Online Design Education: Searching for a Middle Ground

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Abstract

At its heart, design is a studio-based discipline, which makes it difficult for design educators to adopt technology driven changes into an online teaching and learning environment. Globally, few universities offer online undergraduate degree design courses, despite an overall growth in online higher degree curricula. Anecdotal evidence and limited research studies exploring the design educators’ view lament the potential loss of direct interactions between educator and design students in an online learning environment making it impossible to offer design education online. However, the attitude of design students towards online learning is largely underexplored. Given that today’s design students are considered tech-savvy, and there is a growing student demand for flexible study options, it would seem that design students would embrace online delivery options. The aim of this study is to explore the perception of undergraduate design students towards the idea of studying design online and whether or not blended learning could provide a transitional middle ground to a fully online design course. This study also touches on any student reservations about online delivery and identifies the barriers to study design online.

Keywords

design education, online design education, blended learning, social media

Introduction

Technology has changed the work practice of designers and how design is taught and learned. The emergence of digital technology has introduced computer labs as the central learning space for design students while technology enhanced learning and teaching is on the rise. While technology advances, a hands-on studio based learning approach, which is often supported by one-to-one interaction between student and educator and interaction with peers, still remains the preferred model in design education. This traditional approach to learning and teaching design and the characteristics of the studio, have been often identified as beneficial and supporting interaction, active learning and social engagement (Shreeve, 2011; STP, 2009).
While design educators still rely on studio-based learning, there has been a parallel move away from direct face-to-face interaction into online courses in many disciplines particularly during the last five years. In the United States for example, about 75% of the top-ranked higher education institutions offer online degrees (Priceonomics, 2016). The same study reported that in 2012, 46% of 1,844 institutions had at least one online degree program which increased to nearly 60% in 2014. There has been a similar increase in the number of online courses in Europe and Australia (Ross, 2014; Swain, 2012; Virtual College, 2013). ‘In Australia, 12% of all students were off-campus learners’ in 2010 (Distance Learning Portal, 2016).

For regional universities offering degree programs, online education presents an opportunity to attract new students within a large geographical area. Regional universities often face limited growth because they cannot compete with their metropolitan counterparts which draw on a much larger national and international enrolment base. Online education programs can provide regional universities with a broader reach and ultimately the possibility of a bigger market share. As one study observed, online education allows ‘any institution across the world to target anyone interested in their subject while reducing additional obstacles to international studies such as visa requirements, travel costs and travel time’ (Distance Learning Portal, 2016).

In this context, it is surprising that universities, whether they are regional or metropolitan, have been slow in offering design education online. For example, an internet search for American online Graphic Design Bachelor degrees, yielded a total of five colleges offering such a degree compared to a Bachelor in Accounting which is offered by 61 schools (US News, 2017). In Australia, only four of the 40 Australian universities offer an undergraduate design degree online and of these only one university offers a Bachelor of Graphic Design online (The Good Universities Guide, 2017). This trend runs counter to Australia’s well established leadership role in offering online courses: ‘Distance education is a sophisticated service industry exported from regional Australia to around the nation and more widely. Some of RUN’s [Regional Universities Network] institutions pioneered distance learning – in 2010 RUN institutions delivered courses to 34% of all distance students’ (Regional Universities Network, 2013).

Why aren’t design educators picking up the baton and running with online courses? Is there something about the design discipline that discourages the use of an online approach? And are students able to learn as much about design using a virtual design studio approach? It remains unclear why design education is slow to offer their undergraduate education programs in an online delivery that has enjoyed widespread adoption by other disciplines. While a few case studies exist that explore the design educators’ perspective in the online space, the attitude of design students towards online learning is largely underexplored. Therefore, the aim of this study is to explore the attitudes of undergraduate design students towards the idea of studying design online and whether or not it is the students who have reservations, and if so, what are the barriers to study design online and how can these be lowered or removed? As part of this investigation, undergraduate design student perception towards blended learning options (which augments traditional classroom methods with online digital media) is also
explored to investigate a possible middle ground when developing flexible study options for design students.

Findings from this study inform the preparation of the author’s university moving to an online learning mode for design education in the near future. Findings can also help refine pedagogical approaches to be undertaken by other institutions.

**Design education: studio-based learning**
Design education is largely based around studio-based learning and teaching as a central pedagogy (Sara, 2006; Shreeve, Wareing and Drew, 2008). In a design studio, students work on projects which require responding to often open-ended problems (Kuhn, 2001). The projects can be fictional or real-world projects and involve significant hands-on activities (McCarthy and Almeida, 2002). Studio-based learning is centered around the pedagogical concept of ‘learning-by-doing’ (Schön 1983, 1985) and grounded in Kolb’s (1984) experiential learning model. There can be a variety of staff involved in studio-based teaching: the design educator, tutors who are often design practitioners or technical assistants who support students in the use of specialized equipment (STP, 2009).

The design studio has unique characteristics that set it apart from other academic disciplines, primarily because studio-based learning and teaching is a work space and a social environment (Hart, Zamenopoulos and Garner, 2011). According to Shreeve (2011) studio-based teaching encourages students to develop peer learning which is key to creating a community of practice (Wenger, 1998). The community and social aspect of the design studio also facilitates a sense of belonging which can motivate students to learn (Gee and Miller, 2006; Sandbach, 2011). Boys (2011: 8) points out that design education is often cited as a model for other academic disciplines because of its unique approach to learning, which focuses on a collaborative and iterative approach to problem solving in an open-plan, multi-disciplinary environment.

**Online design education: Why the lag?**
As budgets tighten, technology changes, and students demand more flexibility in how courses are delivered, higher education institutions have made online an indispensable tool in lieu of lectures and tutorials (Tucker, Halloran and Price, 2013). But there is little evidence that design education is moving at a similar pace as other disciplines when it comes to developing online courses. Few online design degrees are offered globally. In Australia there is a paucity of undergraduate online design degrees. There are also no apparent studies exploring how online design courses can be structured and deployed or what role blended learning can play in the delivery of more flexible study options in design, which is surprising in Australia, given the country’s robust adoption of online distance education to overcome geographic isolation. Both state and federal governments in Australia have promoted the infrastructure and technologies needed to deliver online courses (Australian Government, 2016; Stacey, 2005).

While various wide ranging literature reviews and large scale student surveys have been conducted in other disciplines (e.g. Kebritchi, Lipschuetz and Santiague, 2017; Tucker, Halloran and Price, 2013) only a few case studies conducted in an online virtual environment have emerged over the last decade that report on research within individual
design subjects or online projects within a subject. For example, in 2005 the Creative Waves project connected 120 geographically dispersed students, educators and creative practitioners in an international online student design collaboration over a period of seven weeks (The Omnium Project, 2005). Some educators in Architecture education have experimented with the virtual design studio (VDS) (e.g. Kvan, 2001) and the use of social media in the design classroom (e.g. Ham and Schnabel, 2011). Ham and Schnabel (2011: 108) see the VDS as a ‘specialized area of design studio research involving digital tools to enable collaboration between remote parties to a design project’. The motivation to introduce subjects or projects into the online environment appears to be largely driven by facilitating collaboration of students and institutions that are geographically dispersed (e.g. Kvan, 2001; Lahti and Seitamaa-Hakkaraine, 2014; Sclater, Grierson and Ion et al., 2001). These experiments offer evidence that online design courses facilitate distance collaboration at the very least and warrant further structural and pedagogical investigation.

However, Kwan (2010: 1) argues that ‘unlike many other subject areas, at the center of design learning is an underlying method of inquiry and dialogue that cannot be objectively transferred to students through typical learning management systems’. Bennett and McIntyre (2004: 2), who are part of a well-established online Master of Cross-Disciplinary Art & Design degree program at an Australian university (COFA online), argue that ‘the “online experience”, whether shopping, socialising, resourcing or teaching and learning, is different to when undertaking the same face-to-face activities. If the differences are acknowledged as potential advantages rather than obstacles, we believe that exciting and valuable things can begin to take place’.

Social media has emerged as a key development in connecting locally dispersed students. McDermott (2012) at Kingston University (UK), for example, experimented with international networks for collaboration connecting design students from the UK and Korea via social media platforms. Other institutions are also in the process of experimenting with ways to integrate technology enabled learning, engaging various delivery platforms and social media integration into coursework (e.g. Lapolla, 2014; Park, 2011). The emergence and widespread use of social media has pushed design education towards realizing technology enhanced learning. For example, social media integration incorporating Facebook and also more visually oriented platforms such as Pinterest or FlickR have also been more recently trialed in design education (e.g. Fleischmann, 2014; Power and Kannara, 2016; Withell, Cochrane and Reay et al., 2012). Outcomes varied for the use of Facebook and are perhaps best summarised with Pektaş and Gürel’s study (2014: 41) who concluded that ‘the potential educational uses of Facebook need to be explored with a particular focus on how the informal and social nature of Facebook interacts with the dynamics of teaching and learning’.

Flexible design students and hesitant design educators?

Today’s design students have grown up in a technology-rich culture using technology like computers, mobile phones and internet services on a daily basis which leads to a fundamental change in how young people communicate, learn and socialise (Helsper and Eynon, 2009). If anything defines today’s design student, it is the almost ubiquitous use of mobile phones. By one estimate nine out of ten Australians aged 14 to 17 own a
mobile phone (Morgan, 2016). About the same percentage of American teens also own a mobile phone (Pew Research Center, 2017). Students entering university today are frequently labelled as digital natives (Kennedy, Judd and Churchward et al., 2008; Prensky, 2001) or also as Millennials, Net Generation or Google Generation (Helsper and Eynon, 2009). Some argue that these digital students view education through their smart devices and have expectations that higher education will allow them to take advantage of these instantaneous means of communication (Andrews and Tynan, 2011; Sutherland, 2016). Barnett (2014: 9) reports that they also request more flexible study options and ‘new kinds of educational experiences’.

Although the concept of the digital native is widely used by policy makers and educators, it is contested by other investigators who acknowledge that younger generations communicate, learn and socialise in fundamentally different ways than older generations but argue that growing up with and using technology does not mean better learning outcomes in a technology enhanced classroom. Researchers such as Kennedy, Judd and Churchward et al. (2008: 117) argue that although students might be highly tech-savvy, ‘when one moves beyond entrenched technologies and tools (e.g. computers, mobile phones, email), the patterns of access and use of a range of other technologies show considerable variation’. Helsper and Eynon (2009) assert that “generation” was not the only significant variable governing technology fluency but that ‘gender, education, experience and breadth of use’ also play a significant part. Myer (2016) also argues that there is a misconception about the Millennials as automatically having ‘some kind of inborn knowledge or learning ability in connection with digital products’. Meyer (2016) further discovered that ‘for many Millennials, person-to-person contact is still a reliable and effective solution to their problems — not something they fear or avoid’.

Student demands for greater flexibility in their higher education study options are also driven by new challenges in students’ life-work-study balance which is very different from those that students experienced twenty years ago (Barnett, 2014; Lowe and Gayle, 2007). The changing funding landscape, for example, requires many students to work part time or even full time to support their studies. This can result in students requiring more flexibility on pace, place and the mode of their learning (Barnett, 2014; McLinden, 2013). Many universities responded to those new demands by offering online or blended learning opportunities for students. The term “blended learning” (or sometimes called “hybrid”) refers to learning design that ‘integrates a range of face-to-face, online, mobile, distance, open, social and other technology enhanced learning across physical and virtual environments’ (James Cook University, 2017). The online content of a blended learning experience can range from 30 to 80 percent; anything over 80 percent is considered an online course (Smith and Brame, 2017).

A number of studies have found that rapidly changing technology does not guarantee better results from both learner and educator perspectives. While not all students entering university today are similar tech-savvy, the same holds true for educators (Cervini, 2016). Andrews and Tynan (2011: 118) argue that many higher education institutions in general ‘are ill-prepared’ for student expectations driven by technology. Central to any successful outcome of blended or online pedagogy is what McGee and Reiss (2012) call a ‘re-design’ of course content, not just adding in online
elements, which some instructors not accustomed to online delivery find burdensome. Design educators who have experienced teaching in online or blended learning environments argue that advancing technology alone does not create better student outcomes (Bennett and McIntyre, 2004; Selater, 2016). A study on attitudes and trends in Australian Art and Design Schools conducted by Frankham (2006: 1) revealed the significant role digital technologies as game changers brought to art and design schools by ‘opening up unimagined creative opportunities, but also imposing significant fiscal pressures as schools strive to maintain competitiveness by upgrading and expanding digital capacity’. The Frankham (2006) survey of Australian Art and Design school program directors found that 42.8% did not reflect on the opportunities technology presented to study art and design online in the future.

A small international study conducted by the author revealed that ‘technology was identified as a continuing major factor in design education and was subliminally noted as a threat, rather than as an enabler. There was a consensus, and a strong belief, that design education does not work well in an online environment’ (Fleischmann, 2015: 106). Indeed, from existing case studies design educators who have participated in online design subjects or blended learning courses reported major challenges. For example, Longbottom (2008) reported that not all educators are willing to participate in blended learning. Gül, Wang and Bülbül et al. (2008) found that designing blended and online learning experience requires a lot of effort from educators which can lead to an increased workload (Chen and You, 2008). Some educators felt pressured to be available 24/7 (e.g. Bender and Vredevoogd, 2006; Longbottom, 2008).

However, similar to Bennett and McIntyre (2004), Hopper (2014: 24) sees a chance for art and design educators to ‘create curricula that best meet the learning preferences of today’s digital natives by effectively incorporating technology into the classroom’. That can be achieved by ‘incorporating the digital culture that permeates their daily lives through text, imagery, sound, and interactive elements created by the teacher’. Whatever the approach, Jones and Shao (2011) state clearly that technology must be incorporated in the context of overall student outcomes to deliver high quality courses, not just driven by student demands.

Although the author agrees with Jones and Shao (2009) and also Blackmore (2009: 857) who argues that ‘what students want is not the only criterion for judging teaching’, it is nevertheless crucial for institutions who consider a shift of their design programs towards online (or blended) learning to also explore design student perceptions and not to focus solely on the educator’s view. Exploring possible barriers to learning design online as perceived by undergraduate design students is an important step in developing an effective online experience. This study therefore explores the perceptions of design students who have been studying design in a traditional face-to-face learning environment and explores possible barriers for students to studying design online and how can these be lowered or removed. In this context, the study also seeks to provide some insight into whether blended learning can provide a transitional middle ground to a fully online design course.

Methods
A pragmatic research paradigm, which enabled the researcher to choose methods that suit the real-world nature of the situation (Creswell, 2008; Punch, 2009) was adopted in this study. The general approach was inductive and had an overall drive of exploration and discovery (Morse and Niehaus, 2009). Second and third year design students studying in the design major of the Bachelor of Arts and Creative Media participated in this study. The Bachelor degree is a three-year degree offered at a regional Australian university. The student participants were studying in a traditional face-to-face learning mode and were enrolled in the subjects Information Design, Interactive Media Design and Design Portfolio. To provide some more context, although design students studied in a traditional face-to-face learning environment, they are accustomed to working within an online context because design students using the Blackboard Learning Management System (LMS) beginning in their first semester. The LMS is used as repository for study materials, grades, assessment sheets, and assessments uploaded by students and a discussion board. Additionally, design educators use the LMS as communication tool to make announcements and providing extra weekly study materials.

An online survey with closed and open-ended questions exploring student attitudes toward online and blended design options was deemed the most appropriate method to gather students’ feedback for several reasons. Online surveys have the advantage of accessing large numbers of participants in a short timeframe; online surveys also overcome geographically dispersed respondents. Secondly, the online survey gives students the flexibility to fill it in when they can which works around time constraints. Thirdly, the online survey allows for the collection of both quantitative and qualitative data at the same time. Consequently, the online survey would not only return data on measurable indicators (e.g. Would you study a design subject fully online?) but would also provide deeper insight into the researched phenomena through collecting qualitative feedback through open-ended questions (e.g. Why would you study a design subject fully online? Or why not?). And lastly, according to Gray and Malins (2004), another advantage of using an online survey is that the anonymity of respondents may also encourage greater honesty and can also lead to a high level of participation if it is well designed, fast and easy to complete.

The student groups surveyed were not taught by the researcher and hence access was requested through colleagues teaching second and third year design students. Students were approached by using the contact emails stored in the LMS. A group of eighty design students were invited to participate in the online survey and 40 students responded to the survey which is a response rate of 50%.

The analysis for quantitative data obtained using the online surveys was done by utilizing existing tools from the survey platform, Survey Monkey, which automatically provided basic statistical data, such as the tally of response totals, percentages and response counts. Qualitative data obtained from responses to open-ended questions in surveys were coded using the research analysis software NVivo. The qualitative data were first coded in two broad coding categories which were perceived “benefits” and “challenges”. Within these two categories subthemes emerged. Similar or same codes were combined into subcategories and their occurrence was counted to evaluate importance (higher occurrence = more important). The students’ feedback with its
subcategories and subthemes are presented in tables and a representative response is provided.

Results
Design students: Social media use and experiences with online learning
The age groups of the participant cohort were as follows: 70% were between 19-21 years old, 20% 22-25 years old and 10% were over 26 years old. All undergraduate design students were therefore born after 1983 and are considered well accustomed to using the internet and grew up in a technology-rich culture.

Because access to technology does not necessarily translate directly into technology fluency—and to better contextualize the feedback from design students on their views on introducing online design education—respondents were asked to report on their familiarity and use of technology particularly their use of popular social media platforms and previous online learning experience. Such feedback can help to evaluate, for example, whether certain technologies can be useful when setting up an online design degree program.

Of the forty survey participants, all but one indicated they used Facebook (97.5%) and ninety-percent of them used the social media platform several times a day. Instagram ran a close second (80%) and Pinterest rated third (57.5%) to Facebook in terms of use but were not used with the same frequency as Facebook. Discussion boards, which are used frequently in online collaborative projects in higher education, were used by about 7% of the surveyed design students. Given that these students are considered digitally fluent, they would presumably problem solve using the internet. Survey results indicate that most design students (85%) are comfortable watching video tutorials on the internet which would indicate that online video tutorials have a place in delivering blended or online design classes.

Students also provided feedback on their previous online learning experience and whether they had studied an online subject or a Massive Open Online Course (MOOC). Of the design student cohort, 75% of students (30) had experience with online learning: 67.5% of design students (27) had studied and completed one or more subjects fully online and 7.5% of students (3) had completed a MOOC. Five students had no online learning experience (12.5%).

Reality check – Would design students study a design subject online?
Students were asked to provide feedback on whether they would study the design subject they just completed face-to-face in an online study mode. The results indicate a large gap in the perceived value of delivering a subject such as design in a strictly online environment and student acceptance of online design courses. Seventy-five percent of students (30) said they would not study the design subject (Information Design/Interactive Design/Design Portfolio) fully online.

To learn about students’ decision-making process and perceived barriers, they were asked to provide their reasoning. ‘Why would you study a design subject online or please explain why not?’ Table 1 and Table 2 present the reasoning why students would
or would not study design subjects online. The ten students who would study the design subject online provided 28 comments describing their reasoning. The 30 students who would not study the design subject online made 99 comments to provide reasons for their decision.

Table 1. Reasons why design students (10) would study a design subject online

<table>
<thead>
<tr>
<th>Reasons (number of mentionning)</th>
<th>Total no mentioned</th>
<th>Sample responses</th>
</tr>
</thead>
</table>
| **Flexibility–Better Suits Learning Style**  | 8                  | I can do my study work at a time that suits me better. I work better at night so doing work for class at 3am is a lot easier for me then having to go to class before midday.  
I prefer the self-paced learning, I can do a whole day of learning and playing with software as opposed to a 2-hour practical in the computer lab at uni.    
My workstation at home allows me to be a lot more productive than at uni. |
| **Greater Flexibility in Managing Study-Work-Life Balance**  | 7                  | It's more flexible for my life. I might be busy some days.  
It gives me more freedom e.g. I am able to work more and manage my social life |
| **Avoid Travel – Save The Way To And From University**  | 6                  | Avoid being late for lectures due to transport, no need to wake up at 6am for a 1h lecture.  
I can avoid the car park hassle at university. |
| Other                            | 6                  |                                                                                                                                                  |

Although in favor of studying design online, three students also acknowledged that it would be harder to study online because they would be responsible for keeping up with
the content and feel they would not have the advice from lecturers and help with software.

Table 2. Reasons why design students (30) would not study design subject online

<table>
<thead>
<tr>
<th>Reasons (number of mentioning)</th>
<th>Total no mentioned</th>
<th>Sample response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Face-To-Face Interaction Helps Learning</strong></td>
<td>Face-to-face is an essential part of learning content. Reading info off the internet is one thing but to truly understand something, we must be shown step-by-step in person for it to be truly understood. I learn from asking questions and interacting with the teacher and the class and I like to bounce ideas off my peers. I respond better in my work and understand more when I am able to physically meet and talk with the teachers. I also feel this is better as you learn to communicate your thoughts and perceptions of your/others artworks which is important later when you’re talking with a client.</td>
<td></td>
</tr>
<tr>
<td>Direct communication and face-to-face interaction is important and helps students learn (8) Face-to-face helps students learn (7) Feedback and questions asked help students learn (7) Interaction with peers is important and helps students learn (5) Interaction with teacher helps students learn (3) Easier to learn (2) More engaging (2)</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td><strong>Suits Learning Style</strong></td>
<td>I find it easier to learn with a teacher in front of me. I take information in more easily this way. Watching video online is almost impossible for me, as it is boring and eventually I doze off and forget everything. I find that learning online doesn't give me much confidence in knowing that I am learning the right information and that I'm on the right path with assignments.</td>
<td>18</td>
</tr>
<tr>
<td>Guidance and help from teacher is important (6) Take information in more easily (4) Difficulties to absorb video lectures (3) Would not watch online videos because videos are not engaging (3) Better to have progress monitored (2)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Motivation And Focus</strong></td>
<td>I need physical classes to motivate myself to cover the content.</td>
<td>10</td>
</tr>
</tbody>
</table>
**Physical classes and structure helps to focus and motivate students (4)**
- Teachers help me to focus (3)
- Easier to keep up with learning content and requirements (3)

A classroom environment helps me to focus on my work.
- Being with the class and the lecturer is a major motivational factor that enables the students to stay focused.

**Social Aspect of Learning in Physical Class Environment**
- Interact with peers and share ideas is an important part of learning (4)
- Social contact with peers is important (3)
- Building networks (3)

**10**
- I need physical classes to socialize, ask questions and get to know other students.
- Face-to-face lectures help you relate to the people around the lecture, creating conversations and friendships.
- It was just such a very friendly, welcoming and encouraging environment that allowed students the chance to share, gain and extend on new knowledge with everyone and network.

**Learning and Teaching Style of Design Education Cannot Be Translated Into Online Learning Environment**
- Subject material does not lend itself to being taught online (5)
- The way design is taught can’t be done online (3)

**8**
- The course is very hands on and requires a lot of testing and therefore, it would be hard to get the same kind of learning through an online course.
- Contact time was needed to fully understand the software and what the tasks required.
- Design can't be learnt through online communication. It requires dialogical learning in order to improve.
- Design needs face-to-face feedback and responses.

**Access**
- Ease of access to teachers (2) and no communication delays (online)
- Ease of access (3)
- Access to facilities (3)

**8**
- Questions that students may have can always be answered immediately. Emailing the lecturer is a long and unnecessary process for small questions.
- Feedback is immediately available from lecturers.
You can easily ask for help during classes instead of waiting for an email response
I want to take advantage of the facilities.

| **Online Collaboration is Too Difficult** | 5 | This subject has a group assignment worth 50% so I don't know how you would be able to efficiently collaborate and interact with a group if it's all online.

The group assignment was a pretty important aspect of this subject and if it was all online then that would not exist anymore, right? The group assignment was really fun and a good learning experience and I'd hate to see it go. |

| **Missing Out on Student Experience (4)** | 4 | It would feel like I wouldn't be at university. I moved from Mackay to live on campus to study because I wanted the university experience, the creative opportunities from both the course and the city. I also wanted to meet and be inspired by the lectures and creative people. When studying online I would lose all these opportunities. |

| **Other** | 2 |

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**Blended Learning a possibility?**
To explore possibilities of offering certain aspects of a design subject online (blended learning), students were asked to provide their views on their preference to study a subject in a blended learning mode compared to online. Students were given the example of a blended design subject that would offer the one hour lecture material (usually delivered face-to-face) as videos online. Table 3 reviews the feedback.

**Table 3. Students’ preferences for online or blended delivery mode of a design subject**

| If you could choose, would you prefer studying Information Design/Interactive Design/Design Portfolio in a blended learning mode rather than online? |
| Number of students | Percentage |
Yes, I would prefer studying the subject in a blended learning mode. 37 92.5

No, I would prefer studying the subject online. 3 7.5

Total 40 100

Students were also presented with the choice to study a design subject face-to-face, in a blended or online learning mode. Table 4 summarizes their preferences.

Table 4. Design students’ preferences for delivery mode of design subject

<table>
<thead>
<tr>
<th>If you could choose a design subject online, blended or face-to-face, what would you choose?</th>
<th>Number of students</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would prefer studying the subject online.</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>I would prefer studying the subject in a blended learning mode.</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>I would prefer studying the subject face-to-face.</td>
<td>27</td>
<td>67.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

The reasoning from the ten students who would prefer studying design in a blended learning mode is presented below through sample quotes that provide insights into students’ reasoning. The following comments provide very good examples of why blended learning could work out for design courses.

- I can watch the lectures at my own pace. I can rewind back in case something flew past my head. I prefer face-to-face practicals as it allows me to easily ask a question about assignments, the lecture etc.
- Choosing when you can watch the lectures so less time at uni and more freedom to do other things outside of uni.
- I don’t mind watching the lectures online but I prefer the tutorials to be in person so that I can be shown how to do things and can ask lots of questions
- I do like the feedback from class, and online lectures are generally concise and short lectures should always be online and tutorials could be longer so that we had more practical learning time.
- Having the face-to-face to get help is easier as you can just show the problem. Being able to watch or read over the lectures at a time when I want to learn will allow me to take more in.
- I like the assistance, encouragement and opinions from the lecturers offered in practicals. I already study blended/external as my preference when it is available, as I need uni to fit in with my work and family commitments. Sometimes I can’t get a babysitter and I miss lectures but can easily catch up online without feeling like I missed important information.

Discussion

**Face-to-face, blended or online design education?**

The findings suggest that there is little support from the design student cohort to study a design subject online when offered a choice between internet delivered design courses or face-to-face. Overall, the majority of students would prefer studying design in a face-to-face learning environment. Thirty design students (75%) would study face-to-face when the online mode would be the only other option and 27 students (67.5%) would prefer to study a design subject face-to-face when the blended learning mode would be an additional option.

The major theme that emerged is that students feel that face-to-face interaction helps them learn. This learning is initiated and guided by the educator and also through interaction with peers. They learn from questions asked, feedback and support from their educator and peers. This interaction facilities the circle of action and reflection as stated by Schön (1983; 1987), which builds the basis for the education of designers in helping them to become ‘reflective practitioners’.

Different advantages of face-to-face education have been highlighted by students in their feedback. They stated that they are more motivated and can focus better when they physically have to attend a structured class and receive direct (and instant) feedback. Individual learning styles of some students favor face-to-face interaction over learning from a video.

The design studio as workspace and a social learning space as mentioned by Shreeve (2011) was also highlighted in the feedback from students who prefer a face-to-face learning environment including face-to-face activities in a blended learning mode. The direct interaction with peers took a central role as students state that they value the feedback from peers, like to bounce ideas off each other and see the interaction as a form of networking. Clearly students’ comments support what is argued by Gee and Miller (2006) and also Sandbach (2011) that the design studio facilitates a community of practice and sense of belonging which can motivate students to learn. According to STP (2009: 14) the design studio enables ‘collective learning’ a feature that would need to be replicated in an online environment.

The decision to study design online or in a blended learning mode is largely driven by greater flexibility, which better suits students’ learning style and provides the ability to more flexibly manage their social, work and study lives. The reasons for a preference to study in a blended learning mode (25%) clearly point towards flexibility in
reviewing the lecture material at any time and as often as necessary to increase comprehension. Flexibility is also required by time pressures, such as family commitments when studying while raising children and organizing a social life around university as is discussed in the literature (Lowe and Gayle, 2007). A strong argument is made by the 25% of design students that although they prefer the flexibility of viewing and reviewing the lectures online, they want the practical/tutorial classes in a face-to-face setting. Students argue that they prefer to ask questions directly in the design studio, that they enjoy the feedback from educators and peers and that they like being directly shown hands-on solutions to possible problems. It appears the immediacy of the exchange in a face-to-face environment plays a significant role in their preferences for face-to-face studio-based learning.

Noteworthy is the design student feedback of their learning preference in relation to their living location. Of the design student cohort, 26 students (65%) were from the regional city where the university is located. Fourteen students (35%) were from the wider region, a different State in Australia or overseas. While it could be argued that these students would prefer online study, the results showed that this was not the case. Of the ten students preferring to study online rather than in a face-to-face design studio environment, only three students were from outside the city where the university is located. The argument against online design courses made by some remote students is that they would miss out on the university experience when studying online. Another interesting theme that emerged from the study were student comments on the elimination of travel which would save time, fuel costs, and avoid university car park costs and availability.

It is interesting that only five design students (12.5%) had no experience with online learning. Over half (67.5%) had at least completed one subject fully online. Considering the increasing number of design and creative arts MOOCs available for free—and McNamara (2015) seeing MOOCs as a great opportunity to enhance design education—it was surprising that a very low number of students (5; 7.5%) had completed a MOOC.

Design students in this study use social media extensively because of its power to connect with other people. However, some students (20%) doubt that collaborative online learning is possible and commented directly that design education (the way it is taught and learnt) is not suitable for online environment. This is in line with Kwan (2010) and others who argue that the design studio with its dialogical learning and teaching methods cannot be easily transferred into an online environment.

Students mention specific challenges when considering online design learning. These challenges are seen as the loss of instant feedback; a lag time in specific questions being answered by instructors; students would miss out on peer interaction and fear that they would not be able to work collaboratively in groups in an online environment. Ironically, the few case studies involving the use of a strictly online approach to design education supports the thesis that collaboration between geographically dispersed students and instructors works well over the web and social media platforms (e.g. Kvan, 2001; Lahti and Seitamaa-Hakkaraine, 2014).
Technology use – strategies to apply in blended or online learning environments

The feedback provided by students about their use of social media platforms clearly identifies Facebook as the number one platform design students use. A high number of students engage several times daily with Facebook. Visually driven social media platforms such as Instagram (80%) and Pinterest (57.5%) are also used extensively by these undergraduate design students. Clearly, social media platforms have a role to play in the implementation of an online design degree or as a supporting technology for blended courses. This contention is supported by positive feedback around social media use from existing case studies in this area (e.g. Fleischmann, 2014; McDermott, 2012). However, the effectiveness of such integration would need to be closely studied.

Learning in an online environment requires design students to problem-solve and learn new skills by using the internet. A typical scenario in design education is learning new graphic software tools by viewing online tutorials. These are either freely available or can be accessed through commercial providers such as Lynda.com. The feedback from the design student cohort reveals a high familiarity with using online tutorials to support their learning. Eighty-five percent of students watch online tutorials often or sometimes to learn new skills. Only 15% of these students stated that they rarely use online tutorials. The high number of students that access online tutorials is a point to consider when thinking about engagement strategies in an online design degree.

Conclusion: Moving design education into the future

This study explored the attitudes of undergraduate design students towards the idea of studying their design degree online and whether blended learning can provide a transitional platform to a fully online design course. A high number of undergraduate design students who participated in this survey had experience in online learning, which reflects a growing movement to offer online courses in undergraduate programs. They have all grown up using computers, mobile phones and internet services on a daily basis and are familiar with the use of social media; the majority of student are also familiar with technology enhanced learning like viewing tutorial videos to learn new skills. Given this context, it is particularly surprising that the survey data demonstrates a student preference for face-to-face studio-based learning and scepticism that undergraduate design degrees can be delivered online. The perceived advantages and challenges of online learning and teaching over face-to-face or blended learning helped to uncover potential barriers that would need to be addressed when developing a fully online design degree. The major perceived advantage of an online approach is its flexibility in terms of time and convenience; the major disadvantage of a strictly online delivery is its perceived lack of social interaction and immediate feedback during the problem-solving process and group collaboration.

Student feedback from this survey highlight key points in architecting an effective online design course:

- an instant feedback mechanism from educators;
- an opportunity to exchange ideas with educators and peers;
- an opportunity to receive instant peer feedback ideally;
- a progress check on students’ learning (projects);
- an opportunity to collaborate online and directly which goes beyond the utilization of social media.

There was strong preference from design students towards studying design in a blended learning mode. While this result highlights the aversion of design students to study design fully online, it also highlights an opportunity to introduce blended learning opportunities that augment the studio environment such as video tutorials and incorporation of select social media platforms. A quarter of students would study a subject in a blended study mode when face-to-face or online is also available. Such blended learning opportunities can help providing the flexibility of anywhere-anytime learning which frees up time for managing work/study/life more easily. The need to travel would also be reduced in a blended subject.

The development of a design curriculum in a blended learning or an online learning approach would need to focus on selecting technologies that support and enhance learning activities by replicating the characteristics of the design studio. There is an opportunity to bring the social characteristics into the online learning environment through the use of current technologies such as social media platforms like Facebook and visually oriented social media platforms such as Instagram; both could be used to offer technology enhanced design learning because students are comfortable communicating and sharing through these social media platforms.

However, these undergraduate design students seem to see limits to how effective social media are in facilitating online collaboration for design projects, because students expressed a very low confidence in the ability of online technology to facilitate collaboration. There is the need to explore more suitable and engaging collaborative platforms which support the specific nature of collaboration on creative design projects. Such platforms (e.g. ConceptBoard, GoVisually) would allow students to annotate designs and provide in-context feedback for faster iterations in real time. These platforms also provide design students with an authentic learning experience because they represent technologies that are increasingly part of a professional practice.

This study collected feedback from a small student sample across two years of undergraduate design study. A university considering an undergraduate online design degree program would need to recruit students nationally and internationally to justify the investment of time and money to develop an online undergraduate design degree course. There is the need for further research to explore the attitudes of potential students in a wider geographic area and the actual costs to develop a fully online design program that requires instructor training and re-design of curriculum.

In order to facilitate this curriculum re-design process, there is a need for design educators to consult with educators who have expertise in delivering online or blended learning courses. The key findings presented in this paper should not be ignored when developing a pedagogically effective online design course as they go to the heart of the design studio experience and what it is that facilities design students’ learning in an online or blended environment. Incorporation of technology will play an important part in developing a pedagogically effective online design course but ultimately it is student
learning outcomes that would drive any technology enhanced re-design of a design course.

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