

# PEDAGOGY 2.0: INVIGORATING A PAPER BASED DESIGN HISTORY COURSE.

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## Abstract

Built on the foundation of four years of research and implementation of mobile learning projects (mlearning), this paper outlines the implementation of an mlearning model in the first year of a Bachelor of Product Design course in 2009. The mlearning model was informed and driven by social constructivist pedagogies, within a staged and scaffolded approach to transform the learning environment from lecturer-centred (pedagogy) to student-centred (andragogy), while maintaining the critical pedagogical guidance of the lecturer (Laurillard, 2007; McLoughlin & Lee, 2007). Analysis and reflection on the previous mobile web 2.0 projects within the Product Design course led to the integration of mobile web 2.0 tools within the curriculum via a three-stage adoption across the three years of the Product Design degree. The first year implementation focused on the first stage in this transformation, facilitating student-generated content and collaboration. A paper that would typically have been delivered in a traditional paper-based mode was developed by the lecturer to model and embed the use of mobile web 2.0 tools facilitating a social constructivist learning environment. Examples of assessment alignment and integration of the mobile web 2.0 tools within the first year course are outlined. Students and lecturers were provided with a WiFi and 3G capable netbook for the first semester (Dell Mini9). At the end of the first semester the students and lecturers were also provided with a WiFi and 3G capable smartphone that integrated a 3.2MP (megapixel) camera, video recording, GPS, touchscreen for text input, and multitasking operating system for a variety of Symbian based applications. Students and lecturers were encouraged to personalise the use of these mobile devices and treat them as if they owned them for the duration of the year. This first stage mlearning project focused primarily on students establishing and personalizing the use of core web 2.0 tools and then moving towards the use of mobile specific affordances adding context bridging and context aware dimensions to the learning environment. The focus for the first year was foundational, using netbooks more than the smartphones to establish students' web 2.0 e-portfolios which will be built upon in the students second year of the course in 2010.

**Keywords:** web 2.0, mlearning, social constructivism, andragogy.

## 1 INTRODUCTION

Design education is traditionally modeled upon an Atelier studio-based approach where students work in physical group spaces, guided by an expert lecturer, and culminating in face-to-face presentations of their designs critiqued by their lecturers. In this paper we investigate the potential for transforming the traditional Design learning environment into a context independent social constructivist model by the integration of mobile web 2.0 tools. The goal is to facilitate a student-centred, collaborative, flexible, context-bridging learning environment that empowers students as content producers and learning context generators, guided by lecturers who effectively model the use of the technology. Students and lecturers leverage the unique affordances of mobile web 2.0 tools to create an online digital identity, begin developing an eportfolio, and establish the basis of a life-long international peer and professional support network, including: blogs, social networks, location aware (geotagged) image and video sharing, instant messaging, microblogging, and augmented reality. This effectively bridges the the formal learning environment of the Architecture Studio and the informal learning environments of situated authentic practice. Brown (2006) calls this "Dewey for the digital age:"

a profoundly social construction of understanding enabled by the Internet. The demand-pull approach draws students into a rich (sometimes virtual) learning community built around a practice. It is passion-based learning, intrinsically motivated by either wanting to become a member of that community of practice or just wanting to learn about, make, or perform something. Formal or informal, learning happens in part through a kind of

reflective practicum, but here the reflection comes from being embedded in a social milieu supported by both a physical and virtual presence and inhabited by both amateurs and professionals... Social software enables communities to form and find each other, to learn through remixing, tinkering, and sharing artifacts using the rich media now available (Brown, 2006, pp. 23-24).

The 2009 mobile web 2.0 implementation was informed by reflections upon a 2008 mlearning project instigated across all three years of the Bachelor of Product Design course at Unitec, involving 25 students and 4 lecturers. The Product Design mlearning projects are situated within an action research project spanning four years and seven different course contexts within the Faculty of Creative Industries and Business, including: Architecture, Performing and Screen Arts, Landscape Design, Product Design, Contemporary Music, Computing and Information Systems, and Accountancy and Finance.

## **1.1 Pedagogical Change 2006 to 2008**

### **1.1.1 *First attempts at pedagogical change 2006***

In 2006 a mobile learning trial was implemented within one project of the third year of the Bachelor of Product Design programme using Palm WiFi PDAs and web 2.0 tools such as Blogger.com and instant messaging (Cochrane, 2006). This was the researcher's first attempt at the integration of mlearning within a tertiary course. However, there was little course integration, limited buy-in from course lecturers, limited campus WiFi coverage, and the results effectively illustrated how not to approach mlearning. At the same time the researcher was developing a community of practice (COP) model for educational technology literacy in tertiary academics (Cochrane & Kligyte, 2007). Product Design course lecturers were invited to form an intentional community of practice (Langelier, 2005) to investigate the use of web 2.0 tools within their teaching. This first attempt at establishing a lecturer COP was short-lived, however one lecturer was motivated to explore these ideas further in 2007. While there were no formal changes made to the traditional paper-based implementation of the major project in 2006, reflections on these experiences merged to form the foundational concepts underpinning subsequent implementation and research into mobile learning (Cochrane, 2007a, 2007b, 2007c). The 2006 trials were also used to develop and test the research questions and data collection instruments.

### **1.1.2 *Introduction of web 2.0 technologies and tools 2007***

In 2007 the main third year major project course lecturer integrated the optional use of web 2.0 tools such as blogging (via Wordpress) into the third year course using student-owned laptops and desktops. This integration was achieved with regular technological support from the researcher. Significant advantages in moving to this learning environment were envisioned by the lecturer: "Research shows us that there are 'far more dyslexic Art and Design students than we ever realized' (Hercules, 2001, p. 2) and that dyslexia raises many issues for studio-based teaching methodologies. By implementing the use of student reflective design journals as living, media-rich blogs it was hoped that these students would be engaged and empowered in their learning" (Course lecturer 2007). This was achieved by modifying the core assessment of the third year programme that focuses upon three student defined product designs throughout the entire year. The impact of this pedagogical intervention on the teaching and learning environment are summarized by the lecturer below:

Thinking about what for us as designers and training young designers - what is 'real world learning'? Real world learning involves team working, and blogs allow you to work in teams in a way that you can't work if you don't use them. We see the use of blogs as a way of being able to stay in touch in a kind of multilane highway – rather than a single stream. It's something that's allowed staff to engage with students in a way that doesn't happen with email and so on. In terms of our profession its absolutely vital that we do this – and I'm keen to sit down with my colleagues and see how we can embed this into the programme rather than in a particular year of the programme – and we can get the students from first, second and third year interfacing with each other and their blogs (Lecturer July 2007).

This led to the re-establishment of a Product Design lecturer COP investigating the integration of web 2.0 and mobile web 2.0 into the course in the second half of 2007. The lecturer COP was then used as a model for supporting students in a COP that comprised the researcher as the technology steward (Wenger, 2005), the course lecturers, and the students. The goal of the mlearning integration planned for 2008 was that by choosing to utilize a range of mobile web 2.0 tools and software with the Bachelor of Product Design students along with a range of assessment criteria including Podcasting and Vodcasting, those students who underperformed due to literacy problems would find a 'natural' way to blog their projects and thus develop the desired critical reflective thinking skills. A project outline for 2008 was developed by the researcher and presented for discussion with the course lecturers.

### *1.1.3 2008 Project Overview*

Starting in February 2008, a more explicit and integrated approach to mobile web 2.0 within the third year course was established. The focus of this trial was the development of group product design teams formed between the students and external client product manufacturers. Students were to develop a commercially viable product for their assigned client. Student blogs and eportfolios (using <http://www.vox.com>) were used to record and reflect upon their design processes, and were made available to the client for comment and interaction. Two lecturers and nine randomly selected students were initially supplied with a Nokia N80 WiFi/3G smartphone and folding Bluetooth keyboard (Funded from a collaborative elearning project), which was later upgraded to a Nokia N95 smartphone when additional research funding was obtained. The smartphones were pre-configured for the campus wireless network, and also a custom installation of mobile web 2.0 applications. Participants were encouraged to personalize the smartphones and use them as if they owned them throughout the year of the course. Ethics consent forms and acceptable use policies were signed by all participants. Participants were also expected to attend a weekly COP, comprised of the researcher, the lecturers, and participating students. Moodle was used as a supporting tool, hosting tutorials and resource links for the use of the smartphones and web 2.0 software. Students used the smartphone for recording and uploading evidence of their design process and prototypes to their Vox blog and other online media sites such as YouTube for video, thus they became content producers and users, or 'producers' (Bruns, 2007). As students 'owned' these online spaces, they invited the course lecturer and researcher (technology steward) into these spaces as 'neighbours' to participate and provide formative feedback. Students were marked on this evidence of the design process and reflection, as well as their critique and reflection on other students' blogs via commenting. The smartphones were also used as a communication tool between students and with lecturers for immediate feedback via instant messaging, email and RSS subscriptions. Students were responsible for paying for a voice call and text message account but were reimbursed the cost of a 1GB/month 3G data account. WiFi Internet access on campus was free of charge.

The third year major assignment was modified in 2008 to assist students to grasp and understand the complexity of the design process, facilitate social constructivist learning and improve the level of mobile and web 2.0 integration within student projects. The full assignment outline is available for viewing on Google Docs (Bateman & Cochrane, 2008). The third year major project spans the entire year of the course, and forms the core of the student learning experience during their final year. Feedback from the main course lecturer on the integration of mobile web 2.0 into the major project for 2008 was very enthusiastic:

Without the mobile devices (as in 2007) blogging was confined to the studio using laptops, so mobile blogging has changed the nature and engagement level! Key therefore is the provision of the mobile devices. Also staff understanding is fundamental. Staff have undertaken a learning process as well. Interestingly we assumed that students would know more about web 2.0 technologies than they have. My teaching approach has changed in that I am now very tolerant of students using technology and not necessarily having to be in the studio as in the past, as they couldn't be interacting with me or other teaching staff. Students are learning on the move and the traditional walls have broken down. My teaching has changed to a balance between being in the studio and reading and marking student blogs. The traditional way of simply being available during the studio sessions has changed to almost being 'on-call' 24/7 because being involved in these blogs becomes quite addictive. Some staff are resistant to this, but using news aggregators is one way to

manage this and allows a more flexible working environment. All in all it has been a fantastic experiment. We are looking forward very much to continuing the learning process and seeing how we can reshape the face of studio, art and design education (Lecturer August 2008).

These experiences informed the development of the integration of mobile web 2.0 into the first year of the newly launched Bachelor Design & Visual Arts (BDVA), Product and Furniture Design major.

## 2 2009 MOBILE WEB 2.0 PROJECT

Table 1 outlines the background details of the 2009 BDVA Product and Furniture Design first year mobile web 2.0 project.

*Table 1: Outline of Bachelor of Product Design first year mobile project 2009.*

<b>Course: BDVA Product and Furniture Design, first year class, 2009</b>	
Participants	15 students  1 Course Lecturer  Technology Steward (Thom Cochrane – CTLI)
Mobile Technology	Semester1: Dell Mini9 3G netbook. Semester2: Nokia XpressMusic 5800 WiFi smartphone, participants responsible for 3G data, voice and txt costs.
Pedagogical Model	Pedagogy
Pedagogical Focus	Integrating blogging, followed by moblogging into the course. Scaffolding the introduction of web 2.0 and mobile web 2.0 tools into the students learning experience to facilitate the beginnings of their online eportfolio and introduction to the educational use of social networking for collaboration.
Community Practice	of An assessed online Blog/eportfolio documenting and showcasing students' design processes and forming the basis of the beginnings of a collaborative hub with worldwide peers and potential employers/clients.
Support LMS	Moodle
Deliverables	An assessed Vox eportfolio and group blog.
YouTube Links	Introduction of First Year Project <a href="http://www.youtube.com/watch?v=Z6wN36H4TNo">http://www.youtube.com/watch?v=Z6wN36H4TNo</a>
Blog Links	Example student blog Group <a href="http://historicallyfuturisticdesign.groups.Vox.com/">http://historicallyfuturisticdesign.groups.Vox.com/</a>
Course Project Outlines	<a href="http://docs.google.com/View?id=dchr4rgg_55r5gntvf7">PIC2 Project1 http://docs.google.com/View?id=dchr4rgg_55r5gntvf7</a> <a href="http://docs.google.com/View?id=dchr4rgg_57c3xj5qg7">PIC2 Project2 http://docs.google.com/View?id=dchr4rgg_57c3xj5qg7</a>
Timeframe	April 2009 to November 2009

Students were surveyed at the beginning of the year to establish their previous experiences of using mobile and web 2.0 technologies. A summary of the survey is shown in Figure 1.

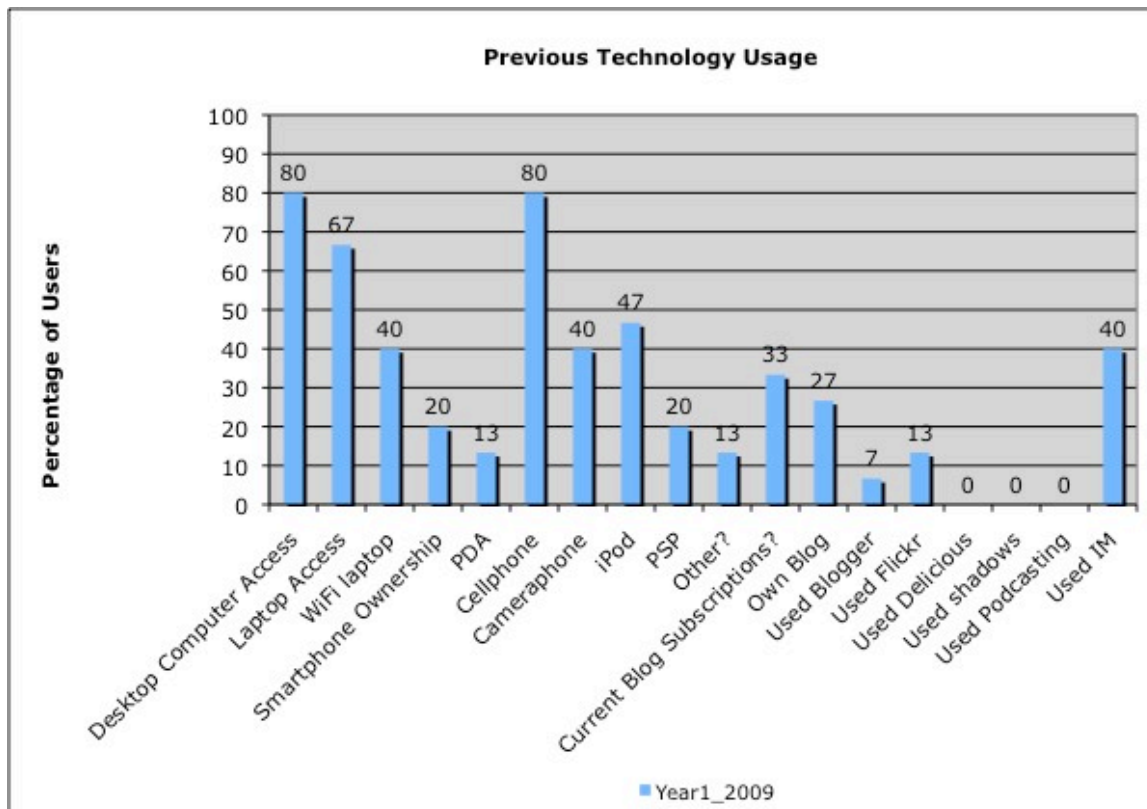


Figure 1: First year BDVA Product and Furniture Design students' previous technology experience.

## 2.1 First Year BDVA Product and Furniture Design MLearning Plan 2009

This section outlines the implementation of the mlearning model in the first year of the Bachelor of Product Design in 2009 that was informed and driven by social constructivist pedagogies, with a scaffolded approach to transform the learning environment from lecturer-centred (pedagogy) to student-centred (andragogy), while maintaining the critical pedagogical guidance of the lecturer (Laurillard, 2007; McLoughlin & Lee, 2007). The first year implementation focused on the first stage in this transformation, facilitating student-generated content and collaboration. Examples of assessment alignment and integration of the mobile web 2.0 tools within the course are outlined. The following provide practical examples of how the integration of mobile web 2.0 tools were achieved within the course. Students and lecturers were provided with a WiFi and 3G capable netbook for the first semester (Dell Mini9). At the end of the first semester the students and lecturers were also provided with a WiFi and 3G capable smartphone that integrated a 3.2MP (megapixel) camera, video recording, GPS, touchscreen for text input, and multitasking operating system for a variety of Symbian based applications. Students and lecturers were encouraged to personalise the use of these mobile devices and treat them as if they owned them for the duration of the year. The first year mlearning projects focused primarily on students establishing and personalizing the use of core web 2.0 tools that could then be built upon more explicitly in the second year of the course where the focus moves to mobile specific affordances. The focus was therefore more upon the use of the netbook than the smartphones during the first year course, establishing students' web 2.0 eportfolios which will be built upon in 2010. The following sections outline the first year projects.

### 2.1.1 Semester1 Ergonomics Assignment (Year1)

The goal of this assignment was for students to take into account the user, the product and the context of use within a product design project. The project was designed to give students an introduction to conducting a controlled research project and prototyping test rigs to measure quantitative and qualitative data. Students used their supplied netbook to create and establish an online journal/blog (<http://www.Vox.com>) of their design investigation. Students invited their peers, lecturers, and the researcher (as the technology steward) into their 'neighbourhood' to facilitate sharing, commenting

and critiquing, creating a virtual collaborative learning environment to augment the traditional face-to-face studio environment. Thus students used web 2.0 tools for social collaboration within their course, but also had the opportunity to share this process and content with a potentially worldwide audience. These blogs then become the core of students' online eportfolio that will be developed over the next three years of their course.

Aims:

- To introduce basic ergonomics research methodology, both in theory and in practice
- To explore data gathering methods and information analysis in a user-centred design context
- To develop an 'Ergonomics Approach' to the design of products and systems through prototyping and test rigs,

Deliverables:

Data log / Web 2.0 documentation of research findings. *Include video, photography, references, and hyperlinks to relevant websites or Blogs.* Use interview/video analysis to document qualitative evidence such as tool performance and comfort. Provide evidence (such as, data logs, drawings, photographs, questionnaire summaries etc) and analysis of your research in series of progressive weblog posts. Include a minimum of two cross referenced findings from the weblogs of your class colleagues. Work in pairs to conduct the research and gather information. Collaborate to generate a range of data and findings.

### 2.1.2 Semester2 PIC2 Assignment1

Practice and Context 2 (PIC2) follows course Practice in Context 1 (PIC1 1st semester) PIC1 is a generic course delivered across all BDVA majors and provides students with a broad historical overview of design and visual art in the twentieth century. Within PIC1, there is emphasis on key theoretical and historical contexts for considering works of design and visual art. Through these means it is intended that students establish some evaluative framework that supports analytical and critical discussions, and provides a foundation for individual student-centred learning. A formal, planned course of study in the form of weekly lectures, group tutorials a written assignment, and group seminars are provided within this course. PIC1 provides students with a basic understanding of research and academic study skills in order to equip students for further study within a degree education. Research projects and assignments involve the students undertaking independent research including reading, collating and writing on a well defined area of study, to demonstrate evidence of analytical, interpretative and communication skills.

This assignment was ideally suited to students using web 2.0 tools to explore and document key historical and current influences on their field of study. Students used their blog, accessed via the netbook, to upload written reflections, photos (geotagged via the smartphone), video reflections, interviews, weblinks, and other original material captured using their smartphones. Thus the focus was upon shared student-generated content (Bruns, 2007) and critiques by their peers and lecturers.

Aims of PIC 2:

- To introduce a range of issues, ideas and themes in the history of product and furniture design.
- To enhance awareness of the intellectual environment with which contemporary practice operates.
- To provide a range of theoretical and historical frameworks for product and furniture design.
- To develop cognitive skills of analysis and critique
- To encourage the attainment of skills, attitudes and methodologies essential for research and practice in product and furniture design.

Deliverables for Project 1:

A written assignment in the form of an online Blog that further elaborates on the weekly introductions to the history of contemporary product and furniture design. Vox was used as students' blog host and they created a 'PIC Group' on their existing Vox Blog. Students were required to produce a Vox blog that ran throughout this project (and project 2), posting to their blog at least weekly: Use your Vox blog to collate information about the people, movements, companies etc that are covered in the weekly

lectures. Use your Vox blog to write up your self-directed research on the people, movements, companies etc that are covered in the weekly lectures. Regularly comment on each other's Vox blog posts – providing critique, feedback, and links to appropriate resources.

### **2.1.3 Semester 2 Practice In Context Assignment 2**

The second assignment built upon the processes and affordances of web 2.0 that students built up during the first PIC2 assignment. This assignment focused upon student-generated content (Bruns, 2007; Evans, 2005; Johnson, Levine, & Smith, 2007), and additionally using web 2.0 tools to present to the rest of the class and the course lecturers (Lomas, Burke, & Page, 2008).

#### **Assignment Deliverables:**

Create a chronological timeline (Design-Line) that identifies and discusses key moments in design through products, craft objects, fashion, cars, architecture, exhibitions, literature, music, politics, war, graphics, manifestos, design schools. Your Design-Line must be visual as well as text rich. A clear use of graphical communication is required. Source quotes from designers, industrialist, politicians etc and add these to your Design-Line. Final submissions can take the form of a Google Docs hosted booklet, poster, or some form that produces a saleable end product – for example: a Picasa or Flickr annotated slideshow from your online web album with geotagged data, descriptions, and mobile QRcodes for URL links for sharing via your smartphones. You must mock up your final Design Line by printing it in full colour and add the design to your Vox blog using appropriate technology to do so (for example: embedding your online slideshow within a post on your Vox blog).

## **3 RESULTS**

Students tended to use the smartphones as standard cellphones, with occasional use of their multimedia affordances. Of most use was the image and video capturing capabilities of the XM5800's, but students were somewhat disappointed at the quality of the images. The first year project's main focus was upon developing students use and integration of web 2.0 tools (facilitated by the netbook and the smartphone), rather than upon the unique affordances of the smartphone, this being the focus of the second and third year projects. Thus while the first year students experimented with the unique multimedia affordances of the smartphones they did not (in general) as a group socialize the everyday use of these unique affordances into their course. The use of the unique affordances of the smartphones was encouraged, but was optional in their projects. The majority of first year students enjoyed the mobile web 2.0 projects, with none finding it a disagreeable experience. First year students and their lecturers were highly active in commenting on each other's blog posts. The majority of media uploaded to student blogs was captured via the smartphones. The bulk of this media was in the form of still images, followed by web links to resources and closely followed by videos – either original recorded videos from their smartphones or embedded YouTube videos. Links to Google Docs and Picasa Slideshows (collections of images formatted as interactive online albums) were also popular. First year students uploaded a surprising number of images to their blogs. The student-content creation focus of the first year project generated a lot of engagement from the students. Almost all of the Product and Furniture Design students uploaded to their vox blogs weekly (as outlined in the project deliverables) rather than waiting until a number of weeks had passed or bulk uploading at the end of the project. This weekly uploading allowed peers to comment regularly on each others work and staff to assist and support students with their assignments. By using web 2 tools, appropriate and timely feedback could be given to the students throughout the duration of both assignments 1 and 2 in a way in which could not be achieved when following a standard paper based lecture and assignment route. Due to PIC 1 and 2 being new courses it is not possible to categorically state whether students have gained higher level of achievement in their PIC assignments though the use of web 2.0 tools and technology, however the teaching staff believe that almost all of the students in the BDVA PFD engaged with the courses at a deeper level than they would have had the courses been of a paper based nature. Overall academic grades for both PIC1 and PIC2 projects were high.

### **3.1 Examples of student blogs associated with PIC2.**

- Post showing penultimate version of PIC2 assignment 2-  
<http://adrienne662.vox.com/library/post/design-line.html>



- Post showing final version of PIC2 assignment 2- <http://careymilicich.vox.com/library/post/design-line-toilet-paper.html>
- Posts showing student reflections on weekly lecture topics- <http://careymilicich.vox.com/library/posts/tags/pic2>
- Posts showing student reflections on weekly lecture topics- <http://fauxchrome.groups.vox.com>
- Posts tagged PIC2 <http://ondesigno.vox.com/explore/neighborhood/library/posts/tags/pic+2/page/2>

### 3.2 Examples of Increased Student Engagement and Collaboration

Student engagement and output exceeded the lecturers' expectations. The new course imposed a high self-directed load on the first year students, requiring eight hours per week self directed learning, however all of the students demonstrated significantly more time than required spent on research, blogging, and creating interactive slideshows and presentations of their assignments. Peer feedback via commenting on each other's blog posts and the formative feedback from their lecturer, coupled with the weekly face-to-face COP sessions successfully created an engaging learning community that the students personally appropriated.

## 4 DISCUSSION

The Product Design mlearning projects achieved significant progress in course integration, pedagogical reconceptualisation, and development of a staged and scaffolded implementation model for developing learning communities facilitated by intentional communities of practice across each year of the course. The case study illustrated the potential to stage and scaffold mlearning integration across all three years of a Bachelor level course, starting with establishing a learning community culture involving both the students and the lecturers and facilitation of a progression of teaching paradigms from pedagogy to heutagogy (PAH) (Luckin, et al., 2008) following the first year to third year of the course. The PAH continuum maps well with the progression of mobile web 2.0 course integration from web 2.0 appropriation (JISC, 2007, 2009a) in first year to student mobile facilitated content creation (Bruns, 2007; JISC, 2009b) in second year, and finally the context independence and bridging affordances of mlearning (Luckin, et al., 2008; Vavoula, 2007) leveraged in the third year 'nomadic studio'.

### 4.1 Lecturer Reflections on the Impact of Mobile Web 2.0

Teaching staff have witnessed first hand a deeper engagement in courses from students when using mobile web 2.0 technology and PIC2 has continued this trend. With each project over the last 3 years the initial 10 -14 day period of the projects sees a drop off in 'normal' project activity (Cochrane,T., Bateman,R. 2009) This is due to the newness of the tools used, the setting up of the software and hardware and the fun students have exploring the new technology made available to them. The increased engagement from students using mobile web 2.0 comes from a sense of connectivity via immediate access to the Internet, photo sharing, IM, emailing and the usual phone and txt messaging the WMDs bring. Students often group together looking at online material, send each other files and photos, URLs and other digital information. Video blogging has become an effective way to get out of class information across in a short space of time. There is also a sense of current technology being embedded into the learning experience. Also, Students editorial skills have increased due to the constant need to monitor the content of their blogs.

Our projects have shown that the key issues to confront if mobile web 2.0 is to be successfully integrated into courses are the issues of assessment, scaffolding and staff participation. Projects that do not carry an assessment weighting see a slower and significantly lower uptake. Students want to receive credit for doing something that takes time, focus and commitment. It is vital that staff participate in the blogging process and run their own blogs alongside the student ones. Students want to see that staff are visiting their blogs and commenting on posts as well as offering information that might assist them with their projects. This doesn't mean staff are required to comment on all posts but reading the blogs and being able to discuss their content with the students is important. A regular technology update is also required and we have found that the most effective way for this to occur is in a community of practice form with participation from a technology steward. For the teaching of PIC2, the introduction of mobile web2.0 tools into the course has facilitated significant flexibility for students



allowing them to stay connected, share their ideas widely, participate in world wide creative communities and choose to work in virtually any context on and off campus.

PIC2 lecturers blog: <http://ondesigno.vox.com/library/posts/tags/pic2>

## 5 CONCLUSIONS

This paper has outlined and critiqued the journey of two academics integrating the use of mobile web 2.0 tools within a tertiary education course. One of the academics is an academic advisor and the principal researcher in the mlearning project, while the other is a senior lecturer in the course. This collaborative partnership has been invaluable in facilitating both conceptual and pedagogical transformation within the course, facilitating the movement to a flexible social constructivist teaching and learning environment. Looking back over this journey allows us to see how far we have progressed, and where more reflection and work is needed for future development as the journey continues. Pedagogical integration of mlearning into a course or curriculum requires a paradigm shift on behalf of the lecturers involved, and this takes significant time. Hameed (2009) describe this process as a “cultural re-alignment”. Therefore the integration of the mobile web 2.0 technologies into lecturers’ daily workflow and integration into course activities and assessment are critical success factors, as is the establishment of a collaborative learning environment. An intentional Community Of Practice model (Langelier, 2005) has been found to be effective for guiding and supporting the mlearning roll-out. Scheduling explicit times for explicit reflection on the integration of mlearning into the course by collaborating on peer-reviewed research outputs based on the project have also been critically important. Students also require significant time to gain the skills required to maximise the potential of new and emerging web 2.0 tools – as our pre-trial surveys indicated, few students were already using these tools for their own content creation before the trial. Immersing students within a social constructivist pedagogical environment can be a new and challenging experience for the students, therefore implementation requires planned staging and scaffolding to support student learning (Cochrane, 2010). Based upon these experiences, in order to achieve an explicit move to a social constructivist learning environment using mobile web 2.0 tools within the course, a staged, and scaffolded approach across the three years of the programme will be adopted.

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