# CAN THE USE OF AN I-POD IMPROVE THE LEARNING AND TEACHING PROCESS FOR DESIGN STUDENTS?

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## ABSTRACT

With the adoption of virtual learning environments (VLE) such as Blackboard, the ability for students to capture content from lectures for reviewing has been improved, however, with the advent of ubiquitous devices such as I-Pods and mobile phones with the ability to deliver movie style content, the opportunity for multiple viewing of teaching materials has increased significantly. This is due mainly to the portability of the products and the ability for them to store lifestyle choices such as movies, music, television broadcasts, and podcasts. If so, why not utilise mobile devices to re-deliver the lectures they need to understand and build on for future project based work?

Students today may have to manage significantly more activities in their lives than ever before, with a considerable amount of students having to work part time to supplement their academic endeavours, this unfortunately may steal time away from their academic "self managed time" and promote surface learning rather than a "deep dive" approach to projects.

30% of students who participated in LSBU's research "*Survey of higher education students' attitudes to debt and term-time working and their impact on attainment* " Universities UK 2005 were averaging more than 20 hours work per week. Some of the symptoms of low attainment may be that they do not have the time to focus on their study by "traditional" means alone.

Utilising mobile technologies such as IPods for viewing the content from lectures and demonstrations could increase the opportunity for students to access the content. This does not negate the need for "live" interaction with their academics, but allows students to fit smaller chunks of self-managed time around their lifestyle and play / pause / play content to increase transmission of the information. The research is looking at the pedagogic benefits of the increased opportunity of learning time bought by the portability of hi resolution multimodal lectures, which are supported by the student's personal classroom notes.

The research has been driven by an initial questionnaire, which will be followed up with mobile media ready lectures which students can use to "prototype" the process. A second questionnaire is then given to the participants to review their appreciation.

There is also insight into the practical realities of reproduction of lecture content into mobile ready formats. This is an important aspect if the content has to integrate static slides, text, animations, YouTube style movie clips and web links that allow the students to expand their knowledge by further research into the subject matter. An exploration of any benefits of the mode of delivery can be fed back into the live lecture itself, with the possible improvement of the initial lecture content itself.

*Keywords: New design education paradigms, Best practices in design education*

## 1 INTRODUCTION

This paper is intended to focus on the pedagogic benefits and practicalities of production of podcasts for design students, the research project that this paper is based on both empirical and literature research into the production of podcasts, the benefit to both academics and students as a learning and teaching tool. This research was part of the unit four of a post graduate certificate in higher education (PGCHE) at London South Bank University. The research looked at current models of thinking surrounding the current emergence of podcasting in education and exploring how the content delivery could be adapted to suit design students. Questionnaires were given to the students in both years one

and two to garner understanding of their experiences with the technology and their teaching needs. A second questionnaire was given to colleagues in the design teaching team, this questionnaire had similar initial questions to the student questionnaire for example usage of podcasts and the technology in question, but also more pertinent questions regarding how long would academics be prepared to spend in the creation of podcasts, more information about the research techniques and findings is written in a secondary paper, which is intended for the PGCHE submission.

Another important factor in the choice of this research is that students who participated in LSBU's research *"Survey of higher education students' attitudes to debt and term-time working and their impact on attainment"*[1] indicated that up to 30% of undergraduate students were averaging more than 20 hours work part time per week on top of their studies. Some of the symptoms of low attainment may be that they do not have the time to focus on their study by "traditional" means alone, and new models of content delivery and self managed learning have to be provided.

## 1.1  Attainment

Wood [1] states that significant numbers of students have to support their studies by undertaking part time work during term time, this can have significant implications on student attainment and on occasion progression.

Not only do the implications of this situation on some of today's students affect work, life and study balance, students may find that their time management is seriously affected as they may not have significant blocks of time to undertake a deep dive approach to their studies; anecdotal evidence suggests that even if students incubate good design concepts for assignments, sometimes time can run away from them due to fitting in work activities, which can affect the quality of the realisation.

Considering that current academic programs combination of contact and self managed time adds up to about 40 hours a week (the equivalent to a full time job) and for disciplines such as design, where there is a combination of both intellectual and physical skills; these may take longer to learn, implement and then evidence as presentations and physical/digital models. If you add working times of 12-25 hours a week, suddenly we arrive at a workload that may be difficult to sustain for some students. If some of the academic content they have to study can be accessed in smaller more frequent chunks, it may clear some time for realisation tasks.

## 1.2  The use of VLE and mobile technologies

There is significant use of Virtual Learning Environments (VLE's) within the higher education sector. The intention of use varies from repository of lecture content through to adoption of a virtual classroom. Software providers are now developing apps (applications) for the iPod touch and iPhone devices to allow ubiquitous learning and study management; these systems are not fully inclusive, you have to buy in to an Apple product to have access, however, this is a start of mobile devices becoming smarter and adopting the phone "application" approach to their usability, eventually most mobile phone will adopt this form of usability or a derivative, and therefore the inclusivity of this approach to learning and teaching will expand.

The use of ubiquitous technologies and has been successfully adopted in both secondary and some higher educational establishments in the UK, with significant research being carried out by the Impala project [2] and books such as Podcasting for learning in education [3] which promote good practice and suggest both technological know how as well as pedagogical rationale, disseminating current information for academics to learn a new way of facilitating learning. It has been stated that tools such as VLE's and podcasts can be medication for poor attendance [4]

Until the emergence of a replacement for VLE's it is envisioned that they will be the main platform for the dissemination of 'in house' podcast material, partly due to issues of intellectual property of the university.

## 2   LIVE INTERACTION

Although not all design related teaching activities could be "reverse engineered" into podcasts, a significant amount of teaching can be related to the student and tuned to the individual during tutorials. A generic response may not be adequate, for the student needs or the direction of the academic student relationships.

If podcasts could be used both for students self managed learning activities as well as in class scenarios, negative implications may occur; academics already have issues with students using mobile

phones in lectures and some even have a "phones off" rule, there has be a cultural shift in the academics control over this situation and the students yearn for learning; using methods that that may increase engagement in a scenario that is beset with time management conflicts.

## 2.1 Feedback

When teaching processes such as technical or software based activities, a significant amount of time can be spent reiterating process descriptions or giving micro demonstrations to top up the student knowledge and understanding, this can soak up considerable time for the academic and improvements can be made to free up the academics use of time more appropriately and empower student learning either as directed within a teaching session or during self managed time. The use of multimedia presentations may allow the student to support themselves at their own pace, improve confidence, and allow the academic to control the creative process within the project more efficiently.

During the design of the questionnaire, pertinent questions were asked regarding students ownership of devices capable of showing audiovisual media, the current use of educational podcasts that students may seek to increase their learning. Unsurprisingly all students in the survey had devices that could play podcast or movie content. Surprisingly the sample group at the time of filling in the questionnaire did not use podcasts for personal use; however, to counter this, in addition to the book list in the unit guide, links for podcasts, blogs and YouTube clips were embedded at the back of traditional lecture material for further reference. Observations of how students reacted in their coursework after delivering technical content regarding manufacturing processes using flash animations, suggested that some design students can be early adopters of the new uses of teaching technology. Students started to use YouTube clips to supplement their learning, and in effect the only issue was the formality of referencing the clips in their coursework not their understanding.

## 3   PROCESS RATIONALE

After careful consideration it was decided to use Apple's domestic movie creation tool iMovie to create the process demonstration podcast, although current recommendations suggest using Apple's Garage Band and the open source audio capture software Audacity. The rationale for this was that if the adoption of the use of podcasting was going to range across the academic cohort of both early and late adopters the simplest tools with a smoother learning curve should be used. The questionnaire research carried out as part of the PGCHE course gave insight into students needs for podcasted material; a dominant request was for process animations and demonstrations of a technical nature, it was also an aspect of teaching that required repetition.

It was decided to create a podcast of the silicon tooling process used in the design and development industry to create multiple artifacts, elastomeric parts and water clear parts; not only is this process potentially messy, it can be fraught with opportunities for the process to fail. The rationale behind using this process was to benchmark the empirical research on podcasting, and that there was a blend of factors and stages that the student had to go through. To make a generic podcast that could be subsequently supplemented with other forms of information such as data sheets, risk assessments, student analysis of the part to be tooled, these would be held on the blackboard site for the unit in question.

The podcast itself was designed to combine moving imagery and still photography depending on the content stage of the demonstration, this was particularly effective in reducing the podcast time to about five minutes, which is about the time recommended in the 'podcast development model' [5] as advocated by the research carried out by the Impala project, it also is about the length of a piece of music, so it can be embedded into to the students listening/watching experience.

## 3.1 Tools used

A wide range of software and digital capture devices were used in the experimentation of the production of the demonstration podcast; although not all of these would be necessary for every podcast, it is indicative of the software tools that may be needed to provide image rich, well designed visual podcasts for design students.

- Digital camera
- Digital movie camera
- Camera lighting
- Apple IPod Touch, (updated to IPhone 3gs)

- Adobe Captivate
- Adobe Photoshop
- Adobe illustrator
- Rhinoceros
- Apple I movie
- Apple QuickTime

## 3.2 Examples

It was intended to create a range of podcast types to test if one content type had significant benefit over another. Due to time constraints only two of the three types identified were created; they were the podcast of a demonstration process, a conversion of PowerPoint slides into something that would be pod-ready, and finally an end of year podcasts showing a student event which was intended to reinforce camaraderie and have the added benefit of becoming some publicity material for the design courses at LSBU.

The tooling podcast was not narrated over but instead was given some background music to aid the flow of the process, and simple "strap line" instructions were given; this may restrict learning for some auditory learners but considerations of the environment where the podcast could be viewed prior to the activity itself had to be included. This was counter to the current examples of vodcasts (voice only podcasts), and suggested pedagogic benefits of vocal narration [6] where the academics voice has dominance in the process, considering the time compression of the podcast demonstration, 2 hours worth of speech compressed into five minutes, a simpler route was considered. The intent was to test the content in a voiceless form, albeit with a soundtrack, gain feedback, and then update the content if it was found to be unsuccessful.
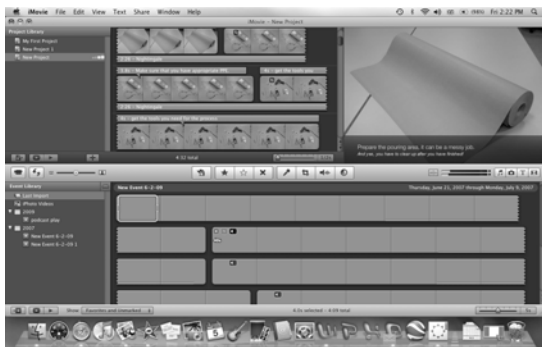


Figures 1. & 2. screen shots from iMovie

## 3.3 Time compression

A significant benefit of time compression can occur if demonstration podcasts are created prior to the academic teaching cycle, for example the demonstration podcast for the creation of a silicon mould tool took a combination of 3 hours of filming, approximately 4 hours learning the software and transferring film data from both digital video and digital still cameras. The editing process, however, had significant time investment, and various iterations were created and tested on an iPhone for clarity and to test the "rhythm" of the process demonstration; re-filming did not occur, although various digital still photographs were taken to supplement perceived gaps in the process.

## 3.4 Don't forget your pen

There is a concern amongst colleagues that the adoption of podcasts would negate the use of written notes during lectures or subsequent viewings of the cast material. To counter this, a design of a podcast workbook was created to try and embed a ritual with the students, if developed this could be part of a formal assessment process or alternatively a working guide in the "students words" that allows them to recollect their insights and reactions to the content given in longer podcasts. Refer to Figures 3 for an image of a student using a movie clip on his mobile phone to provoke creativity for a design project and Figure 4 for an image of the Podcast workbook concept.

Figure 3.



Figure 4.

## 4    CONCLUSION

The empirical research allowed understanding of the timing implications of creating podcast material for design students, the potential benefit to student learning could be dramatic, promote better engagement across all levels of students.

Depending on the content, podcast production could be as simple as a "save as" command for the conversion of traditional PowerPoint files, for material that will be updated yearly, through to multilevel time consuming movie style podcasts, for content that has some permanence in the curriculum.

Consideration would have to be given to the advancement in the technology as during the production of this paper various new iterations of ubiquitous devices have come to market, and the content may have to be adapted to suit these platforms.

Continuing with the research would need investment at a faculty level and would most likely require time to concentrate on content areas that would gain significant improvements in student learning via the use of podcasts. Incremental benefit has yet to be fully tested across the academic levels through this research, but web-media coverage, literature and anecdotal evidence suggests that this may be a form of learning and teaching material that becomes the norm in the future.

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