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Social Technologies for Online Learning: Theoretical and Contextual Issues

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Abstract

Three exemplars are presented of social technologies deployed in educational contexts: wikis; a photo-sharing environment; and a social bookmarking tool. Students were found to engage with the technologies selectively, sometimes rejecting them, in the light of their prior conceptions of education. Some students (a minority in all the studies) were unsympathetic to the educational philosophy underpinning the technology's adoption. The paper demonstrates, through an examination of in-context use, the importance of socio-cultural factors in relation to education, and the non-deterministic nature of educational technology. The academic study of technology has increasingly called into question the deterministic views which are so pervasive in popular discourse and among policy makers. Instead, socio-cultural factors play a crucial role in shaping and defining technology and educational technology is no exception, as the examples in the paper show. The paper concludes by drawing out some implications of the examples for the use of social technologies in education.

Keywords: Social technologies, technological determinism, social constructivism, culture, online collaborative learning

Introduction

This paper concerns the use of social technologies in higher education. These technologies are designed for general communication purposes, but have been taken up with enthusiasm by educators (Ornellas & Muñoz Carril, 2014). The paper presents and discusses three exemplars of social technologies for learning: (1) wikis to support a group project; (2) a photo-sharing application for peer feedback; (3) social bookmarking to develop a learning community. The paper uses these exemplars to address the following questions:

1. How do learners respond to the use of social technologies in learning contexts?
2. What should educators consider when introducing social technologies into their courses?

Although the adoption of the social technologies in these examples was largely successful, their use was not entirely as envisaged by the educational innovators involved. Instead, the outcomes were strongly influenced by the attitudes and beliefs of the students; this is the particular point of interest for this paper. We believe the examples are instructive for our ways of thinking about educational technology in practice, and the influence of users.

The paper contextualizes these examples within theoretical perspectives on technology, its development and its use. These theoretical perspectives come largely from the field of social studies of technology – an area which is has only recently been applied to educational technology (Jones & Bissell, 2011; Selwyn & Facer, 2014; Selwyn, 2012; Walker & Creanor, 2009). The paper provides a brief overview of the theoretical perspectives, and then presents and discusses the three exemplars. The paper concludes by drawing out some common themes, and links them back to the theoretical ideas presented earlier.

Theorising technology

Since the mid-1980s, academic thinking about technology has been influenced by ideas from the social studies of science, a field that has flourished from the 1960s. The influence manifests itself in a scepticism about widely accepted beliefs concerning technology, for example, the belief that technology evolves independently of social processes, or that it is on an evolutionary course to an almost inevitable future. Such deterministic views have been brought into question by many detailed historical and sociological case studies of technological innovations (for example MacKenzie & Wajcman, 1999). We examine the contrast between deterministic and social views of technology in the following sections.

Technological determinism

In his book *Technology Matters*, David Nye counters a commonly held view that 'technology has an inexorable logic, that it forces change' (2006, p. 19). As an example of this view, Nye quotes Nicholas Negroponte, the founder of MIT's Media Lab:

Digital technology can be a natural force drawing people into greater world harmony. (Negroponte, 1995, p. 230)

Nye comments on Negroponte's observation as follows:

This is nonsense. No technology is, has been, or will be a 'natural force.' Nor will any technology by itself break down cultural barriers and bring world peace. (Nye, 2006, p.19)

What Nye takes issue with is Negroponte's technological determinism. Technological determinism is not a single idea but a set of closely interconnecting ideas. A fundamental aspect is the idea of technology having agency – having the power to make things happen. It is seen as developing according to its own inner logic, independently of its socio-cultural context. As Nye comments, technological determinism is a widespread view, 'even among scholars' (2006, p. 19).

Although this determinist perspective is out of favour with sociologists of technology, it thrives in discussions of technology in the popular media and among policy makers. It can also be apparent in educational circles, where new technologies may be eagerly adopted and promoted without account taken of the social and educational cultures in which they are to be used. An early, and much quoted, example of technological determinism is attributed to Thomas Edison, in a remark from 1922:

I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks.¹ (quoted in Watters, 2015).

Rushby (2013) and Kirkwood (2014) point out that where the introduction of educational technology is concerned, the focus tends to be on the technology rather than the learning. Such an approach is consistent with technological determinism in its imbuing of educational technology with inherent qualities.

These [inherent] qualities were then [during the 1980s and 90s] seen to ‘impact’ (for better or worse) on young users in ways which were consistent regardless of circumstance or context. (Selwyn, 2012, p.83)

Blondheim (2009, p. 216), writing about communications media, elaborates the idea of ‘inherent qualities’:

... a tendency to consider media technologies as lucid and unambiguous, and to interpret them on their own terms.

This ‘what-you-see-is-what-you-get approach’ (Blondheim, 2009, p.216) is one in which the functional attributes of technology are considered to determine the ways in which it is used. Instead, Blondheim suggests some of the contextual factors that bear on the form and usage of technology:

... state policy, law, the business environment, even other ... technologies, ... let alone less tangible aspects of the environment such as ideology and cultural patterns. (Blondheim, 2009, p. 216)

¹ A definitive source for this frequently cited quotation appears to be unknown. Nevertheless, it captures a sentiment Edison expressed in a newspaper interview in the *The New York Dramatic Mirror* in July 1913. See <http://quoteinvestigator.com/2012/02/15/books-obsolete/> for a discussion of this quotation.

The influences of culture and ideology, referred to by Blondheim in the last quotation, are evident in the following exemplars, which relate to educational uses of social technology.

Social theories of technology

In scholarly circles deterministic views of technology have given way to a variety of sociological approaches which can loosely be classified as ‘social construction of technology’ or ‘social shaping of technology.’ For a good account of this development see Brey (1997). Sociologically oriented approaches draw heavily on ethnographies or case studies of technological developments.

Many studies have shown that, particularly in the early stages of technologies, different social groups may have contending interpretations of what a technology is for, or how it should be used. Two useful analytical concepts which emerge from this sociological work are: ‘relevant social groups’, defined as ‘those groups who share a meaning in an artefact’ (Kline & Pinch, 1996, p. 765); and ‘interpretative flexibility’, in which ‘different social groups associate different meanings with artefacts’ (Kline & Pinch, 1996, p.766). With this in mind, it is reasonable to ask, in relation to educational technology, who decides its form and function. Relevant groups could include manufacturers and developers, educational institutions, teachers, students, and possibly potential employers. In this paper we are most concerned with educators and students, for some of whom, as we show, social technologies were not regarded as educationally appropriate.

Social technologies in education

Just as sociological processes are at work in the way technology is interpreted, developed and used, so also they are at work in how learning is defined, nurtured and

achieved. Social constructivist learning theories suggest that learning takes place through authentic contexts and by communicating and collaborating with others (Chen & Bryer, 2012). This is in contrast to individual, passive study of material, which can lead to inert knowledge that students can reproduce but cannot use (Karagiorgi & Symeou, 2005). Social constructivist theories of learning focus on the activities (both physical and cognitive) that learners carry out, and on learners' interactions with each other and with their teachers (Scardamalia et al., 1989; Brown, Collins & Duguid, 1989). Taking these ideas further, Wenger (1998) claimed that learning is a process of developing an identity as a member of a community of practice:

Such learning has to do with the development of our practices and our ability to negotiate meaning. It is not just the acquisition of memories, habits and skills, but the formation of an identity. (Wenger, 1998, p. 96)

Awareness of these ideas in the context of educational technology has led to the concept of an online learning community, where students and teachers communicate in a shared online space (Garrison & Anderson, 2003; Palloff & Pratt, 2007). Online learning communities have typically been supported via discussion forums (Haythornthwaite et al, 2000; Salmon, 2004), but more recently a range of other social technologies has become available (Mason & Rennie, 2008; Ravenscroft, 2009; Hemmi, Bayne & Land, 2009).

Given the widely accepted social views of education, many educators and educational researchers have advocated the use of social technologies to support learning (Veletsianos & Navarrete, 2012). For example, it is argued that: forums can support discussion and debate (McConnell, 2006); wikis can support co-creation of resources (West & West, 2009; Jung & Suzuki, 2015); blogs can support reflection, sharing and feedback (Kerawalla et al., 2009). Educational use of social technology is

not without its problems, however (see, for example Muuro et al., 2014). Although the present paper draws attention to some difficulties with the use of social technology in educational contexts, it does not argue that social views of education are misguided, or that the use of social technology is inappropriate. Rather, it argues that inherent in social interpretations of both education and technology is the scope for students and users to construe education and technology along very different lines from the way their teachers construe them.

Exemplars of social technologies in education

In this section we present the three examples of social technology referred to earlier. In all three cases the social technologies were used to support online collaborative learning. Two of the exemplars involve distance learning modules from the UK Open University (UKOU). These involved large numbers of students (more than 500 per module presentation). The third exemplar is from Dubai Men's College, in the United Arab Emirates (UAE), and is an example of a smaller scale face-to-face learning setting, in a culture very different from that of the preceding two.

In the first UKOU exemplar, wikis were used within the university's Moodle-based Virtual Learning Environment. In the second UKOU exemplar, a photo-sharing environment was created in-house, based on the public photo-sharing environment Flickr. In the UAE exemplar, a freely available social bookmarking tool (Diigo) was used.

Wikis for group projects

The UKOU module *Information and communication technologies: people and interactions* included a group project which students carried out over a period of seven weeks (Kear, 2011, pp.162–165). The purpose of the project was twofold: (1) to enable

students to learn through discussion and collaboration (2) to support the development of skills in online team work. The project required students to work in groups of between four and eight to develop a small website on a particular theme (the concept of the 'cyborg' – a merging of humans and technology). A simple HTML template was provided which enabled each group member to work on a sub-topic of this theme, and then to join their work together with that of other group members. An important aspect of the group project was a peer review activity where each student gave feedback on the draft contributions of two fellow students from their group. Students used the feedback they received to improve their contribution.

The group work was initially facilitated via an online discussion forum for each group. Discussion forums, together with the HTML template, were found to be reasonably effective tools for group work carried out at a distance. However, an opportunity arose to try the use of a wiki, which was provided as part of the university's Virtual Learning Environment. It was felt that a wiki would provide a good environment for students to develop and share their contributions, and to provide peer feedback. Tutors were therefore invited to offer the wiki to their students as an alternative to the HTML template, and the majority of the tutors did so. Students in these tutors' groups could choose the wiki option or the HTML template. In both cases they still had the group forum available.

Once the group project with the wiki option was completed, an online survey was used to elicit feedback from students on their experiences. The survey asked students a number of questions about whether they used the wiki, and if so how they had used it and how effective it was. Most of these students (84%) reported that their groups chose to use the wiki. This was because they were interested in trying a new technology and they thought it might make online collaboration easier. The benefits

students reported included having a shared, visible space where they could develop their material and see how other group members were progressing. Most students reported that their groups used the wiki for developing and pooling their contributions, but used the forum for discussion and decision-making. Some groups also made use of other tools, such as instant messaging. Students were positive about the wiki, and found it reasonably easy to use (although there were some technical issues with images).

Students also reported that they agreed strategies within their groups for how they used the wiki. A specific example was coming to an agreement about whether they would edit each other's contributions, and if so in what ways. Although some students thought that a licence to change other members' contributions was 'part of using the wiki', others were either reluctant or felt that a strict etiquette should be applied. One group had a policy that only the author of a particular contribution could edit it. Another had a rule that permission was always to be sought from the original author when a group member wanted to change another's contribution. Another respondent suggested, retrospectively, that it would have been better for the entire group to approve a change to someone's contribution.

These responses were surprising to the educators who designed the project, given that collective writing and editing is one of the tasks a wiki is designed to facilitate. The educators had assumed that students would take a more collaborative and interactive approach to the writing. It is natural to wonder why, in this respect, the technology was not used in a way that might seem inherent to it. This is a point we shall refer to later.

Collaborative learning via photo-sharing

In a 10-week UKOU module on *Digital Photography*, one of the intended outcomes was that students should develop their photography skills through peer learning

(Minocha, 2009, pp. 55-58; Kear, 2011, pp.105–108). This was particularly important as the large numbers of students taking the module (over 1000 at one point) made personal tuition impractical. The presentation of this module pre-dated the advent of MOOCs, which face similar challenges in the design of learning for large cohorts without personal tuition.

It was suggested that the module should be based on a photo-sharing environment similar to the public website Flickr. One possibility was to use Flickr itself, but this raised difficulties because the Flickr environment was outside the control of the university. Therefore it was decided to develop an in-house social networking environment for photo sharing. The resulting software tool, titled OpenStudio, enabled students to upload photos and to comment on the photos of fellow students. Because the module attracted large numbers of students, OpenStudio automatically divided students into small groups which changed weekly. In this respect, OpenStudio enabled easier and more effective management of student groups than Flickr would have done.

The module was designed on the premise that students would complete activities and upload photos each week, and would also provide comments and critiques of the photos uploaded by the students in their group for that week. Students were also able to comment on photos from the wider community of students if they wished, and could comment on their own photos, as a means of reflective learning. Tools such as a search facility and ‘favourites’ enabled students to find photos of particular interest, and keep them in a ‘virtual album’.

The majority of students used OpenStudio as they were encouraged to do, uploading photos on a regular basis as activities were completed. One student reported his personal usage over the module (typical of a highly engaged student) as:

Posted 100 photos.

Commented on 706 photos.

Received 315 comments.

Had 47 photos made favourites by others.

The primary purposes of OpenStudio were peer learning and reflection, and these were largely achieved, as summed up in this student's comment:

I really appreciated the comments I got. I also found that evaluating others' work made me think about the various aspects that make a good photo, again helping me to improve.

The social aspect of OpenStudio use had a greater role than was first envisaged. The use of constructive criticism, given in a friendly way, is described in this comment from a student:

I contributed to discussions, trying to find images that had not been commented on. I always gave a positive comment before making a suggestion as to how the image could be improved, ensuring I did so in a question to make it appear more friendly.

The importance of the social aspect of OpenStudio is evidenced by a number of large groups set up by students on Flickr (and to a lesser extent Facebook) to continue their social interaction after the module ended.

Overall, students were satisfied with the learning strategy adopted for the module. However, a significant minority of students did not use OpenStudio as intended; they posted only spasmodically and had much lower levels of engagement. A very small number of students, on discovering that use of OpenStudio was not assessed, opted not to use it at all, subverting the learning strategy completely. Some students were critical of the reliance on peer review in OpenStudio and had concerns about using

feedback from other students. These students wanted more personal input from experts (although general advice was offered through forums).

Peer feedback, which the software tool was designed to facilitate, was largely achieved. However, the educators who designed the module were surprised that there were significant numbers of students who were reluctant to make academic critiques of images, although they were happy using OpenStudio to interact in a social way.

Social bookmarking for learning

Dubai Men's College, in the United Arab Emirates, offers vocational higher education. In a module on Monetary Theory, with a class of 19 students, the educator decided to use a public social bookmarking facility (Curcher, 2009; Kear, 2011 pp. 95–98). A social bookmarking facility allows users to bookmark web resources, to tag them with keywords, and to share these bookmarks (and hence the resources) with other web users. Several social bookmarking tools were considered as possibilities for the module, and Diigo (www.diigo.com) was chosen because it offered facilities to set up separate groups of users (useful for different classes), allowed users to annotate resources, and could host discussions based on individual resources.

The UAE students' prior experience of learning was mainly based on a didactic model, where a teacher is seen as the source of knowledge, which is then 'transmitted' to the students:

Students expect teachers to make all the key decisions in relation to learning and tend to have a rather polarized view of the world where questions have answers that are either right or wrong. (Curcher, 2011, p. 81)

Moreover, the religious and secular culture placed a strong focus on memorization and rote learning.

In contrast, the trial of social bookmarking in the module was based on the idea of a more egalitarian learning community, with students and teachers finding and sharing web-based resources. Students could then discuss these resources with each other and with the teacher. This blurring of the roles of teacher and learner was a significant change of philosophy and pedagogy for this cultural context, and was part of the reason for introducing the social bookmarking tool into the module.

In the module's trial of Diigo, 16 of the 19 students registered with the software, and 10 students participated actively in resource-sharing and discussion. There were good examples of students directing each other to useful resources, sharing insights and supporting each other. Most of the participating students shared 3-4 resources during the module, and two students shared more than 10 resources. An evaluation of the Diigo trial was carried out via an online survey of the module students, with 10 of the 19 students (53%) completing the survey. Of the 10 respondents, 8 had used Diigo in the module, and they reported that it had been enjoyable and helpful for their learning. Given the prior educational experience of the students, most responded positively to the opportunity for collaborative learning online.

However, even though marks were attached to the online activities with Diigo (10% of the module's grade), some students did not engage with the activities. The students who did not participate included a number who were strongly opposed to the approach. They considered that it was solely the teacher's responsibility to provide all the learning resources and to answer students' questions. The potential of the software for mutual educational support was therefore not fully realised, at least for these students. It is clear that there was resistance to a change in educational approach. If students' prior learning experiences do not include the development of communities and

the discussion of ideas, it can be a major challenge to move towards this model of learning.

Discussion

The three exemplars discussed here were, on the whole, successful. Survey results were generally favourable, and the teachers concerned have continued to use social technologies for educational purposes. In pointing out some of the issues, we certainly do not wish to criticise these initiatives with social technologies. What seems to us especially interesting in these examples is that some students resisted social approaches to learning that social technologies were expected to foster.

In the case of the wiki, some students declined to edit each other's work, preferring instead to adopt etiquettes concerning who was allowed to edit which contributions. In the case of the photosharing tool, some students were reluctant to use advice from other students, wanting instead to receive feedback from experts. In the case of the social bookmarking site, some students were unwilling to seek out and recommend resources to other students, viewing this as the teacher's responsibility. In each case, students' unwillingness was 'principled'. That is, lack of engagement was not because of apathy, but because of students' discomfort in engaging with a particular pedagogic approach. The new kinds of educational activity based on collaboration, which use of the tools was intended to facilitate, were resisted by some students because the activity did not align with their views on what education should involve.

Ravenscroft (2009, p.5) has commented on a tension between:

...the tradition of learning as a highly structured and organised experience, involving clear levels of authority, and the more collaborative, volatile and anarchic nature of the social web.

Ravenscroft here suggests that disquiet about social constructivist pedagogy can crystallise around, or be provoked by, social technologies as they are introduced into educational contexts – an observation supported by the exemplars in this paper.

In the social bookmarking example, based at Dubai Men’s College, clear cultural factors were at work related to traditional, didactic concepts of education in that part of the Arab world. Other authors (e.g. Heble, 2007; Alebaikan & Troudi, 2010; Jung & Suzuki, 2014) have identified these cultural factors, where education ‘depends largely on rote-learning rather than encouraging original or critical thinking’ (Heble, 2007, p. 221). But the difference between the social bookmarking example and the photo-sharing example was one of degree rather than kind. In both examples some students expected the educator to be the ‘expert’ who would tell students what to study and how to progress. In the wiki example, it could be argued that a similar cultural issue arose. Students were unwilling to edit each other’s work, perhaps because this is taking on the role of an expert: a role normally held by the teacher.

In the world of educational technology it is not uncommon to hear particular technologies promoted because social constructivist educational principles are claimed to be a design feature – as though these principles could be built-in, and students’ learning behaviour thereby determined. This is unrealistic, as the nature of the learning is not inherent in the technology but is created through interaction between students, their peers and teachers, and is related to the cultural context. As Webster (2013) says:

...innovation is performed, produced and stabilised over time but in ways that depend on its compatibility with the values and cultural norms of its context of use (Webster, pp.231–232, quoted in Selwyn & Facer, 2014).

Webster’s observation is clearly supported by the examples given here, but it would be wrong to substitute cultural determinism for technological determinism. Cultures are not

homogeneous or unchanging. Moreover, 'culture', in any society, includes technology, and beliefs about technology. It also includes beliefs about the nature of learning and of education.

Implications for educators

The exemplars in this article, together with the theoretical perspectives presented, have implications for educators. To elaborate these implications, we return to the two questions posed at the beginning of this paper:

1. How do learners respond to the use of social technologies in learning contexts?
2. What should educators consider when introducing social technologies into their courses?

The examples suggest that, although social technologies are well received by the majority of students, some students may not use the technologies as expected, and some may not use them at all. Issues that need to be considered by educators include the cultural context, students' prior experience, and students' own views on education.

Although many educators are committed to social constructivist learning approaches, these approaches may seem alien to students, and may not be what they expect or want. It is important that educators be aware these possibilities when introducing social technologies into their teaching. Educators may therefore wish to discuss with learners beforehand what the new activities will involve, and the principles on which they are based. This discussion could include the potential benefits of the activities, the issues which might arise, and how these issues can be addressed.

Educators can provide resources to help students prepare, and include practice activities as 'scaffolding' for students.

In the context of wiki use, for example, the educator could explore with students the different ways in which wikis can be used. Students could be asked to discuss in

their groups the benefits of these different approaches, to consider how any problems could be addressed, and to agree an approach for their group.

In the photo-sharing example, the educator could discuss with students what makes someone an ‘expert’, and to what extent expertise can be developed by students as they study the module. Resources could be provided to support students in giving specific and constructive feedback, and in using feedback from other students. The educator could ‘model’ good approaches to giving and using feedback.

In the social bookmarking example, the educator could discuss with students their ideas about education and learning. This discussion could consider contexts where students have more knowledge than the teacher, or where a student has specialist knowledge that they can share. Simple, well-structured activities could be used to introduce students to the process of searching for useful resources and sharing them.

Finally, it is important to be open to students’ perspectives and interpretations: educators should learn from the reactions of students, give them serious consideration, and make adjustments to the learning approaches as needed.

Conclusion

Generalising from the exemplars in this paper, we suggest that the effectiveness of any educational technology cannot be predicted from the technology itself. To put it another way, technology does not determine outcomes. It might seem strange to have to point this out, but the prevalence of deterministic ways of talking about technology, especially in business and educational environments, makes the point worth reiterating. Other factors related to the social context, and the perspectives of the users, need to be considered. The use of social technologies in education has differing outcomes depending on the educational context, the teachers and the learners. One of the contextual and human factors count for more than purely technological ones.

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