. There are considerably more female respondents. This shouldn’t surprise as medical education is traditionally mainly populated by female students (70% of our respondents is studying for nurse, speech therapist, ...). The mean age of the total student population was 22 years (range 18-37, SD= 4.1 years). On average, they spend 1h04 using the internet for educational purposes (range 0h30, SD= 45min) and 1h48 (range 0-19h, SD=1h30) for leisure purposes.

With regard to the instructors, 42% of the respondents were male, and 58% female. Their mean age was 39 years (range 23-65, SD= 10.5 years). On average, they spend 2h04 using the internet for educational purposes (range 0h8h00, SD=1h47) and 2h22 for non-educational purposes like research or personal use (range 0h10-15h00, SD= 2h15).

3.3. Results

3.3.1. To what extent are students and instructors using social software?

82% of the students and 96.6% of the instructors are almost daily communicating through email. More than half of the students (55%) use instant messaging tools on an almost daily basis, while 38.9% of the instructors use these tools at least once a month. Figure 5 and 6 present a detailed overview of all the activities.

In general, the results of ordinal regressions show us that instructors are significantly (p < .001) more involved in posting and consulting bookmarks (respectively 3.9 and 2.3 times more), keeping (2.9 times) and consulting (3.1 times) a calendar, buying things online (2.0 times), contributing to a wiki (3.7 times), and communicating through email (6.3 times, although this difference is distorted due to low frequencies in the lower categories).

On the other hand, students are 3.1 times more involved in watching pictures or movies, 4.1 times more in chatting in a chatbox, 6.6 times more in instant messaging, 3.5 times more in creating their own profile on a community website and 5.4 times more in checking out other’s profiles, and 2.3 times more in rating articles, pictures, or tools. For the other activities listed in Figure 5 and 6, no significant difference between instructors and students were found.

3.3.2. For which purposes are they using social software and the internet?

First of all, both instructors and students use the internet mainly to search for information. This is followed by communication with acquaintances, colleagues and students. The third purpose students use the internet for is collaboration with acquaintances and other students, while instructors rank this collaboration possibility only fourth. The last purpose they both are using the internet for is to communicate or collaborate with unknown persons. It is striking that for both students and instructors their ranking of different purposes for using internet is very similar, though not identical.

3.3.3. What are the drawbacks of using the web for educational purposes?

In the previous parts we only discussed the actual usage of social software. We also wanted to assess how students and instructors evaluate their usage. Therefore we confronted them with some statements about possible drawbacks of social software in an e-learning context.

The main drawback seems to be the lack of interpersonal contacts: 45.9% of the students and 50.8% of the instructors think that e-learning results in a lack of interpersonal contacts. Respectively 41.4% and 36.3% of the students and instructors state that the lack of feedback possibilities can be a problem. Practical issues such as the availability of a pc (27.3%) and 21.1% respectively) or internet access (31.0% and 26.0% respectively) is less of a problem. Privacy issues are only for 3.4% of the students and 6.5% of the instructors problematic.
4. Discussion and Conclusion

Searching information and communicating seem to be the two main activities the internet is used for, by both students and instructors. This resulted from the question to what extent social software is used and the question for which purposes social software is used. One may notice that those two activities are the ones with the longest tradition in ICT. Newer forms of activities, like collaborating and sharing information to a whole community, are less popular. At this point, it seems that instructors tend to be leechers instead of feeders. Although the strengths of the recent technologies that we call social software might have an important impact on educational processes, it seems that the penetration of this latest technology is not that high. However, the penultimate question, focusing on the kind of information that is shared, reveals that instructors do share information, especially information related to their education, whereas students use social software mainly for sharing multimedia and other leisure related activities. Other than educational purposes. Although they both do not use the full range of available social software, this finding indicates that instructors and students are willing to share information. It might take more time – and more fine-tuned social software specifically focusing on educational environments – before the advantages of social software will be fully applied in education.

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6. References

Figure 5. Overview of the use of social software (students)

Figure 6. Overview of the use of social software (instructors)