

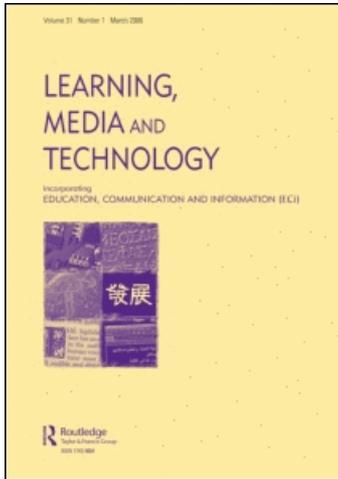
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'I DON'T CARE DO UR OWN PAGE!' A case study of using wikis for collaborative work in a UK secondary school

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Alongside other forms of social software, wikis have been heralded as supporting more collaborative and democratic teaching and learning practices. This paper explores, through a case study approach, the use of wikis to support a collaborative research project undertaken in a UK secondary school. Findings are analysed in the context of research on social and collaborative learning, using theories of Communities of Practice and Knowledge-Building Networks. The study identifies tensions between views of learning and knowledge-creation as collaborative and learner-driven, with students' views of learning, drawn from their experience of the broader economy of education. The role of assessment, the importance of authentic activities, and the teacher's role are all seen as important factors in the facilitation or otherwise of a collaborative classroom. Rather than asking how schools can make best use of social software, this study raises the question of how social software prompts a debate about the value of collaborative learning and ways to cultivate attitudes and organise education that may be more conducive to such collaborative practices.

Keywords: collaboration; wikis; social software; communities of practice; knowledge-building networks

Introduction

Wikis are websites that allow their users to create and edit content. Different wiki services offer different levels of functionality, although they all include functionality for editing by more than one person, either restricted to members or open to a wider public. They commonly also include the ability to compare previous versions of a page, a separate page for discussion and a user history that tracks the time and content of contributions and edits. The most well-known public wiki is *Wikipedia*, an online encyclopaedia in which most entries can be edited by anyone, at any time. *Wikipedia* illustrates a belief in the 'wisdom of crowds', that the collective knowledge of a large group can be greater than that of an individual, even if that individual is an expert (Surowiecki 2004). The success of *Wikipedia* is one factor behind arguments describing a move to a 'read/write web' (Berners-Lee 2005) in which the boundaries between producer and consumer are eroded, a process termed 'produsage' by Bruns and Humphreys (2007).

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Wikis have been used for a wide range of purposes: from private wikis for small groups to collaborate on business projects, to online special interest groups recording their history and work to date (e.g., *Ludocity*¹) to an open-to-the-public attempt to collaboratively write a novel (*A million penguins*²). An analysis of wikis' features, coupled with observations of their use in various contexts, has given rise to increasing interest in their potential to support teaching and learning (Bruns and Humphreys 2007; Crook 2008a; Desilets and Paquet 2005; Forte and Bruckman 2007; Lund and Smørdal 2006; Parker and Chao 2007). The affordances (Greeno 1994; John and Sutherland 2005) of wikis to support collective work, in which a group takes responsibility for creating its own content, and in which individuals learn from and build upon one another's contributions, seem to tie in to current theoretical and policy-driven ideas about education, particularly socio-cultural and social constructivist theories that emphasise the social and collaborative nature of learning (Crook 2008b), and policies that focus on skills of lifelong learning to participate fully in society and a global economy (DIUS 2008).

However, there are still very few examples of wikis being used in a secondary school context. The use of wikis in schools, and in education more widely, is still infrequent (Crook 2008a; Luckin et al. 2008) and the research literature on using wikis in secondary school classrooms is still very limited, with most available empirical research on using wikis in an educational context coming from work with students in Higher Education. While popular and academic writing valorises the potential of social software and wikis to usher in new forms of learning, there is a need to understand the realities of such software use in a real educational context. This paper therefore explores the use of a wiki in a secondary school classroom to support a collaborative research and writing project with 13- to 14-year-old students.

Literature and research background

This study is particularly interested in the process of collaborative research and writing as played out in a wiki. In particular, this paper explores how wiki use in the classroom can be understood in relation to a number of social theories of learning including Communities of Practice (Lave and Wenger 1991; Wenger 1998, 2000; Wenger et al. 2005) and Knowledge-Building Networks (Scardamalia and Bereiter 1994), focusing in particular on notions of collaboration and audience, authenticity and 'voice'. As such, it seeks to explore how these notions of collaborative and authentic learning are present (or not) in wiki use in the classroom.

Communities of practice

Lave and Wenger (1991) and Wenger (1998) see knowledge as a social product, with knowledge as collectively created through participation in the practices of the community. Wenger situates knowledge as contingent on the broader social and historical circumstances: 'knowledge is... also a matter of the positions of our practices with respect to the broader historical, social and institutional discourses... to which we can be more or less accountable' (1998, 141). The implications of this are that communities need to define the relevance, usefulness and validity of knowledge for themselves, but that knowledge is also contingent on broader social, cultural and historical constructions of knowledge.

Knowledge-building networks

Scardamalia and Bereiter (1994) see learners engaged in Knowledge-Building Networks as participating in a collaborative activity in which learners take responsibility for their own learning goals, identifying the problems and gaps in their understanding of a subject and deciding how to solve these problems. In such a social constructivist approach to learning, reflecting on learning and making it explicit is an important process. Parker and Chao (2007) argue that wikis allow for this reflective process to be done collaboratively; similarly Forte and Bruckman (2007) argue that wikis could act as a ‘construction kit’ that could support the process of public and collective knowledge-building in schools.

Collaboration, competition and ‘collective intelligence’

While many (e.g., Augar, Raitman, and Zhou 2004; De Pedro et al. 2006) see wikis as promoting collaboration, it is important to consider exactly what is meant by ‘collaboration’, particularly in distinguishing between collaboration and other forms of social learning. Lund and Smørdal’s (2006) study of using wikis in a secondary school classroom focuses on what they term ‘collective cognition’. Collective cognition is seen as emerging when a number of people reach insights through the process of working together that neither could have made alone, and that cannot be ascribed to the contribution of any one individual. This is significantly different from the roles of co-ordination that children in Desilets and Paquet’s (2005) study engaged in. Similarly, some group processes of collective knowledge-building may be based more on competition than collaboration. For example, within Wikipedia, many people may edit a single article, but this does not necessarily imply that any of the individuals taking part in successive contributions have gained any insights that they could not have gained alone. Indeed, the process may be one of competing to see whose version of an article ‘wins out’. In an educational context, Guzdial et al. (2002) found that too much student competition meant wikis were unsuccessful.

Audience, authenticity and voice

In both theories of Communities of Practice and Knowledge-Building Networks, as well as in notions of the ‘read/write web’ (Berners-Lee 2005), communities are seen to be generating knowledge for both their own and others’ use (Guth 2007, 61), seeing learners as having the potential to legitimately contribute to the work of the real world, which in turn gives that activity meaning and relevance to the learner.

Rheingold emphasises the importance of finding the first public audiences when young people are expressing their public voice through social software (2008), relating to Habermas’ notion that a web of informal personal communications can contribute to the foundations of a democratic society (Kellner 1998). Rheingold (2008) also makes the obvious, but often overlooked, point that it isn’t ‘voice’ if nobody listens. In this sense, an authentic task is one in which learners are able to publicly express themselves to an audience who listens and responds. Collective or collaborative authoring, however, could challenge this notion of public voice. While the ‘voice’ of Wikipedia may be the sum of everybody’s contributions and thus represent a ‘collective voice’, no one contributor would necessarily see the resulting article as representing his or her voice. A more collaborative process in which the participants of the wiki had engaged in ‘collective cognition’ and contributors had

gained insights from the process of working together, might see a form of collective voice emerge through the wiki that was both the result of collective edits, as well as represented the voices of all contributors.

Research methods

The literature summarised above provides a theoretical context for the case study in which we used a wiki as a framework for collaborative work in a classroom. This section briefly summarises the case study method employed to explore the use of wikis to support a collaborative research and writing project in a secondary school classroom.

This study aimed to explore the extent to which students were able to collaborate with one another during a specific research and writing project, supported by the use of wiki tools. A case study approach was taken (Yin 1994) that used the notion of 'collective cognition' as described above to define collaborative knowledge construction and presentation of that knowledge through a wiki. For this reason a particular focus on students editing one another's work was taken, as opposed to simply using the wiki to aggregate or co-ordinate individual contributions. In editing another's work, students have to reflect on the quality of that work and whether and how it could be improved, meaning they have to develop their own ideas in response to the ideas presented by previous contributors. Conversely, when a student's own work is edited, they can consider the changes as feedback on their content and quality of their work and so mutually engage in the development and presentation of ideas.

A specialist technology co-educational secondary school in Gloucestershire agreed to host the study. Three Year 9 (age 13–14) ICT classes took part in the project, which were selected by the teachers on the basis of the school timetable. Within each class, teachers randomly assigned students to small groups of between six and nine students each, where each was set up with its own separate wiki.

Of the many wiki platforms available, Wikispaces was chosen. It was chosen on the basis of several factors, not least that it did not charge for use. It incorporated features that were felt to be important by the class teacher, including comparison of versions of a page, discussion pages, user authentication and tracking, and a semi-closed restriction limiting editing to members only while being viewable by the public.

Teachers wanted to restrict reading and editing of wikis to allow students to take ownership of their wikis without interference from the public. They also wanted to be sure that all the content had been produced by their students without outside help, echoing concerns of the teacher in Forte and Bruckman's (2007) study who did not want students to make public their ideas and work without his oversight. It was also important to the teachers that they could track authors of all contributions and so identify the authors of any abusive or offensive posts.

The project ran for three weeks at the end of the autumn term of the academic year 2005/06. The students were asked to work in their groups on a joint history and ICT research project on 'innovations in technology since 1950'. They were asked to choose a particular topic within this subject, such as music or sport and to collaboratively research and present their findings on their chosen topic through the wiki. They were given class time in both ICT and history lessons to work on their wiki projects, and also required to continue work on the project as homework. The technical features of the wiki software were introduced to the students at the beginning of their project by

their ICT teacher and the researcher wrote an initial front page for each student team's wiki explaining how to edit, create new pages and create hyperlinks between pages. Teachers were concerned that students learned to work 'independently', that is, without being dependent on the teachers to tell them exactly what to do, and so they decided to leave further decisions about how to collaborate and use the wikis to the students themselves.

Six students from three wiki groups took part in a focus group interview, which was video-recorded and transcribed for analysis purposes. The ICT teacher was interviewed before the project began and again afterwards. The students' wikis, including discussions, written contributions, edits and deletions and uploaded images, were recorded in the wiki and analysed on an ongoing basis during the project. Using RSS (Real Simple Syndication) feeds, the researcher was alerted when any updates were made to the wikis and so was able to constantly monitor students' activities from a distance.

Findings

This section describes the findings in relation to students' collaboration in terms of their actions and attitudes towards editing others' work. The subsequent sections relate these findings to the theories indicated in the literature and research outlined above, and then contextualise the findings in the light of similar studies and reflect on a number of themes related to the central concern with collaboration.

Participation in collaborative research and writing

Each of the three wiki groups represented in the group interviews began their project by deciding, individually or in pairs, on a particular topic, so each group's wiki covered several distinct topics. The wikis of those who were not present in the interviews also appeared to follow this format. Once they had decided who was responsible for a particular page, the ownership of that page was strongly asserted, often by including the names of the owners in the title of their pages, for example as in Figure 1.

While most students said they enjoyed publishing their work on the internet, very few edited material on others' pages, repeating the findings of several previous studies of educational uses of wikis (Forte and Bruckman 2007; Guth 2007; Lund and Smørdal 2006).

There was one instance of a student editing another's work, which is interesting to look at in detail because it is out of character with the usual practice of the students during this project. In Group 5 one student, 'heatherw', deleted text that referred to technology before 1950, which was outside the remit of the subject set by the teachers. The original authors complained and used the 'revert' functionality to reinstate their original page, including the pre-1950 material. The argument continued (see Figure 2). This was the only example of a student trying to substantively contribute to the work of others, and was met with hostility by the rest of the group.

One other example of a student editing others' work emerged during the group interview: a student remarked that he had noticed a spelling error on someone else's page and corrected it. However, he was very careful to say that he had only noticed it in passing and had not been 'checking' the writing as that would be 'sad'. This reluctance to edit others' work extended to the introductory text written by the researcher

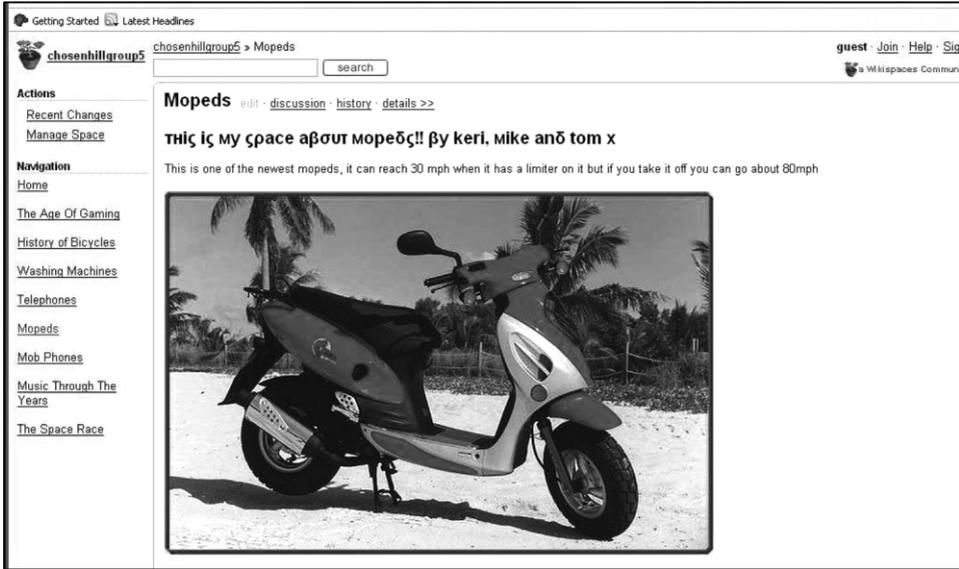


Figure 1. Asserting ownership of a page.



Figure 2. Reverting to the original authors.

on the home page giving brief instructions on how to create new pages and hyperlinks between pages. In one group, students created a new page and named it 'Home' rather than deleting material already on the home page and so ended up with two home pages. There were no comments on the discussion pages relating to written content, and interviewed students said that they did not discuss the written content with other members of their wiki group.

Participation in a community of practice

Students did not view the ability to edit each others' work as useful or desirable. As the typical quotes below indicate, interviewed students agreed that it was better to focus on your own work and on your own page rather than edit someone else's:

I think it's better if we all just write ourselves [i.e., our own pages]. Because if you didn't know what you were talking about and started making up things... If you were doing some work in a lesson you don't want people come and start writing on it – it's the same thing really. (Graham³)

There should be locks on it. Because they could write rubbish stuff and then you'd get told off for it. (Mary)

As discussed above, the practices and knowledge adopted by a particular community of practice are defined in the context of the broader discourses and other communities of practice in which this community operates.

The comments above show how the students are relating their work in wikis to the wider discourse of school education, comparing this work to other written work completed in lesson time and to being judged individually on the quality and content of writing produced. Underlying both these comments can be seen the discourse of individualised, written assessment that pervades school as students are concerned with others 'making up things', or 'writing rubbish stuff' that they would be judged on. This is further summarised by another comment from a student during the interview: 'Writing's what gets you your grades' (Jamie). Despite the students' stated concern for other editors introducing errors that they would be judged on, it seems that 'heatherw' had stepped outside the boundaries of legitimate participation of this community, not by introducing errors but by trespassing on someone else's territory. The fact that another student felt that he had to explain away his spelling correction also indicates his understanding that editing others' work did not align with the accepted shared practices of the class as he perceived them, regardless of the accuracy of those edits.

In the absence of other models to draw on, it seems students imported the existing practices of school as they perceived them. In these groups, negotiating meaning was therefore defined in relation to the wider community of practice of the school, and the discourse of individualised, written assessment that the students perceived as dominant characteristics. As Wenger writes:

If an institutional setting for learning does not offer new forms of identification and negotiability – that is, meaningful forms of membership and empowering forms of ownership of meaning – then it will mostly reproduce the communities and economies of meaning outside of it. (1998, 269)

Guth (2007) found that students took more care over their work in a public wiki than one that was restricted to contributions and edits by students on her course only. This may be partly explained by the students' concern that their public work would be viewed and judged by a public audience, but this also reflects the fact that students were entering an existing community of practice with rules of participation (including rigour and accuracy) that could be gleaned from the wiki itself, acting as a reified record of the community's work. Students were thus able to observe and interact in a process of legitimate peripheral participation. In contrast, in the present study, students had to build their own practices from scratch rather than being acculturated into an existing community.

Knowledge-building

All of the groups chose a combination of different topics for their wiki. Small groups took charge of a topic based on their own personal interest and they saw no need for

links or any coherence between topics within a group beyond the overarching theme of ‘technology since 1950’ (e.g., one group chose sport, music, cars and fashion). In the focus group interview one student commented on the benefits of this approach as ‘at least there were no arguments’ (Mary).

There was little evidence of a knowledge-building network as defined by Scardamalia (2002) and Scardamalia and Bereiter (1994, 2003) in this case. The students did not take responsibility for their own learning goals, did not review each others’ work, did not identify gaps in their knowledge of a topic or find ways of making their different topics relevant to each other. The students’ focus over this short period of study was on selection of content rather than on developing ideas. However, in terms of ideas about visual design and technical expertise the group did support each other in developing understanding of these skills. In one instance a student commented that another student’s page needed more photos, and in another instance that better and more modern photos were needed (Figure 3).

There were also several questions in the discussion pages asking others for technical help uploading photos and making links to new pages. There were no replies recorded to these questions, but during the focus group interview it emerged that help had been given face to face, echoing Guth’s (2007) finding that while in class, students would discuss face to face rather than through the wiki.

These students were familiar with multimedia websites, and frequently used *Microsoft PowerPoint* to present work. Visual presentation, including font, colour, background and image, was mentioned as important during the focus group interview, and students would have preferred more options within the wiki software for design. While design should not be seen as completely independent from written content, and the students themselves commented on the importance of good design to convey meaning effectively,⁴ they did treat visual design in a very different way to written content. However, visual design and technical competence needed to complete the task at hand would generally fall outside the domain of knowledge-production as defined by Scardamalia (2002) and Scardamalia and Bereiter (1994, 2003). The knowledge content produced during this project appears to be limited to each individual or pair’s research, rather than shared as a group. The group decided to focus on the task rather than collective engagement with ideas, and did not set themselves, or perceive, a clear learning goal, so Scardamalia’s charge of shallow constructivism (2002) could be levelled at this project.



Figure 3. Example of student feedback.

Collaborative practices in the classroom

Bringing this discussion back to a focus on collaboration, while students may have been operating as part of a school-based community of practice, there is little evidence of collaboration of the sort described as ‘collective cognition’. As Bruns and Humphreys note in reference to editing others’ work: ‘If truly collaborative work is the goal... then the reluctance to critically evaluate and to learn how to provide constructive critique to peers must be overcome’ (2007, 5).

Several previous studies have commented on the ‘cultural mismatch’ between collaborative learning of the kind that it is hoped Web 2.0 tools may support and the forms of individual work that characterise the formal classroom (Forte and Bruckman 2007; Lund and Smørdal 2006). Lund and Smørdal found that while learners were positive about using the wiki to aggregate content from the whole group, they were reluctant to embrace notions of collective ownership, instead continuing practices of ‘institutionally cultivated individual ownership’ (2006, 41), which echo the findings of the present study. Crook (2008b, 35) also identifies several tensions between social software and its integration into education systems, including balancing privacy and assessment that focuses on the individual, with the ‘relentlessly social’ collaborative rhetoric of Web 2.0. Forte and Bruckman see this as an opportunity for improved design of wiki tools to ‘close the gap between existing classroom practices and the real-world practices of Knowledge-Building communities’ (2007, 39), while Lund and Smørdal (2006) see the role of the teacher, the nature of the task and the time allowed in the task as crucial in encouraging and facilitating students to work more collaboratively. However, Selwyn (2008) warns against identifying potential benefits of technology and then focusing on removing barriers to realising this potential, seeing this as an example of reductionist thinking equivalent to technological determinism that assigns agency to technology itself rather than people. Instead of focusing on designing technological solutions to cultural barriers, it may be that the perceived potential of wikis and social software can be used to start a debate about the value of a more collaborative approach to learning and ways to organise education that may be more conducive to collaborative practices.

The role of teachers

The teachers in this study said that they were particularly concerned with what they perceived as the students’ ‘dependence’ and wanted them to take responsibility for their own learning instead of requiring the teachers to guide all their activities. For this reason, the subject ‘technology since 1950’ was deliberately chosen to be open-ended and teachers did not participate within the wiki. However, as Crook (2008a, 2008b) points out, the role of the teacher in a Web 2.0 environment is not simply about stepping back and letting learners get on with it. Learners have to learn how to participate and collaborate, and teachers need to play a role in facilitating this process. Lund and Smørdal (2006) see the teacher as needing to go beyond this to facilitate a collective ‘zone of proximal development’ (Vygotsky 1978), that allows all participants to achieve more highly than they would be able to alone. In several studies (Bruns and Humphreys 2007; Forte and Bruckman 2007; Guth 2007; Lund and Smørdal 2006) students only edited one another’s work when teachers explicitly encouraged and exhorted students to do so.

In this study, we see how the teacher’s desire for students to be independent and take responsibility for their own work resulted in them stepping back from the

students' work. However, this did not transcend the socially and historically determined practices of the classroom (Lund and Smørðal 2006, 38). If teachers really do want to encourage students to be independent, responsible for their own learning, and collaborate with one another, then teachers themselves will have a significant role to play in modelling and facilitating these practices.

Assessment

The role of individual written assessment is frequently cited as one of the cultural barriers to adopting genuinely collaborative practices in the classroom when using wikis (e.g., Guzdial et al. 2002; Lund and Smørðal 2006). Students themselves were aware of this in the present study as the quotes above indicate, as were Forte and Bruckman's (2007) students who, concerned about 'free riders', requested to be marked on their individual contributions rather than the collective product of the group.

Tracing the history of an individual's contributions to a wiki does, theoretically, allow an individual to be assessed on their personal contribution, and this is the approach taken by Bruns and Humphreys (2007) who required their students to demonstrate continuous contributions in the weeks leading up to the assignment deadline and to make regular comments on discussion pages. Alluding to Black and Wiliam's (1998) work on assessment for learning, Bruns and Humphreys see wikis as offering an opportunity to 'open up the black box' to assess participation in the collaborative process as well as the final outcome (2007, 7). However, if 'collective cognition' is indeed the result of a process that cannot be traced back to an individual, and is the result of something greater than the sum of its parts, focusing separately on the contributions of individual members may not adequately reflect the collaborative nature of the learning that has taken place.

Audience, authenticity and voice

As discussed above, an authentic activity requires a genuine audience – either of the producers themselves or a wider public audience, so, in this study, who was the audience for the students' wiki? Technically, their work could be read, but not edited by, members of the public. There is no indication that any members of the public did read their work; however, students in the focus group interview did say they were pleased to know that they were publishing their work on the internet, which may have indicated an awareness of a potential public audience. There was no sense that their work would continue to have a purpose after the end of the project and the topics chosen within each wiki group were unrelated, which both suggest that students did not perceive their wikis to be of use to either themselves or their peers. Instead, 'heatherw's' deletion was about making sure that her group's wiki met with the rules set down by their teacher and may well not relate to a desire to improve the quality of the artefact in her own judgement beyond ensuring it meets the rules. This, combined with the students' comments about the importance of grades, suggests that the most important audience for them was in fact their teacher. Scardamalia and Bereiter (1994) suggest that dissatisfaction with content can spur learners on to make their own contributions, or edit others' material, as a way of improving the overall artefact. However, this suggests that learners care enough about the quality of the overall artefact, and not just their contribution to it, to make these edits. For students to care

in this way would require them to perceive it as an authentic, relevant and worthwhile practice, which in this case, when students believed they were writing for their teachers and being individually assessed by them, did not appear to happen.

Conclusion

The study that this research project draws upon was relatively short-term and small-scale, so generalisable conclusions should not be drawn. Moreover, this was the first time this school had used wikis, and was intended as a relatively open-ended exploratory study rather than a defined programme of use. Practices may have changed over time as students and teachers become more familiar with the affordances of the wiki as a collaborative research and writing tool. While Seely Brown and Adler (2008) see the web as providing innumerable opportunities for students to learn through joining niche communities of interest, there is little evidence that large numbers of young people are making extensive contributions to Web 2.0 resources including wikis (Crook 2008a). In this case, the social and cultural practices of collaborative working and learning that would be needed to realise 'collective cognition' were not in evidence. Instead, students appeared to import practices of individualised written assessment that they perceived as important from the broader economy of education and the practices of the school community.

There is, of course, no direct causal link between technologies introduced to the classroom and the practices that follow, and the participatory promise of Web 2.0 does not itself ensure collaborative learning (Crook 2008b). Rather than focusing on the design of technologies, or on removing barriers to achieving the perceived potential of technology, the total ecology of the classroom needs to be considered. So, instead of requiring students to develop collaborative practices from scratch, introducing students to existing collaborative communities of practice, through wikis, could enable them to develop such practices. This study also suggests that consideration for the authenticity of the task, the role of the teacher, and the nature and form of assessment will be essential if a move to more collaborative practices in the classroom is desired. The use of software such as wikis to support such collaborative practices and achieve 'collective cognition' may well be one of the less significant factors required to bring about these changes. Indeed, people have been collaborating since well before social software and wikis were invented. However, as Crook (2008b) notes, such a transformation can seem always out of reach, with enrichment appearing to offer a more attainable model in the light of day-to-day classroom realities. The real opportunity and potential offered by wikis and other forms of social software in the classroom may not be in introducing the software itself, but in terms of focusing a debate on the value of collaborative learning and collective knowledge-production, the development of attitudes and cultures in education that support such approaches to learning, and how to organise education and assessment to support these attitudes and practices.

Notes

1. <http://ludocity.org>
2. www.amillionpenguins.com
3. All names of students have been changed to retain anonymity.
4. 'A picture of a football shows what it's about without having to read it all first' (male student, in focus group).

Notes on contributors

Lyndsay Grant is a learning researcher at Futurelab, an independent UK not-for-profit research and development lab exploring innovative technology and practice in learning. Lyndsay's research has included work on social web technologies and mobile learning approaches to support creative approaches to teaching and learning both in and out of school. Her research has particularly focused on questions of social justice in educational technology use and outcomes and the role of participatory and learner-driven approaches to education.

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