ENHANCING LEARNING IN THE PRIMARY SCHOOL THROUGH WEB 2.0

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Abstract

Web 2.0 tools are now common within K-6 schools, and there is an acknowledged need for more research to evaluate their effectiveness and their relationship to social-constructivist models of teaching and learning. A stronger research base is needed in order to inform teacher reflection on ways of deploying these tools and on their integration into teaching and learning frameworks. This paper contributes to this knowledge base through a detailed presentation of a research project undertaken in one Australian primary school with the aim of examining the effects of the use of two different Web 2.0 tools on the students' learning.

Background

It is becoming clear that the proliferation of Internet-based classroom tools over the last decade has had a major impact on the lives of children, both within and outside schools. According to the Australian Bureau of Statistics, (ABS, 2012) Internet use by children aged 5-14 increased by 65% in the years between 2006 and 2012. In 2012/2013 an estimated 90% of Australian children aged 5-14 reported accessing the Internet. Although Internet use among children in the 12-14-age bracket is greater than that for children in the 5-8 years age bracket, the differences are not enormous and they are becoming less prominent. Another interesting aspect of this data is that Australian households with children in the 4-14 age bracket are much more likely to have broadband access than households with no children (86% vs. 66%). The differences between boys and girls in this regard are not significant, although differences between Internets access in the country vs. the city continues to be an issue. A similar study based on 751 Australian families by the Australian Communications and Media Authority (ACMA, 2007) found that over 40% of the 8-17 year olds had created their own material on the Internet.

This increased access to the Internet, together with the technical improvements that have included increased capacities and speeds have meant that young children (and their teachers) have been able to do more with this improved access than was the case only ten years ago. This in turn has resulted in the proliferation of tools that allow users to publish multimodal texts on the web and interact with others synchronously and asynchronously. Tools such as Facebook, YouTube and a range of smartphone-apps mean that individuals can publish images, text video with the express purpose of interacting with others. In fact, some of the discussion has now moved on to imagine what Web 3.0 might mean to daily lives and education. Teaching and learning and the spaces and boundaries of learning environments have been dramatically changed by this revolution (McLoughlin & Lee, 2008). In the primary school context the application of Web 2.0 tools has several different dimensions.

Collectively, they reflect the range of roles identified by Luckin et al. (2009) in their study of learner use of Web 2.0 tools. This study categorized learner roles in using Web 2.0 as: (1) researchers, (2) collaborators, (3) producers, and (4) publishers. An additional category could be added to this to account for teachers' use of the Internet in the organisation of curriculum materials and records: (5) administrators.

Polls conducted by Eudemic (2011) to establish teachers' favourite classroom Web 2.0 tools give some indication of the web-based activities teachers are modeling in the classroom. In these polls, teachers were answering from a perspective that included the learner directly. The nominated top ten classroom tools over two years underscore the importance these teachers place on creating and publishing, on interactivity within learning communities and on the potential these tools offer as *spaces* (Mitra, 2004; Black, 2007) where knowledge building discourses can occur (Scardamalia & Bereiter, 2006). What we also see in these lists, year after year, is a distinct preference for the multimodal – that is tools that allow the publication of text, sound and image and animations. The other trend that is noticeable is the trend towards a mix of platforms. Teachers are favouring tools that enable Facebook / Twitter like short posts and interactions as well as those that are designed for longer and more discursive texts.

The Questions

The questions that formed the focus of this project related to gaining a better understanding of the ways in which Web 2.0 tools were being deployed in primary schools and the ways in which teachers were differentiating these tools according to their pedagogical intention. In addition to this, the project sought answers to questions relating to the learners' use of these tools and their disposition towards using them outside the classroom.

Elements of the Theoretical Framework

In this section of the paper three aspects of the theoretical framework that guided this research and the data analysis will be outlined. Three concepts form the foundation of this framework and these are: the concept of the i-mode, digital literacy, and dialogic spaces. These concepts influenced the research design and the analysis of data.

The i-mode

It is more than a decade since Rheingold (2002) wrote about the *i-mode* and *smart mobs* theorizing what the implications of every-ready wireless Internet combined with hand held devices could be for society and education. The concept of *perpetual connectedness* has been a reality for some time, and we are seeing its effects on teaching and learning at all levels both within and beyond formal contexts. Following Rheingold's work, a number of researchers focused on the increasing use of Web 2.0 application in their private spheres. Researchers such as Selwyn (2006) and Luckin et al. (2009), to name but two examples of many, highlighted the increased use of social networking and Web 2.0 tools by school children and their non-application for educational purposes. These and other researchers identified disconnectedness between what was happening at school and the use of technologies by students

beyond the classroom. Luckin et al (2009), also identified a 'blurring of the boundaries' (see also Schuck and Aubusson, 2009) between formal and informal spaces as learners in their study were found to be creating their own spaces within the formal demarcations of the school setting.

It is arguable that the past five years or so has seen a further blurring of these boundaries and dissipation of the *digital dissonance* (Clark, Logan, Luckin, Mee, & Oliver, 2009, p.56) theorised by these researchers. It would seem that the challenge presented by Web 2.0 to "the way schooling is enacted" (Schuck and Aubusson, 2010, p. 299) is being played out in some very creative ways (Light, 2010; Bereti & Song, 2012). That is, the i-mode that characterises the lives of many teachers and students is changing educational scenarios from the classroom up. Such behaviours are doing this in ways that seem to be fulfilling the criteria set down by Lankshear and Knobel (2006) for the successful development of pedagogy for the i-mode. There are more and more examples of teacher developed teaching and learning scenarios that manifest these key principles: the principles of efficacious learning, of integrated learning, of productive appropriation and extension in learning, and the principle of critical learning.

Far from being "subservient to existing school mores, laws and rituals" (Schuck & Aubusson, 2009, p. 756) Web 2.0 has the clear potential to enrich new scenarios of schooling based on networks of communities of enquiry or as Gee (2005) has termed *affinity spaces*.

Digital Literacy

The proliferation of digital tools, particularly as they are applied in educational contexts has changed the way we conceptualise literacy and the terms multiliteracies and multimodality have achieved a prominence in most discussions about the development of reading and writing skills in young children. The concept of multiliteracies dates back to the mid-nineties. Its main exponents were the New London Group who used the term in an effort to account for both the increasing "multiplicity of … modes of meaning making" as well as the "realities of increasing local diversity and global connectedness" (Cazden et al., 1996). The "profound shift" (Kress, 2010) has come about because of factors that are obvious such as the increasing dominance of the image in multimodal texts and the increasing proliferation of reading from a screen, rather than from a book. Literacies are seen as "socially constructed practices" (Lankshear & Knobel, 2004) and include, for example, the ways in which users interact with texts in online environments and the ways in which meaning is negotiated through interaction and in context. Reading and writing are "dialogic meaning making processes that are acquired and embedded in specific social contexts" (Black, 2005).

Web 2.0 and Dialogic Spaces

The sociocultural view of learning holds that language is a tool system that "mediates the development of thought" (Wegerif, 2002). Interaction and talking with others are knowledge-building activities. As Wells (2000) sets out in some detail, spoken and written texts not only transmit knowledge, they also mediate the authors understanding as the articulation of ideas makes them clearer to the person forming them. This is why Web 2.0 is important as a

knowledge-building tool. This is also consistent with Merchant's (2008) call for a model of teaching and learning that would provide young children with "planned opportunities to engage with ICT as a writing tool from the earliest stages of schooling" that would "necessitate a reconceptualisation of emergent writing" (p.757). An important element in the reconceptualisation is the recognition of the essentially dialogic nature of reading and writing (Black, 2005). According to authors such as Davies and Merchant (2009); Wright (2010) and Scardamalia and Bereiter (2006), the value of Web 2.0 tools lies in the cognitive and affective benefits that come with collaboration between users. Warschauer (2004) also focused on the specific benefits to writing skills that come from publication and interaction with others. Wegerif (2007; 2010) takes up the theme of interaction within Web 2.0 and continued the development the concept of dialogical spaces, built on the purposeful disposition among learners towards collaboration. Wegerif sees the potential of Web 2.0 as creating and fostering such spaces.

It is also important to bear in mind that one of the most important precepts relating to the integration of Web 2.0 tools into constructivist models of teaching and learning is that "where control of technology use is situated primarily with teachers, collaborative, co-constructive and student-centred pedagogies are unlikely to be enacted" (Wright, 2010, p. 26). In fact, much of the learning that students do online is not located in the classroom. Providing affordances for children, rather than controls seems the logical approach for teachers to take.

Method

This project followed the posts of 25 children from two different Primary classes – Year 5 and Year 6 in Sydney, Australia. The children were all aged 10-12 and were from a range of language backgrounds. These blog posts all related to the students' responses to the tasks they had been set and the comments posted by other students and teachers. The posts were analysed using a multimodal framework that drew on the work of Bateman and Delin (2001) as well as Kress and van Leeuwin (2006). In addition to the posts, interviews with the class teacher and school librarian were conducted to establish factors relating to the contexts for use as well as obstacles and affordances that affected the use of Web 2.0 tools by the students. These were analysed using key word and thematic coding.

Edmodo

Edmodo was originally developed in 2008 by Nicolas Borg und Jeff O'Hara who were working in schools in Chicago in the USA. Today it has 17,000,000 users worldwide and is available in English, Spanish, Portuguese, German, Greek, and French. It is similar to Facebook but can be used to post assignments, create polls for student responses, embed video clips, create learning groups, and so on. Students and teachers can provide instant feedback for the posts of others in the group. Of particular interest for the purposes of this study is that the Edmodo site is designed for to facilitate short posts and responses. For this reason, it is often described as a micro-blogging platform. The advantages for this aspect of the platform is that younger students do not feel intimidated by the thought of having to write longer

discursive texts (Dobler, 2012). At the same time, they can develop ideas and share these with others in a truly collaborative way.

Kidblog

This platform differs from Edmodo in that it is a blogging platform that allows teachers to provide each student with an individual blog. Teachers maintain complete control over student blogs, and user accounts and texts that are written within this environment tend to be longer and more discursive than those on EdModo. Its functionalities support the uploading of text, image sound and animations.

Multimodal Semiotic Analysis

The posts on Kidblog and Edmodo are not only simple webpages with posts/texts in chronological order; they can have images, videos and diverse design elements. To account for this complexity and the multimodal aspects of posts, it was decided to apply social semiotic multimodal analysis to the blogs themselves in order to gain a greater insight into different purposes and functions that each platform fulfils as well as the potential of each as tools to develop the literacies of the students. The two frameworks that were combined and applied are the framework of Bateman and Delin (2001) and of Kress and van Leeuwen (2006). The first was used to identify the contributions that specific structural elements make to the communicative goals of the posts and comments. Applying this framework of analysis in a systematic way made clear the ways in which the structural elements, organization of the posts and their multimodality harmonise and work together to form spaces that are dynamic and interactive and within which students are able to collaboratively construct knowledge and represent themselves as learners.

The first part of the framework looks at the architecture of the posts and its relationship to the overall communicative goals. Bateman and Delin (2001) argue that this architecture can be seen as consisting of five different levels that relate to the fulfilment of the communicative goals of multimodal online text: *Content structure* – the structure of the information to be communicated; *Rhetorical structure* – the rhetorical relationships between content elements; how the content is 'argued'; *Layout structure* – the nature, appearance and position of communicative elements on the page; *Navigation structure* – the ways in which the intended mode(s) of consumption of the document is/are supported; and *Linguistic structure* – the structure of the language used to realise the layout element. Particular emphasis was placed on the way in which the posts worked to facilitate interaction between the students and the articulation of the knowledge they had gained from their research.

Findings

The following section provides examples of the analysis that was applied to the postings from the two Web 2.0 tools that were examined in this study. The Edmodo examples are drawn from the sample taken from the Year 5 class. This focused on the weather. The Kidblog posts are taken from the Year 6 samples and focus on the students' responses to the books they were currently reading.

Edmodo Analysis (Example)

Figure 1.0 shows a screen shot of a typical Edmodo post from one of the students in the study. Posts are short but the skills involved in researching, locating, judging relevance, embedding are quite complex. Taken as a whole, the series of posts constitute a literacy event (Street, 2003) and exemplify a number of aspects of the particular functionalities of Edmodo that facilitate the development of dialogic spaces through online collaboration. The first entry was posted in response to the question 'What is a barometer?' The student has very little latitude in relation to the layout structure, although there is much more flexibility in relation to the rhetorical structure and the linguistic structure. The readers commenting display their own avatars but beyond this their contribution to the rhetorical structure is by way of text. The central element in the rhetorical structure is the text – setting and responding to the question. The videos the author has embedded are given a secondary priority as a way of validating and explicating the original text. The text itself has a simple structure and is written in the student's own words. An important aspect of the content structure is that it supports this personalisation by inviting comments from the reader.

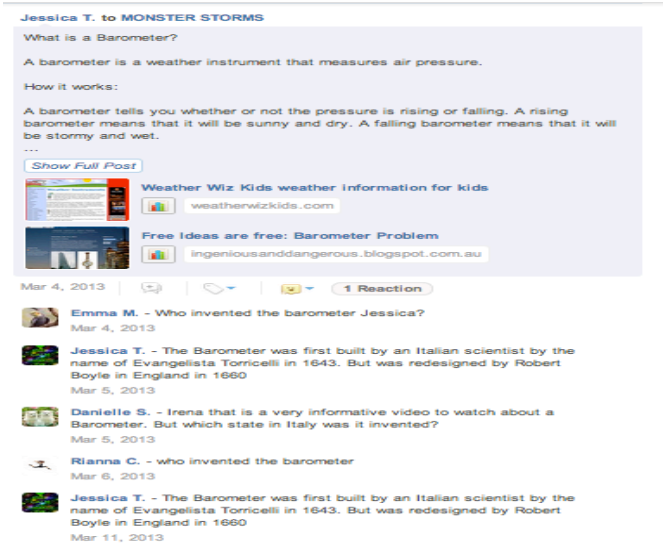

Figure 1. Example of Edmodo posts.

If we consider the linguistic structure, we see that most of the posts are based on short sentences and that questions are addressed to the writer using her name. It is also important to note that the other students use their avatars to show that they are members of the group. The comments appraise the information but they also seek to extend the answer by asking questions. There is a preference for verbs over nominalisation and the tenor of the posts is quite familiar and personal. These elements combined encourage collaboration and dialogic knowledge building. The high level of interactivity that was noticed in all the posts on this site was directly facilitated by the targeted nature of the posts and the short personalised comments.
Figure 2.0 shows a typical post from the Kidblog platform together with the comments on the left side. Of all the posts that were analysed from this platform, none were found to contain any uploaded images, videos or animations, even though the platform does support this. The emphasis in Kidblog is the development of discursive texts. In this instance, the teacher

used Kidblog to invite students to respond to a book they had read. The average length of posts was 400 words.

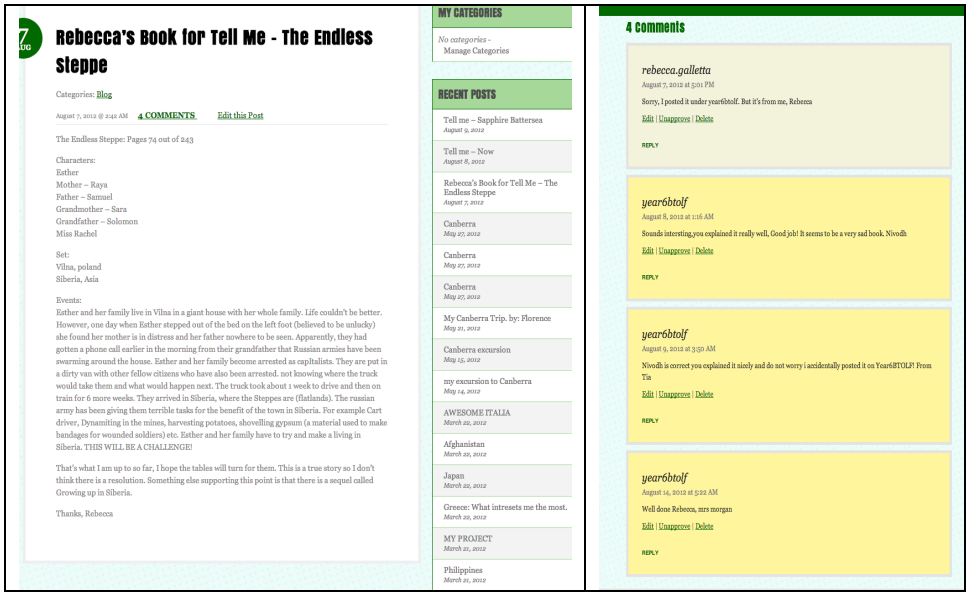

Figure 2. Example of Kidblog post.

It was Mitra (2008) who used the term *discursive space* to refer to a "virtual place whose texture is the product of the quality of those discourses" (p. 458). Black (2005) further develops this notion of space as applied to the Internet and describes how the interactions between writers and readers "contributes not only to further understanding of each other's meanings, but also to their perceptions and thus constructions of the writing/reading space" (p.386). In this sense, the individual Kidblog shown in Figure 2.0 is a "space" created not only by the posts of the author but also by the classroom based discourses around responding to literature and the genre of the personal response. This one example is, in fact, one part of a series of blogs linked by a unifying purpose and constituting collectively and individually a collaborative discursive space. Behind the blog there sits a real person writing within a particular social context linked to others through the activity of reading and writing. It is a space that affords the development of detailed texts. In these posts we see that the students have the opportunity to develop their ideas about the books they are reading in some detail through a series of paragraphs that contain expository elements but also reasoned arguments about why a certain interpretation or response is logical and acceptable.

The linguistic structure of the Kidblog entries provided a sharp contrast to those of Edmodo. In all the Kidblogs analysed, there were high levels of hypotaxis, that is the use of embedded clauses, coordinating conjunctions and the like. There were also many examples of chains of reference that provided coherence within the extended discourse. The focus within the Kidblog was found to be very much on the text as discourse and on organising texts in a way that enabled the reader to follow their logical development. The comments of others of the Kidblog were usually short and did not pose questions. Invariably, they offered appraisal of the post or commented on the appeal of the book that was being discussed. They did, however, form a very

important function: They validated the writing of the students by clearly signalling that there was an audience out there – people could receive and read their posts.

The Teacher Interviews

The interviews with teachers highlighted a number of factors relevant to the focus of this project. Firstly, the teachers described the value of having specialist teacher in IT at the school. The students in this study had received about one hour a week specialist IT instruction for the past two years. These lessons focussed on netiquette as well as the skills required for maintaining multimodal web sites. The teachers also indicated that the influence of the students' home use of social media had not been obvious in the school context. The findings from the interviews also highlighted the importance of the teacher's role in interacting with the students on the sites and in scaffolding tasks. The data showed that teachers were aware of the importance of questioning eliciting in the comments space. The main hindrance they identified was the lack of time available to work with each of the students individually. The teachers felt it was important that control was maintained over the use of social media in the school context and one of the main criteria for judging the usefulness of platforms was the aspect of *safety.* They were conscious of the knowledge building potential of the platforms and tried to encourage interactivity beyond the classroom in their scaffolding of tasks.

Discussion

The results of this small-scale project highlighted important differences between the two platforms. The analysis of Edmodo demonstrated the value of micro-blogging in enabling the students' engagement in a range of collaborative learning activities and in providing a meaningful context within which the students could engage in new modes of enquiry. On the other hand, it was found that Kidblog provided a discursive space where students could develop concepts and understandings in a much deeper and more detailed way. Both platforms were found to be technologically mediated literacy environments (Lapadat, 2011) but the way in which they worked in this regard was quite different. As Black (2005) points out, context can have a formative role on literacy events, and we a very good example of this in the way on which the two platforms in this project encouraged different forms of writing and different types of interaction and knowledge building. The results also underscored the need for thoughtful differentiation of Web 2.0 tools based on the specific affordances they provide for the development of students' multiliteracies. If literacy education is to be successfully reconceptualised (Merchant, 2008), it will require not only fine-tuning of the tools that are deployed in schools but also an effort to ensure that these tools are at the forefront of what is currently available to students in their daily lives in their personal spheres.

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