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Facilitating new forms of discourse for learning and teaching; harnessing the power of web 2.0 practices

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Abstract

When asked what they would find most helpful to enable them to use technologies more in their teaching, most teachers say "give me examples, in my subject area" and "point me to relevant people I can discuss these issues with". Web 2.0 technologies - with their emphasis on sharing, networking and user production - seem to offer a potential solution. However uptake and use of web 2.0 sites such as blogs, social networking and wikis by teachers for sharing and discussing practice has been marginal so far. This paper focuses on work we are undertaking as part of the OU Learning Design Initiative (<http://ouldi.open.ac.uk>) and the Hewlett-funded Olnet initiative (<http://olnet.org>). A key focus of our work is the development of tools, methods and approaches to support the design of innovative learning activities and Open Educational Resources (OER). In this paper I want to focus on one strand of our work; namely how to leverage technologies to promote better sharing and discussing of learning and teaching ideas and designs.

Introduction

Technologies now infiltrate all aspects of our lives and are recognised as important tools for education, as is evident by the rhetoric around e-learning in current policy perspectives (G. Conole 2007) (DCSF 2009). Educational technology research is now a well established research field and we have a significant body of research into the use of technology in education to draw on (Andrews & Haythornthwaite 2007; (G. Conole & Oliver 2007); research that is enabling us to draw inferences on strategies for successful implementation of e-learning as well as an understanding of some of the challenges facing the field. Despite the evident potential of technologies to support learning, wide-scale uptake of technologies has not occurred; there is a gap between the promise of technologies and actual practice. The reasons for this are complex and multi-faceted, as much (if not more) to do with pedagogical and organisational issues as to do with the technologies themselves (G. Conole 2010). This paper describes a social networking site that has been created to help foster debate and exchange of educational practice. This work focuses on a particular sub-set of issues within this broader context:

- What are the barriers to teachers sharing and discussing their learning and teaching ideas and designs?
- Why have web 2.0 technologies not been taken up more extensively in learning and teaching?

- How can social networking practices be harnessed and used in an educational context?

Web 2.0 tools and practices

The term Web 2.0 was defined by O'Reilly in 2005 to denote emerging tools and services where the emphasis of use had shifted from the web as a source of information to a web that was more participatory, characterised by user-generated content and peer critiquing. (O'Reilly 2005). Blogs, wikis and social networking sites such as Facebook are the most commonly cited and used examples of web 2.0 tools for fostering communication; coupled with sites for sharing content (such as Flickr, YouTube and Slideshare). Collectively these offered a rich set of tools to support new forms of communication, sharing and networking. Not surprisingly there has been considerable interest in how these tools might be used in an educational context (Alexander 2006; Ala-Mutka 2009; Redecker 2008). Arguably the characteristics of these web 2.0 tools (active participation, peer critique, collective intelligence through social aggregation of resources, etc.) align well with what is the perceived wisdom on 'good pedagogy' (inquiry-based or problem-based learning, dialogic and collaborative learning, constructivism and active engagement) (De Freitas & G. Conole 2010). However despite the potential and the general enthusiasm for these new technologies, they have not been taken up extensively in education (Davis et al. 2007; Bertolo 2008).

Clearly these web 2.0 tools could be used in a variety of innovative ways with students to support their learning, but also they could provide a communication mechanism for teachers to share and discuss practice. The issue is how we promote and support this use. It is this focus on use in teacher practice that I want to concentrate in this paper. However on reviewing actual use of web 2.0 tools we found that teachers, on the whole, were not using web 2.0 tools extensively to support their practice (G. Alevizou, & G. Conole). The review focused on the use of web 2.0 tools in Higher Education. The review consisted of two parts: a standard desk review (a search of relevant journals, databases, sources of reports and keyword searched on terms such as 'web 2.0', 'social media', 'learning 2.0', 'social networking', etc) and the creation of a space on our social networking site Cloudworks (<http://cloudworks.ac.uk/cloudscape/view/1895>) to stimulate discussion around the core research questions and to gather additional references and links. The desk review included a number of recent reviews that have been undertaken on the use of web 2.0 in learning. The space in Cloudworks was set up with an outline of the focus of the review and each of the core questions. The research team and users of Cloudworks developed the space (through discussions and additional of links/references). The space was promoted via Twitter and other social media sites on a regular basis. This 'open' approach to gather data yielded rich additional data; the space has had over 600 unique views so far, and 234 comments across the different sub-themes.

Summarising the findings from the desk review and the discussions on Cloudworks, a number of reasons for the lack of impact of Web 2.0 tools in an educational context are evident:

- Teachers need time to assess the tools and to appropriate them to their own practice
- Many of the social networking tools have been developed to support social communication rather than professional dialogue and so the environments are not always appropriate.
- Social networking tools often combine a confusing array of tools, making navigation around these sites difficult and a lack of clarity as to where to post information or which channel to use for communication.
- An important dimension of successful web 2.0 practices is being part of a relevant community of users; benefit and relevant dialogic engagement is only possible if there is a critical mass of those with a common interest using the tools.

Reviewing actual use of new technologies in an educational context leads to a bleak conclusion, i.e. that even though web 2.0 tools seem to have the right mix of affordances to facilitate sharing and discussion of educational ideas, this is not happening spontaneously across the broad educational community and nor is it happening at scale where the real macro benefits of the collective intelligence affordances (Lévy 1997) and sheer scale of the web comes into effect. To address this, as part of the broader programme of work under the OU Learning Design Initiative, a new social networking site (Cloudworks) has been developed specifically to support teacher practice and with the explicit intention of organically building on the best of web 2.0 practices. Our intention was to articulate an initial vision for the site, but to adopt an agile development approach where the site would co-evolve out of the use of the site by users. The site is attempting to address three inter-related issues:

- The lack of uptake of technologies for learning and teaching (despite the fact as outline above that they have immense potential).
- The new skills needed for engaging in a participatory digital landscape (Jenkins 2009).
- The request from teachers for examples of good practice and mechanism for sharing and discussing their ideas with others.

Our overarching research question is: Can we harness web 2.0 practices to foster better sharing and discussing of learning and teaching ideas and designs? Cloudworks has been developed to attempt to tackle these issues and to bridge the gap between the potential of technologies and their actual use in an educational context. Development of the site began in February 2007 and has been through a number of design phases. The latest version of the site was launched in September 2009.

Methodology

The core principles of our approach are that it is: user-centred, theory-based and critically reflective and evolving. Our methodological approach is evaluative with elements of virtual ethnography (Hine 2000). We draw on a range of sources of data (desk research, interviews, focus groups, workshop evaluations, observations, web statistics, etc.) to develop a rich picture of users' practices and perspectives in relation to the use of technology to support their learning and teaching activities.

In terms of data collection we are using a rich set of data to capture the experiences and patterns of behaviour occurring on the site. This includes web stats across all the activities occurring on the site (total number of registered users, number of clouds, number of cloudscapes, number of links, references and embedded content added, and number of comments posted). For each of these we differentiate between the activities we as a research team have created and activities generated by other users of the site. This enables us to track the extent to which we are directing site activities. Ultimately the aim is to achieve self-sustainability on the site and the degree to which we support and facilitate activities on the site decreases over time. In addition to the statistics we generate ourselves about specific features of the site, we are also using Google analytics. Amongst other things this enables us to track usage of the site over time, as well as the total number of unique visitors, pages visits and requests made, and the origin of those using the site. At key points in the development of the site we have undertaken interviews and focus groups around specific themes and also run a series of specialised focus groups, which we term 'cloudfests'. These are sessions where users evaluate existing clouds in the site and then discuss barriers and enablers to getting greater uptake and use of the site. We are using the site extensively at a range of workshops and conferences and using feedback from these events to improve the site. We have a critical friend group who meet with us once every two months and a broader expert group of peers who we bring together periodically to discuss some of the wider challenges with trying to do this type of research. Our own use of the site and critical reflection on this use is also an important part of our overall strategy. We keep detailed observation notes and reflective diaries to capture this aspect.

In terms of the development of the site we are adopting an agile development approach (Cockburn & Highsmith 2001). The site was initially developed in Drupal, a content management system (<http://drupal.org>), but in June 2009 it was completely rebuilt using a PHP framework called Codeigniter. To date we have undergone three design phases. Each has been associated with a series of design decisions. Further information on this and on the associated evaluation of each design phase is available in a recent Computers and Education paper (G. Conole & J. Culver 2009b). Theoretically our approach is socio-culture in nature (Daniels et al. 2007). We see cloudworks as a valuable mediating artefact to help guide discussion and sharing of learning and teaching ideas (Conole 2008). Adopting a socio-cultural approach also helps clarify that we recognise the importance of the situated nature of use and ongoing evolution of the site. It emphasizes both the context and constraints associated with the site. Initially we drew on two theoretical insights to

help framework this work, the notion of 'social objects' as the core element of the social network (Engeström 2005) and Bouman et al.'s framework for sociality (Bouman et al. 2007). See (G. Conole & J. Culver 2009a) for a more detail account of this.

An overview of the Cloudworks site

Cloudworks is a social networking site for sharing and discussing learning and teaching ideas and designs (<http://cloudworks.ac.uk>). There are four key concepts associated with the site:

- *Clouds*: The core object in cloudworks is a cloud, which can be anything to do with learning and teaching. A cloud might be a description of a specific element of teaching practice, for example how a wiki was used in a particular context to support group project report writing. It might be a description of a useful tool or resource for teaching or it might be a question to stimulate a debate or ask advice. Clouds are social, i.e. others can comment on the cloud. This builds on Engeström's notion of social objects, where he argues that successful social networks build around collective social objects (Engeström 2005). Hence Cloudworks is an object-centred rather than ego-centred site (Dron & Anderson 2007). Clouds can be cumulatively improved; anyone can add additional content to the core cloud or tags, links, references or embedded content. In addition each cloud has an associated social space to foster debates and discussion.
- *Cloudscapes*: Clouds can be grouped into community spaces or 'clusters of interest'. So for example a cloudscape can be set up for a particular event such as a workshop or conference. Alternatively a cloudscape might consist of a collection of clouds relating to a specific course or resources and references around particular research topics. Clouds are mobile and can belong to more than one cloudscape; all the collective intelligence associated with the cloud travels with it.
- *Activity streams* are dynamic filters of new activity. There are four types of activity streams. The first is the public activity stream, which is shown on the homepage of the site. This lists all recent activity on the site. There is a tab view of the activity stream so that you can see everything or just the latest activities around a particular aspect of the site (i.e. clouds, cloudscapes, comments, links, references and extra content). The second type is the activity streams associated with cloudscapes, again these are tabbed and they show all the latest activities associated with a particular cloudscape. The third type is the activity stream associated with an individual and their latest activity on the site. These appear on a user's profile page. The final type is an individual personal activity stream, this shows any activities associated with things (cloudscapes and/or people) that a person has chosen to follow.
- *Follow and be followed* – it is possible to 'follow' both people and cloudscapes, this has a dual function in terms of acting as a form of peer recognition in the site and also technically anything a user follows is added to their personal activity stream.

The screenshot shows the Cloudworks homepage with a blue header containing the logo and navigation links: Home, Clouds, Cloudscapes, Tags, People, About. Below the header is a search bar and a user profile for Gráinne Conole with a 'Log out' button. The main content area is divided into four sections:

- Featured Cloudscapes:** A section with a green header. It features a 'Flash debates' cloudscape with a photo of people at a conference. Text includes: 'Reviewing the use(s) of Web 2.0 in higher education', 'OLnet pilot virtual workshop: OLnet & OER - How do our practices reflect and inform the world out there?', 'Conference: ASCILITE 2009', and 'Workshop: ETUG Fall Workshop: Learning Design'. A link 'View Cloudscape' is visible.
- Cloudstream:** A section with a green header and a 'Show all' button. It lists recent site activity with icons for comments and links. Examples include:
 - "will - email me... g.c.conole@open.ac.uk" (comment on 'Mapping tools to pedagogy' by Gráinne Conole, 1 hour ago)
 - "Sclater, N. (2010), 'elearning in the Cloud', in International Journal of Virtual and Personal....." (reference added to 'The VLE is Dead' by Antonella Esposito, 1 hour ago)
 - Hedge your BETTs – the 7 paradoxes of technology in education (blog post by Donald Clark) (new link on BETT added by Antonella Esposito, 11 hours ago)
 - The CMS and the PLN (blog post by Jon Mott) (new link on 'The VLE is Dead' added by Antonella Esposito, 14 hours ago)
 - "What is the title? could be in hard copy. I am a lurker in libraries, but don't have an id....." (comment on 'Mapping tools to pedagogy' by Will Pollard, 18 hours ago)
 - "Hi Will think you can get access to it if your institutional library is signed up....."
- Active Clouds:** A section with a yellow header listing ten active cloudscapes:
 - BETT
 - What theoretical perspectives underpin e-learning/TEL research?
 - Academic Writing for the New 3rd Level Student
 - Mapping tools to pedagogy
 - What disciplines contribute to Technology-Enhanced Learning?
 - What methodologies do people use in e-learning/TEL research?
 - Building Intelligent Interactive Tutors
 - Horizon Report 2010 (Preview and full Report)
 - Online Information 2009
 A link 'View all 1615 Clouds' is at the bottom.
- Cloudworks Blog:** A section with a yellow header listing recent blog posts:
 - Keynote today at Ascilite
 - Ascilite 2009 conference
 - Ascilite Learning Design Workshop
 - Thinking about assessment practices
 - A virtual fieldtrip of cloudworks
 Links for 'Archive' and 'RSS' are at the bottom.

Figure 1: Cloudworks homepage

The homepage is divided into four blocks (See Figure 1): 'active clouds', 'the Cloudworks blog posts', 'featured cloudscapes' and the site activity 'cloudstream'. We want to ensure that the site can be tailored to an individual's personal preference but also wanted to encourage serendipity, the accidental coming across things. In terms of filtering or personalisation there are a number of mechanisms for achieving this. Firstly there are RSS feeds associated with both people and cloudscapes. Secondly it is possible to set up different levels of email alerts, ranging from being emailed when there is anything new on the site to being alerted to changes on clouds you have created. As described above the different types of activity streams are another way of filtering what you look at on the site. We have included four mechanisms for encouraging serendipitous engagement with the site. The ten most active clouds are listed on the home page. These are clouds that have had the most activity in the last two weeks. They give an indication of what are current topics of interest. We also include featured cloudscapes on the homepage,

these are picked based on areas of the site that we know have a lot of current activity and/or interest. It's also possible to browse around the site – to browse clouds, cloudscapes, tags or people. Finally content can be found via a simple search box.

Web statistics and use of the site

At the time of writing there have been 38,304 unique visitors to the site, with 1803 registered users from a 158 countries. The top five countries are the UK, the States, Canada, Australia and Italy, but there is good representation around the globe and some evidence of postings in languages other than English. Users come from across the educational spectrum (K-12, the tertiary sector and independent). They include teachers, researchers, educational technologists, support staff, policy makers, researchers and learners. As is typical with other social networking sites there is an inverse exponential curve of use; the majority of users lurk (and may not even register with the site), the next level of participation is creating an account, the next adding links or comments, then creating clouds and finally cloudscapes. Table 1 provides a snapshot of some recent statistics for the site.

Aspect	Everyone	Team	Non-team
Cloudscapes	185	81	104
Clouds	1712	1112	600
Comments	2732	898	1834
Links	2364	1488	876

Table 1: Some statistics on use of the site

Use of the site has really taken off since we launched a new design in July 2009 and included a whole set of new functionality (such as the ability to add links and academic references and the various activity streams). Over the past few months we have started to see really interesting new patterns of user behaviour emerge. There are five in particular I will draw out here:

- *Events: conferences and workshops.* The use of cloudworks around events has been a strong feature of the site for some time, but has really picked up in recent months. A nice example is the cloudscape that was set up and used for an Educational Technology User Group (ETUG) Learning Design workshop (<http://cloudworks.ac.uk/index.php/cloudscape/view/1903>). The workshop ran over two days (20th-21st October 2009). The cloudscape was used as a pre-conference space to aggregate workshop resources and provide shared space for the presenter and the organisers to co-construct the workshop. It was used extensively during the workshop, to 'live blog' sessions, summarise discussion,

answer questions around workshop activities, aggregate resources and summarise the reflection evaluation of the workshop. A new feature is the ability to add dates and location to events, which then dynamically appear on a calendar of forthcoming events (http://cloudworks.ac.uk/events/events_list).

- *Discussions: Flash debates.* Since September 2009 the site has been used to support what we are terming 'flash debates'. The first of these was a cloud 'Is Twitter killing blogging?' This was set up following a tweet on this topic. Quickly the cloud became a shared space for people to discuss the topic and to aggregate resources. Many of them then went to their own personal websites such as blogs to write more individual reflective pieces, posting links back in the cloud. So cloudworks acted as a valuable connector between twitter and individual blogs and seem to fill a new niche space to complement other web 2.0 tools. A cloudscape of flash debates has now been set up and there are a number of very interesting discussions, including one on the changing nature of conferences (<http://cloudworks.ac.uk/cloud/view/2577>). A recent example is the debate 'Should staff and students learning in second life have accurate human avatars?' (<http://cloudworks.ac.uk/cloud/view/2886>).
- *Eliciting expertise and open reviews.* People are also beginning to use cloudworks as a space for undertaking initial desk research. For example a review of the role of educational technologists in enhancing the learner experience (<http://cloudworks.ac.uk/cloudscape/view/1872>) and our own use of the site to support a literature review of Web 2.0 use in Higher Education (<http://cloudworks.ac.uk/index.php/cloudscape/view/1895>).
- *Aggregating resources.* In a similar way cloudworks is also being used as an alternative social bookmarking tool, as a space to aggregate relevant resources around a topic. See for example the cloudscape on 'Personalising formal learning with technology' (<http://cloudworks.ac.uk/index.php/cloudscape/view/1871>).
- *Sharing practice:* Across the different clouds there is also evidence that Cloudworks is being used as a means of generally sharing practice. For example in the Cloud <http://cloudworks.ac.uk/index.php/cloud/view/2201> teachers share their experiences of using different mindmapping tools in teaching. The space acts both as a useful evolving repository of tools coupled with examples of how they can be used.

Use of Cloudworks at the Cambridge International Conference of Open & Distance Learning

This paper has been developed following on from a keynote give at the Cambridge International Conference of Open & Distance Learning in September 2009. The talk and associated links can be found at <http://cloudworks.ac.uk/cloud/view/2282>.

This section provides a reflection on how Cloudworks was used during and after the conference.

The screenshot shows the Cloudworks interface for a Cloudscape titled "The Cambridge International Conference on Open and Distance Learning". The header features the Cloudworks logo and navigation links: Home, Clouds, Cloudscapes, Tags, People, and About. The main content area displays the Cloudscape title with "UNFOLLOW", "EDIT", and "ADD PICTURE" buttons, the location "Cambridge, 22-25th September 2009", and "348 views". A dropdown menu shows "Content", "Cloudstream", and "Clouds". A description states: "This space has been set up as a space to live blog sessions at the Cambridge International Conference on Open and Distance Learning; aggregate useful resources and links and discuss session. Twatterkeeper archive of the tweets from the conference." The "Clouds in this Cloudscape" section lists 14 items, including "Cambridge International Conference on Open and Distance Learning (3 comments)", "Home group 1: The wordle group", "Home group 2", "Home group 3: The Icelandic Cloud (8 comments)", "Home group 6: The namibian nucleus (5 comments)", "Home groups: Reflections on the conference (1 comment)", "Keynote: Conole - Innovation through design: new approaches to learning and teaching (20 comments)", "Keynote: D'Antoni - Open Educational Resources: building knowledge societies (3 comments)", "Keynote: Mitra - Towards the future of learning (1 comment)", "Keynote: Paulsen - Visualizing student profiles through NKI's online catalogue and student network", "Parallel session: The Re ViCa project - review of virtual campuses (2 comments)", "Parallel Sessions (2 comments)", "Plenary summary (10 comments)", and "Tool: Evernote". The "Cloudstream" section has tabs for "Show all", "Clouds", "Discussion", "Links", "References", and "Extra content". It shows two recent items: "The full paper by Susan D'Antoni can be found here....." and "Susan D'Antoni's keynote paper". The right sidebar includes a search bar, a "Create a Cloud" button, a "Tags" section with "cambridge", "conference", "open and distance", and "education", a "Followers (8)" section with a "View all" link, and a "Tweets for #camopen09" section with "No tweets".

Figure 2: The Cambridge conference cloudscape

The conference was timely as it occurred soon after the launch of the new site and a number of new patterns of user behaviour such as the flash debates were emerging. A conference cloudscape (<http://cloudworks.ac.uk/index.php/cloudscape/view/1890> and see Figure 2 was set up and populated with a total of 14 clouds during the conference, these included

- Clouds for each of the four keynotes. The sessions were then 'live blogged' during the event and relevant links and references added. The clouds also acted as a place to comment and reflect on the topics discussed during the talks. The embedding functionality enables paper associated with the talks and Slideshare presentations to be dynamically included.
- Clouds for each of the home groups. A special feature of the Cambridge conference is the idea of 'home groups'. Delegates were divided into six groups and met at regular points during the conference to discuss the issues raised. On the final day of the conference each group presented back key points. Cloudworks proved to be a valuable complementary tool to support these face-to-face sessions as is evident by the richness of the discussions in the home group clouds.
- A cloud to enable participants at the conference to keep in touch.
- A series of clouds on the presentations in the parallel sessions.

The main cloudscape had 348 unique views, the four keynote clouds had between 190-360 unique views each. Overall the conference presence in cloudworks was being followed by not only conference delegates, but other remotely. A total of 55 comments were added across the 14 clouds and a rich array of links, references and additional embedded content added. Twitter was used during the conference as a means of posting announcements about new conference activities and the Cloudscape was promoted as one of the features cloudscares on the homepage. As a means of archiving the Twitter stream for the conference, a TwapperKeeper for the #camopen09 tag was set up and linked from the conference cloudscape.

Many of the delegates at the conference had not previously use social networking tools to augment real events in this way and anecdotal evidence from participants during and after the event suggested that on the whole this was seen as a positive addition and a valuable resource aggregating the conference outputs and discussions. The following extract from a blog post (Murphy 2009) supports this:

"My friend and collaborator Len Webster has just returned from the biennial Cambridge Conference, and he's declared that it was the best ever. No, not just the best Cambridge Conference, but the best conference he's attended, full stop...

Getting back to the 2009 event, which carried the theme Supporting learning in the digital age: rethinking inclusion, pedagogy and quality, Len was also excited about the discovery of Cloudworks, about which neither of us was previously aware...

Extolling its virtues ... Len inspired me to visit the site and sign up. Cloudworks is a "social networking site for finding, sharing and discussing learning and teaching ideas and designs". And on first glance it's a beauty,

replete with fascinating resources and opportunities to interact with like-minded ODI professionals.

Use of the site during the conference is a perfect example of how we are actively co-developing the site, watching and reflecting on user behaviour to fine tune and tailor the site specifically for educational professionals.

Conclusion

Use of the site continues to grow and we are getting evidence of regular users/visitors and niche ecologies of use. We are revisiting our initial theoretical perspectives to explore how other theoretical frames might help us explain the new patterns of user behaviour we are seeing (Giota Alevizou, et al. forthcoming). We are currently in another phase of development and improvement, activities include exploring how to provide zoning of cloudscales, the ability to add dates and deadlines to clouds and cloudscales, introducing a voting functionality to the site, to help promoted user-recommended and evaluated content. We are now moving into a phase of working closely with specific communities to explore how the site can be used to meet their particular needs and we will continue to learn from the use of the site to support both real and virtual events in the field.

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