Dynamic digital posters: Making the most of collaborative learning spaces

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Academic and professional staff at Queensland University of Technology (QUT) have been faced with the challenge of how to create engaging student experiences in collaborative learning spaces. In 2013 a new Bachelor of Science course was implemented focusing on inquiry-based, collaborative and active learning. Student groups in two of the first year units carried out a poster assessment task. This paper provides a preliminary evaluation of the assessment approach used, whereby students created dynamic digital posters to capitalise on the affordances of the learning space.

Keywords: digital posters, learning spaces, blended learning, learning design, student engagement

Introduction

Dealing successfully with changes to curriculum to be implemented in new collaborative learning spaces can be very challenging for academic staff. This is especially true if staff have not had significant involvement in the design process. Importantly, they may feel unprepared to take advantage of the affordances of technology enriched spaces and might have little time to develop understandings and skills of how to do so (Steel & Andrews, 2012; Jeffrey, Milne, Suddaby, & Higgins, 2012).

In 2012, academic staff in the Science and Engineering Faculty (SEF) were involved in preparing to deliver a new Bachelor of Science course for Semester 1, 2013. The curriculum stressed the need for a variety of blended learning approaches over more traditional ones. The four new first year units were to focus on:

- inquiry-based, experiential, exploratory, peer-to-peer and collaborative learning (and avoid long lectures)
- group work and group assessment, peer-to-peer learning and formative feedback (and avoid examinations).

All group work activities were to be carried out in collaborative learning spaces in the new Science and Engineering Centre (see http://www2.qut.edu.au/sci-eng-centre/) and the spaces were ready for use from the start of 2013.

To cope with the choices and decisions to be made, academic teams need guidance and assistance with integrating technology into learning and teaching, developing a variety of effective assessment methods, and preparing students for technology in the workplace (Diaz, Garret, Kinley, Moore, Schwartz, & Kohrman, 2009). To become skilled practitioners in e-pedagogy, both initial staff training and continuing professional development is advisable (JISC, 2009). The Learning and Teaching in Collaborative Environments (LATICE) Project at QUT has partly addressed the need for professional development by facilitating the exploration of learning design solutions that are reusable, sustainable and scalable. As part of this project, one of the authors coordinated a program for SEF staff that followed an academic development model proposed by Steel and Andrews (2012). The program modelled inquiry-based learning in collaborative learning spaces, and the participants experienced, designed and practiced teaching activities. Through investigating a group poster

assessment task, participants critically reviewed the suitability of creating and assessing digital posters using Google Sites. Feedback was positive including: *'this is a brilliant mode to encourage collaborative learning and collaborative assessment'* and *'it was a real eye opener … a really useful reconceptualisation'*.

Unit coordinators then evaluated this approach and decided to adopt it for two first year science units in Semester 1, 2013 (with approximately 360 students per unit). This paper provides a preliminary evaluation of the use of digital posters in one of the units. It is intended that the findings will help develop a common approach for the Bachelor of Science course (since two second semester units will also require that students produce a digital poster) and could be useful for other units taught in collaborative learning spaces.

Blended learning environment

The digital posters approach was developed by considering the pedagogical requirements of a group assessment task for a poster, the affordances of the collaborative learning space and then identifying potential benefits of using digital posters and more specifically, Google Sites.

Pedagogical considerations

Recent work on threshold concepts in science that focus on authentic learning has influenced curriculum design at QUT. For example, Jones and Yates (2011, p. 26) suggest that Chemistry graduates should be able to communicate to their peers, to chemistry and scientific non-experts, and to the general community using a range of media (including written, oral and visual media) and include a range of formats such as posters.

Developing understanding and skills in poster creation has a number benefits for students: posters can facilitate the rapid communication of scientific ideas, visually represent ideas, stimulate an exchange of ideas between the presenter and the audience reading the poster, be a summary of work done, be viewed when the author is not present, and allow for valuable networking opportunities (Hofmann, 2010, p. 499; The University of Adelaide, 2009). From a learning and teaching perspective, they have the potential for creativity and originality, reliable and fast marking, active learning, peer assessment, can promote positive attitudes in students, and also help students to explore and confront misconceptions about a topic (Curtin Teaching and Learning, 2010; Berry & Houston, 1995). However, there are possible disadvantages in that students can focus unduly on presentation rather than content or understanding, finished posters might be very different thus making comparison difficult, and they could require additional resources (Curtin Teaching and Learning, 2010).

Technology and space considerations

The collaborative learning spaces in the Science and Engineering Centre can be viewed from the Learning Spaces Tool (see http://www.itservices.qut.edu.au/generalservices/lets/learningspaces.jsp and search for *Space Type = Collaborative Learning Space > GP — P Block*). Central to the success of collaborative learning spaces has been the use of 'Computers on Wheels' (CoWs) with touch screens, portable whiteboards, and moveable (wheeled) tables and chairs. A space typically has nine CoWs, with two tables and six chairs per CoW for a total capacity of 54 students. Also, by opening central glass doors, pairs of adjoining spaces can be used as one space.

Poster-related activities were designed for each student team to work from a CoW (that is, their 'digital hearth'), connect mobile devices or use cloud-based apps if necessary, and obtain ongoing formative feedback from academic staff and other team members. This was to culminate in all teams presenting their final digital posters from a CoW in the collaborative learning space (that is, to simulate a conference poster session) and being assessed by their peers.

Reasons for using a digital poster

When creating a printed poster (for example, in the way outlined by O'Neill & Jennings, 2012), students need to have access to suitable resources such as relevant types of software and printing facilities. However, one of the main reasons for creating digital posters is that students more likely need to develop information literacy skills rather than desktop publishing and printing skills. JISC (2009) state that this involves developing skills and understanding of how to search, authenticate, critically evaluate and attribute online material as well as develop 'web awareness' to operate as informed users of web-based services.

Digital posters offer distinct advantages. Hai-Jew (2012), who outlines the use of digital poster types for virtual conferences, argues that digital posters enable wider audience reach than is possible during face-to-face

conferences (for example, to generate interest prior to, enhance synchronous presentations during, and be accessed for deeper analysis and learning after the conference). They can include combinations of dynamic multimedia rather than static content, and allow for the audience to interact with the poster to perhaps share new knowledge online instead of being passive consumers of information. The possible interaction between digital poster author(s) and audience is an important one. Creating a poster for an authentic audience can 'up the stakes' by adding to the authenticity of the student project and help increase students' motivation to produce work of high quality (Buck Institute of Education, 2013).

In summary, creating a digital poster has the potential to enhance student engagement. By considering suitable blended learning engagement strategies, the assessment task could be one that students perceive as authentic and challenging (that is, the approach may be new and so stretch their performance), could enable timely and elaborated feedback from academic staff and peers, and could help academic staff monitor student work and identify students at risk (Jeffrey et al., 2012).

Expected benefits of a Google Sites approach

From the author's own experience of using Google Sites as well as that of other QUT academic and professional staff, these potential benefits were identified at the start of semester:

- It is relatively easy to create a layout for one poster page, add content and edit.
- Content can be either static (text and images) or dynamic (links, videos, slide shows and maps) to encourage interaction from a presenter and an audience in the collaborative learning space.
- Different kinds of sharing can also occur, such as between team members to build the poster, with academic staff for formative feedback, presenting to other teams for peer assessment, or making the site available for showcase events. Furthermore, the sharing of a Google Site is very similar to that for Google Drive, which staff and students might already be familiar with.
- Students can carry out work on the poster synchronously and asynchronously (although only one person can edit a Google Site page at one time).

Evaluation

For one of the first year Bachelor of Science units, students were required to select one of four challenge groups to participate in during the semester. Students from one of these challenge groups took part in this digital posters evaluation. Each of the 84 students in this group consented to having their group poster evaluated for this study and of this number, 50 completed a survey voluntarily. There were 17 student teams ranging in size from 3 to 6 people, and 12 of these teams used Google Sites to create the poster (whereas other teams decided to select Prezi or PowerPoint). Four academic staff completed a similar survey. Note that this group of students was selected since the academic team leader had participated in the 2012 LATICE Project workshop series and was familiar with the Google Sites approach.

Both staff and students needed to develop skills and understanding of creating a digital poster using Google Sites. Only some academic staff had attended the LATICE workshops in 2012; therefore, the unit coordinators and team leaders as well as available tutors attended training in the week before semester commenced. Ad hoc support was further provided by the author during the semester as needed. The author produced a guide for creating, sharing, presenting and submitting a digital poster for assessment and this was referred to as required by academic staff and students (see http://goo.gl/Y84gw, an example digital poster for ascilite 2013 providing links to the guide and exemplar posters).

Findings

The student survey focused on how easy it was for students to create the poster, include relevant content, be creative, and share access. Responses were also gathered about the suitability of using digital posters in collaborative learning spaces and the potential for audience interactions.

Table 1: Student survey results

Survey question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. A digital poster is easy for students to create.	18%	50%	18%	14%	0%
2. A digital poster allows students to include relevant content.	32%	60%	8%	0%	0%
3. A digital poster allows students to be creative.	38%	44%	10%	8%	0%
4. A digital poster suits students learning in a collaborative learning space.	38%	48%	14%	0%	0%
5. A digital poster is easy for students to share within a team, with academic staff and with peers.	48%	44%	6%	2%	0%
6. A digital poster allows the audience to interact with the poster.	42%	44%	10%	2%	0%

As illustrated in Table 1, the most positive responses were for: 2. relevancy of content; 4. suitability of space; 5. sharing; and 6. audience interaction. Less positive results were for: 1. ease of use; and 3. creativity. This was reflected in the responses to these two open questions:

- *What do you think are the one or two main benefits of students creating a digital poster?*
  A thematic analysis revealed the benefits were: ease of collaboration (54%); ease of communication and interaction with audience (26%); and creativity (20%). Other benefits noted were that teams did not have to meet face-to-face to complete the poster, it was interactive and engaging, it encouraged teamwork, it was possible to edit and tweak on an ongoing basis (which could not happen with a printed poster), and students felt they were using the latest software to do real tasks.

- *What do you think are the one or two main challenges of creating a digital poster?*
  A thematic analysis revealed the challenges were: technical issues (62%), such as not knowing how to use Google Sites and not being aware of its limitations regarding layout and positioning of content; creativity (26%), where students were unsure how best to produce a visually attractive design; and difficulty with collaboration (12%), especially since only one person could edit a page at one time. Other challenges noted were being able to edit images, creating concise content, maintaining group consensus and understanding the assessment requirements clearly.

Academic staff responded that the digital posters approach suits inquiry-based learning, allows for creativity and the investigation of questions in more depth compared with printed posters, provides a flexible learning option and allows for multiple types of media. Some challenges noted were that students and staff need time to learn how to use the technology (but did not state if time was lacking), there might be too much scope for creativity, and there could be too much focus on the presentation of the poster instead of its content (which can also occur for a printed poster).

The content items in the 12 student Google Sites posters were quantified as being either static or dynamic. As shown in Table 2 below, the use of static items was similar in all groups with a title, headings, text, graphical elements (such as photos, diagrams, graphs/charts and maps) being included in most posters. The greatest variation occurred with the use of dynamic items, with active links most commonly included in a poster, as well as external YouTube videos. With the exception of one poster, all had additional pages to provide reference details and some included navigation and search features. Two posters embedded a Google Drive presentation (created by the team) and a Prezi (sourced externally by the team). This might suggest that academic staff need to indicate to students what kinds of static and dynamic content would be appropriate.

Table 2: A comparison of static and dynamic content items

Static content	No. of posters	Dynamic content	No. of posters
Title	12	Active links for references	7
Author names	4	YouTube video embedded (external video)	7
Headings	10	Links to YouTube video (external video)	1
Text	12	Prezi embedded (not created by team)	1
Photo	12	Google Slides embedded (created by team)	1
Diagram	7	Number of sub-pages (links to these pages provided in navigation and/or content)	0 page = 1
			1 page = 3
			3 pages = 2
			5 pages = 5
			7 pages = 1
Graph/chart	11	Left navigation menu (on home page)	3
Table (information/results)	6	Top navigation menu (on home page)	2
Image of map	5	Search tool	5
Reference list on home page	2	Google map	0
Reference list on sub-page	11		

Conclusions

The digital posters approach seems to have been challenging for some students, but overall it was one that effectively engaged most students. The academic staff commented that students were very motivated and positive during the final poster presentation session in the collaborative learning space. Interestingly, staff did not realise that some students found the task difficult, and this suggests that perhaps the initial challenges were daunting, however most students eventually seemed satisfied and confident with the final outcome. Two academics stated that using a digital poster challenges the notion of what a scientific poster could or should look like and that this trend needs to be followed and further developed at QUT. This therefore means that academic teams need to be clear about the assessment instructions and guidelines provided to students, as well as be mindful of the support and direction that might be required during the semester. This is especially pertinent since the types of digital posters can be quite varied including:

> *lecture-capture lectures, videos, slideshows, short games, audio files, and "mash-ups" of various types of digital content. Anything that may be created as a web-deliverable multimedia file or a web-page may be a made into a stand-alone digital poster session* (Hai-Jew, 2012, p. 268).

Finally, two broader trends are worthy of continued investigation regarding the appropriateness of digital posters. The first is how digital learning can contribute to deeper learning through personalised skill building via the tools used for production, collaboration and simulation, and due to the enhanced access to learning (VanderArk & Schneider, 2012). The second is by being aware of what first year students expect at university and the skills and knowledge they bring to their learning environment—for example, students may be seeking flexibility, interactivity, relevancy, ways to measure progress, challenging but achievable tasks, and opportunities to develop some expertise in an area of interest (NGLC & iNACOL, 2013).

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