A phenomenographic investigation on the use of iPads among undergraduate art and design students

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Abstract
The increasingly widespread use of iPads in higher education (HE) brings to the forefront questions about the contribution of these computer tablets towards teaching and learning. However, there is a noticeable gap of research on the instructional potential of iPads in HE. This paper describes the first stage of a research project on the use of iPads in undergraduate art and design disciplines, and is a collaboration between the research lab “Networked Learning Technologies in Art and Design” at Cyprus University of Technology, and the “Centre for Pedagogic Research” at Falmouth University in England. The participants from both institutions provided a student-centred perspective, and the qualitative analysis (phenomenography) revealed varied perceptions. Based on the findings of this project, the implication is that there are a number of challenges and obstacles in embedding the use of iPads in art and design education. Further research in the second stage of this collaborative research will investigate the views and motivations of art and design faculty.

A video abstract of this article can be viewed at https://www.youtube.com/watch?v=ZBXnuVJ8eBY

Introduction
The iPad is described as a “category-defining phenomenon” because it is claimed that it has considerable potential to enhance learning (Johnson, Adams & Cummins, 2012, p. 14). However, there is a noticeable shortage of studies on the use of this tablet in higher education (HE). This computer tablet is of interest to this investigation because in the majority of cases, undergraduate art and design students use Apple Macintosh products in educational settings, to the extent that the latter are synonymous with design education.

This paper describes the first stage of a research project on the use of iPads in undergraduate studio-based art and design disciplines, and is a collaboration between the research lab “Networked Learning Technologies in Art and Design” at Cyprus University of Technology (CUT), and the “Centre for Pedagogic Research” at Falmouth University (FalU) in England.

The objective was to investigate for a period of one semester the perceptions and experiences of undergraduate art and design students on the educational potential of the iPad. The phenomenographic approach allows for a bottom-up investigation, ie, from the perspective of learners. Sharpe and Benfield (2005, p. 1) reminded us that the overwhelming research on e-learning is teacher
focussed rather than student centred, and emphasises the value of instructional interventions, while the student experience of e-learning has not been explored sufficiently. Similarly, but with an emphasis on mobile learning (mlearning), some authors (Cochrane, 2012, p. 124; Wright & Parchoma, 2011, p. 253) highlight that the related literature on mlearning deals mostly with small-scale innovations and pilot projects in quasi-experimental settings and with a top-down approach.

**Literature review**

There are varied definitions of mlearning. Some authors (Rajasingham, 2011, p. 3; Sølvberg & Rismark, 2012, p. 24; Traxler, 2007, p. 1) make the distinction between the emphasis on the mobile devices and the associated technologies (Yeonjeong, 2011, p. 79), and others conceptualise mlearning in terms of the mobility of learners or learning (Melluish & Falloon, 2010, p. 3). Rosing, Miller, Cecil and Stamper (2012, p. 1) make the observation that definitions of mlearning that can withstand technological innovations are broad in scope and carefully consider the interplay between device, mobility and learning. In more recent research on mlearning, it is the latter definitions and the characteristics associated with them that prevail (Rosing et al, 2012, p. 1), and in these cases the learning activities are not restricted to instructional settings but encompass diverse formal and informal scenarios, ie, learning that takes place in situ and is facilitated through mobile devices.

Another major theme in the literature on mlearning consists of attempts to delineate the instructional contexts possible with mobile devices. High on this list is ubiquitous learning (ulearning). Researchers generally agree (Burbules, 2009, p. 16; Yahya, Arniza Ahmad & Abd Jalil, 2010, p. 120) that the main characteristic of ulearning is that it enables anyone to learn at any place...
and at anytime. Mobile computing devices facilitate this process and the related technology, known as ubiquitous computing, is embedded in the background of daily activities; it is ubiquitous (Yeonjeong, 2011, p. 80). Ubiquitous computing environments provide interconnectedness in the form of access to a wider socially distributed intelligence, thus blurring the boundaries between formal and informal learning. As one author suggested, “. . . if you need something, you can always look it up” (Burbules, 2009, p. 16).

Closely associated with mlearning and ulearning is the concept of informal learning (ilearning), i.e., learning that happens outside the curricula of formal educational institutions (Frohberg, 2006, p. 6; Sharples, Taylor & Vavoula, 2005, p. 2). Although there is no straightforward definition of ilearning (Jones, Issroff, Scanlon, Clough & Mcandrew, 2006, p. 251), it is estimated that it corresponds to the majority of learning episodes that take place in one’s life (Sharples et al, 2005, p. 2). It is argued that indicative of informal learning is that individuals display high intrinsic motivation because they define their own learning tasks and objectives based on their interests or needs (Jones et al, 2006, p. 251; Laurillard, 2007, pp. 168–169).

Caballe, Xhafa and Barolli (2010, pp. 29–30) argue that long-established instructional approaches such as constructivism, behaviourism, situated learning, project-based learning and collaborative learning lack pedagogic and didactic concepts on the usage of mobile devices for teaching and learning. Most of these instructional theories fail to capture the uniqueness of mlearning because they are predicated on the assumption that learning takes place in classrooms facilitated by teachers. Theories of mlearning should embrace ilearning and the personalised preferences of learners for knowledge. Looi et al. (2010, p. 155) acknowledge that learners spend a significant time in ilearning settings, but note that there is a research gap on how to bridge formal instruction and ilearning.

Lastly, a study by Wright and Parchoma (2011, p. 248) dealt with the literature of mlearning, and concluded that the widespread association of the term “affordances” with mobile devices is generally accepted uncritically. The authors argue that the term has varied meanings and lacks precise definition, yet it is used to present mobile devices as technologies for learning.

The art and design context
According to the Art and Design Subject Benchmark Statement (2008, pp. 4–6), art and design education comprises a variety of overlapping disciplines with increasingly blurred boundaries. It attributes to new technologies a significant role for the blurring of boundaries between art and design disciplines. Indeed, within art and design it is possible to recognise curricula that necessitate the exclusive use of information and communication technologies (ICTs), such as media production (film, television), and curricula that rely heavily on traditional studio-based learning (SBL), such as fine arts and graphic design, without completely excluding the use of some form of ICTs for the latter.

SBL entails a series of instructional steps that collectively are characteristic of studio-based art and design education, and normally take place in the physical space of the design studio. The most common sequence of these teaching and learning methods consists of setting a conceptual problem, providing regular lectures, informal presentations of student work under progress, followed by a series of critiques of student work also known as “crits.” Normally, a group of academics undertakes the final assessment of completed student works (Cennamo et al, 2011, p. 14; Ellmers, 2005, p. 2). At the core of SBL is project-based learning, of which its instructional objective is to replicate as much as possible contextualised design problems in real-life scenarios (Ellmers, 2005, p. 5).

Lee and Breitenberg (2010, p. 55) suggest that design-based learning is more consistent with how students learn today. The authors argue that it is characteristic of art and design education that

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students work simultaneously with different media, and that this form of learning involves the processing of diverse media such as text, images and sound; it entails learners who are proactive rather than reactive. The implication is that instruction restricted mainly to physical spaces can be replaced by multidimensional modes of ulearning not limited by time or place such as the physical studio space.

**Methodology and research design**

The aim of this study is to identify the range of perceptions that undergraduate art and design students in studio-based disciplines have on the educational potential of iPads. It is a phenomenographic study, i.e., an investigation of the different ways in which people experience, conceptualise, realise and understand aspects of the world around them.

The premise of phenomenographic studies is that we cannot separate the structure and the content of the experience from one another (Marton, 1981, p. 180). The objective of phenomenographic studies is to find and categorise how aspects of reality are interpreted (Marton, 1981, p. 180). A core premise of phenomenography is that the qualitative different conceptions and understandings of the phenomenon experienced are logically related to one another, typically by way of hierarchically inclusive relationships (Akerlind, 2005, pp. 322–323).

Recent phenomenographic studies (Pang, 2003) focus not only on what are the different ways of experiencing a phenomenon, but on also on what is a way of experiencing a phenomenon. The former is referred to as the “referential” aspect (what) of the variations of perception, and the latter as the “structural” (how). The fundamental assumption of this method of analysis is the existence of a finite number of qualitatively different ways of perceiving a particular phenomenon, in our case to illuminate the variations in ways of considering the instructional potential of iPads in undergraduate art and design disciplines.

Disciplines with a significant SBL component were chosen from FalU and CUT. The breakdown of programmes and how participating students are represented, is presented in Appendix A. Students in the first and final years of their studies were excluded. In the case of the former, it was considered that they did not have sufficient time to adapt to the teaching and learning culture of studio-based disciplines. Equally, students undertaking their final year of study may not have sufficient time to engage in a meaningful manner with this investigation. There was an effort to balance the gender of participating students, although this was not possible due to the voluntary nature of the project. Thus, in terms of selecting participants from certain years only, the population sample is purposeful. Regarding the gender of the participants, the population comprises a sample of convenience. In terms of the last point, it needs to be noted that although the literature on how female users engage with tablets is not extensive, the limited studies indicate some differences. Male users tend to be early adopters and use tablets for a much wider range of activities (Snyder Bulik, 2011, p. 12).

Each student was handed an iPad and a stylus, with a number of pre-installed free applications (apps). These comprised four categories: utilities, social networking, productivity and creativity, and were selected on the basis of their perceived value (Appendix B). The exclusion of games was a delimitation informed by the work of Rossing et al (2012, p. 11), who highlighted the potential “downsides” of such apps in learning environments, including student lack of focus and attention. Students were not provided with passwords and thus were not able to download their own apps. Lastly, participating students were not provided with instructions on how to use their iPad and this was deliberate because the focus of the investigation was to capture a bottom-up appraisal of the value of iPads from undergraduate students in studio-based disciplines.

Data were gathered through open-ended questions (Appendix C), and a total of 40 students were interviewed, 20 from each institution. Interviews were transcribed verbatim, and Atlas.ti (qualitative software: ATLAS.ti. Berlin, Germany) was used to identify emerging themes.
The main limitation of the research methodology relates to the generalisability and utility of findings that are the result of phenomenographic analysis. This relates to the ability to draw descriptive or inferential conclusions from the sample data about the wider group of undergraduate art and design students. Underlying relationships and associations may be established between perceptions of the instructional value of iPads and learning, but it is also possible that the real causes may not be identified or that there are different causes for different contexts.

**Data presentation and analysis of findings**

Through repeated readings of the interviews, for each question (Appendix C) discrete categories were identified based on the characteristics that distinguish them, these are the referential aspects of the analysis (*what*). This was the first stage of analysis. The second stage focused on identifying the structural aspects of each category (*how*).

*Based on your experience in using the iPad for one semester, how did you find it for your studies?*

Four distinct categories were identified (Table 1). Category A consists of perceptions that the iPad was helpful and characteristic of this group is that students described varied ways that the iPad was useful for their learning. An indicative statement is:

Interviewee 15: “. . . the iPad is quite useful. Besides its size that is convenient and practical . . . I used it for everything, Internet, camera, Skype, Facebook . . . I would take notes . . . [the iPad] allowed you to design and sketch . . . I had it with me at all times . . . Like when I went on a trip . . . and while I was sitting at the airport . . .”

Category B consists of views that combine both positive and negative perceptions on using iPads for learning. The positive views are based on the usefulness of some apps, while the negative views centred on the small size of the screen and that fact that this hindered typing. For example:

Interviewee 33: “. . . I used it [iPad] for note taking and picture taking, and the sketchbook app was great for getting down ideas and showing people . . . when it actually came to typing, I did it on my laptop . . . because of the screen size . . .”

Characteristic of category C is the preference for non-digital learning practices. An indicative statement is:

Interviewee 35: “I quite like using my hands, I didn’t like using the stylus at all . . . I feel like that about using virtual things, that you don’t have a physical kind of connection to what you are doing . . .”

A significant inference from the above is that in the context of SBL, that entails a significant amount of hands-on and tactile learning and teaching experiences, the division between useful and not useful uses vis-à-vis iPad and art and design, is based on the dichotomy between digital versus non-digital tools. Both views are evident in the data. In category B, this dichotomy breaks down because even though some apps were perceived as useful, the iPad was considered limiting for typing. Overall, it can be argued that students who found the iPad useful or partially useful for their studies (Categories A and B) did so in the context of preliminary learning tasks and groundwork, and not for all stages of their work. In addition, the same two groups of students indicated that they used their iPads in multimodal ways and in ulearning environments.

*In your opinion, in what kind of situations do you think the iPad can be useful for learning?*

The replies were grouped in three different categories (Table 2). Students who listed more than three different situations were grouped in Category A as “many different situations.” Indicative of this category is the following statement:
Interviewee 10: “I think the best way to use the iPad is for note taking, reading, studying for a test, because you can download documents . . . Also for recording [interviews] . . .”

Students who described fewer than three different uses were put together in Category B, as “a few situations”, ie, limited use, and characteristic is the statement:

Interviewee 3: “. . . we could use the iPad for presentations . . . I used it also for interviews . . .”

Lastly, Category C consists of the perceptions that there are no situations where the iPad can be useful for learning, and representative of these views is the statement:

Interviewee 34: “. . . I don’t know really. It is hard to say . . .”

It needs to be noted that the uses described in Categories A and B were diverse and not always identical between interviewees. They included: note taking, reading, studying, recording, making presentations, sketching, researching online, taking photos, watching tutorial videos, communicating through email and creating digital portfolios. Once again, the dimension of multimodality is evident in the two previous categories. Although aspects of ulearning and ilearning are not obvious here, it can be inferred that at least some of the tasks listed previously can be undertaken outside the boundaries of the studio. The implication of the existence of Category C is that there are a number of students who, for whatever reason, are unable or unwilling to associate the iPad with their own learning, irrespective of where this takes place.

In terms of usability, how did you find the iPad?

Two distinct categories were identified through the analysis of data (Table 3). Category A consists of views that the iPad was easy to use, and there is emphasis on how uncomplicated this tablet was for the participants. An indicative statement is:

Interviewee 24: “. . . I took it everywhere with me . . . It is handy. You can carry it around with you . . . I think it is accessible to everyone. It [the iPad] is really easy to use . . .”

In Category B, perceptions concur that there were some usability issues, such as difficulties in navigating the interface. An indicative statement from this category is:

Interviewee 11: “. . . I consider that the interface of the iPad is not appealing and one cannot customize it . . .”

The main inference from the above is that it cannot be taken for granted that all participants in this research found the iPad easy to use. This may have been compounded by the fact that no induction was offered to the participating students, because the objective of this research was to solicit bottom-up views without any interference. Another reason for the perceived low usability could be due to the locked-down nature of the devices as defined in the limitations of this study. Instances of low usability—as identified here—inevitably imply that students who espouse this
In your opinion, how does the iPad compare with a laptop?

Five distinct categories were identified for this question (Table 4). Category A comprises views that an iPad is superior to a laptop due to its speed and simpler interface, but not for undertaking some tasks such as typing. The following statement is representative of this category:

Interviewee 21: “I think it [the iPad] is better, purely for the fact that it is faster. You can access everything instantly, and the layout is really simple. . . . If I was writing an essay, I would not write it on the iPad . . .”

Category B comprises views that the iPad complements the laptop. Students explained this in terms of using both devices concurrently, but for different tasks. An indicative statement is:

Interviewee 7: “. . . I would sketch on the iPad, transfer it to the laptop and immediately have it opened in Photoshop for editing . . .”

In Category C, the iPad and the laptop were perceived as serving different purposes: the former is useful for quick access to the Internet while a laptop can be used for more complex learning tasks. An indicative statement is:

Interviewee 29: “. . . I think it’s a very different thing that you would be using it for [the iPad]. It is much more for carrying around and being able to quickly do things like checking emails and Facebook, while on the laptop you can do some serious work like write an assignment or process something using design software . . .”

In Category D, perceptions concur that both devices have negative and positive aspects depending on the circumstances. A characteristic statement is:

Interviewee 17: “. . . OK the laptop has a keyboard and a mouse while the iPad has touch screen and this can be a pro or a con depending on the situation. Like when writing a paper, the laptop is best in that you have the keyboard while for sketching the iPad . . . is best, you can use your hand or a stylus . . .”

In Category E, the laptop is considered superior to the iPad because it has more computing power to process and store related work. An indicative statement is:

Interviewee 33: “For me, it [the iPad] hasn’t got the same processing power to do the things you need, for example to run really high demanding memory software . . .”

From the emerging themes, two things are clear. Firstly, there are divergent perceptions vis-à-vis iPad versus a laptop computer, and secondly it seems unlikely that for some students the iPad will completely substitute laptop computers as a learning tool. Category A focuses on issues of functionality such as speed of access and ease of the interface in comparison to a laptop. Views ranged from considering the iPad as complementary to a laptop, to not as useful as a laptop.

What is your opinion about the apps that were installed on the iPad?

Six distinct categories were identified for this question (Table 5). Category A consists of perceptions that the apps were very interesting because they addressed different wants. An indicative statement is:

Interviewee 5: “. . . I think there was a really good range and nice selection of apps . . . There was something appealing to everyone . . .”

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Table 4: Comparing the iPad with a laptop

<table>
<thead>
<tr>
<th>Categories</th>
<th>Referential (what)</th>
<th>Structural (how)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>iPad is superior</td>
<td>Emphasis on speed of access and interface of the iPad</td>
</tr>
<tr>
<td>B</td>
<td>Complementary to each other</td>
<td>Described combined use of both devices</td>
</tr>
<tr>
<td>C</td>
<td>Serve different purposes</td>
<td>Described different uses for each device</td>
</tr>
<tr>
<td>D</td>
<td>Both pros and cons</td>
<td>Identified uses and limitations for each device</td>
</tr>
<tr>
<td>E</td>
<td>Laptop is superior</td>
<td>Perceived superiority of the laptop based on processing power</td>
</tr>
</tbody>
</table>
Category B comprises views that some apps were satisfactory because they were used for a number of projects, but other apps were not used at all. An indicative statement is:

Interviewee 4: “. . . I had a look at them [the apps] but only used 4–5. Normally, the ones I found easier to use at first, I would then use them every time for projects . . .”

Category C includes perceptions that some apps were useful and others not so because the latter were considered too simple in what they offered. Characteristic of these views is the statement:

Interviewee 8: “. . . I tried them all, some seemed useful . . . I mostly used apps for creative reasons . . . Some apps however were simple and could not be used for design . . .”

Category D consists of views that there were many apps that offered similar features and a characteristic statement of this is the following:

Interviewee 24: “. . . I think there were three or four [apps] for taking notes, and there were three or four for drawing . . . I ended up only using one of each . . .”

Category E perceptions concur that there were difficulties working with the apps and students did not have time to learn them. Indicative of this view is the statement:

Interviewee 9: “. . . I am not the type who will sit and explore everything. If I don’t understand it [the app], then I leave it . . . I didn’t have the time to explore the apps I didn’t understand . . .”

Lastly, Category F consists of views that the apps were not useful overall, and were perceived as having mostly entertainment value. Indicative of the latter is the statement:

Interviewee 12: “. . . I found them [the apps] mostly good for entertainment purposes not so useful for helping me in my studies, they seemed a bit gimmicky . . .”

Inevitably, the iPad tablet is intrinsically associated with the wide range of apps available to users. At the end of the semester-long project, when students returned their iPads, they were asked to indicate the apps they used the most. Figure 1 illustrates the order of preference, from which a number of inferences can be made. Firstly, social networking and utility apps rate higher than creativity and productivity apps. Secondly, it can be assumed from the first category in Table 5 that participating students who found the apps to be interesting and useful did not restrict themselves to the use of social networking and utility apps.

Although some of the participants in this project used a number of pre-installed apps, it cannot be assumed that all students will use them all for their learning. Among the barriers is lack of time to explore. There was also the perception that at least some apps were too simple for learning tasks in art and design, there were several apps with similar features, while others were perceived as having entertainment value.

**Conclusion**

This investigation sets out to identify from the perspective of students the range of perceptions and views about the use of iPads in undergraduate art and design programmes with a significant component of SBL. The uniqueness of this study is that it sought the unhindered perceptions of
students—within the limits of the methodology and research design—and was not based on a specific instructional intervention.

What emerged from the analysis is that a number of participating students expressed a preference for tactile learning experiences as opposed to using digital devices (Table 1). Even among students who considered that the iPad supported their learning, they did so within the context of the preliminary stages of their coursework (Table 1) and often for communication purposes, including social networking (Figure 1). Some students considered that the iPad was useful in few or no situations at all (Table 2). Furthermore, there were divergent views on the value of the available apps. A group of students considered that the apps had limited use or had no time to explore them (Table 5). Interestingly, apps in the “Creativity” category were used less than those in the categories of “Utilities” and “Social Networking” (Figure 1). In addition, some students perceived that the iPad had low usability (Table 3), and the laptop computer—in comparison with an iPad—is more useful for their learning (Table 4).

Subsequently, and based on this investigation, it cannot be claimed that students overall found that the iPad contributed in a significant manner towards their learning, formal or ilearning. When discussing the analysis of data, one of the authors commented that there was no significant “breakthrough” for teaching and learning, while another suggested that student opinions were polarised. Indeed, what emerged is no clear indication that the iPad has some inherent learning affordances that were prevalent among the majority of participating students. Instead, what was identified is a patchwork of uses and often-conflicting perceptions about the use of iPads for SBL. Thus, the claim that the iPad has considerable potential to enhance learning cannot be supported in the context of the bottom-up approach adapted in this research.

This investigation revealed that there are a number of challenges and obstacles in embedding the use of iPads in SBL. It was not the objective of this project to examine the perceptions of faculty, but this also needs to be considered before any comprehensive implementation of iPads in art and design takes place. Prosser and Trigwell (2000) argue that teaching and learning are closely related, and the required alignment is between the lecturer’s and the student’s perception of teaching and learning. To complete this picture and compare the perceptions of students with those of faculty, the research partners will pursue the second stage of the research project with a focus on the perceptions of faculty vis-à-vis the use of iPads in art and design.
References


**Appendix A: List of participating programmes and students**

<table>
<thead>
<tr>
<th>Programme</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA Multimedia and graphic arts—CUT</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>BA Fine arts—FalU</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>BA Drawing—FalU</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BA Illustration—FalU</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>BA Contemporary crafts—FalU</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BA 3D design—FalU</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>BA Interior design—FalU</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>BA Textile design—FalU</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>BA Fashion design—FalU</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BA Performance, sportswear design</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>BA Fashion photography</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>12 Males</td>
<td>28 Females</td>
</tr>
</tbody>
</table>

**Appendix B: List of pre-installed apps**

**Utilities**
- Camera, Convert units, Calculator, Dictionary & Thesaurus, Dropbox, Free English-Greek Dict Box, IStock Photo, Getty Images, Pearltrees, Pintrest, Puffin, Safari, Storybrick, VoiceThread, Wikipanion Offline Reader, Wiki offline, Wordpress

**Social networking**
- Facebook, Skype, Twitter

**Productivity**
- Adobe Reader, Apple official Podcast app, Bamboo Paper, Book Creator Express, CloudOn, Evernote, Evernote Peak, GoodNotes Free—Notes & PDF, Inflow, iPDF reader free, Notes, PaperDesk Lite, Real sticky, Schedule St. HD, Supernote, Wunderlist HD

**Creativity**
- Action Painting Lite, Animation HD EXPRESS, Art gravity, ArtStudio Lite, ColorSchemer, Computer Arts, Computer Arts visualator, Doodle Buddy for ipad, Ibis Paint X-Speed Painting, Illustrator Lite, Instagram, Intaglio SketchPad Lite, Morpholio Trace, myPANTONE, Paper ArtTrends, Paper by FiftyThree, Phi, Photo Editor by Aviary, Photomem, Pixlr o matic, PowerCam, Set Paint Go Lite, Sketchbook Express, SketchTime, Storyboards, Storyboards HD, TimeLapse Free, Typefaces, TypeDrawing Free, Vintique, Zen Sketch

**Other**
- BBC iPlayer, Fancy, FiveStopStory, iBooks, iTunes U, TuneIn Radio, You Player, Vimeo

**Appendix C: List of interview questions**

1. Did you have any expectations on how the iPad might help with your studies?
2. Based on your experience in using the iPad for one semester, how did you find it for your studies?
3. In your opinion, in what kind of situations do you think the iPad can be useful for learning?
4. In terms of usability, how did you find the iPad?
5. In your opinion, how does it compare with a laptop?
6. What is your opinion about the apps that were installed on the iPad?