

# **University of the Forest: a case study into the ways in which Education Studies students use technology as learning and teaching tools**

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## **ABSTRACT**

*Higher Education as it is experienced by practitioners and students seems often to be driven by competing ideas about technology, pedagogy and employability. Often these are drawn together as the dawn of a new technological age suggests new ways of teaching and learning, utilising different tools and approaches are required to prepare students for life in an information age. Increasingly, concepts of a new generation, a net-generation, are cited as drivers for change, demanding greater use of technology and innovative pedagogical applications to reflect these technological developments. This case study explores what happens when a cohort of second year undergraduates on a BA in Education Studies are given open access to create a learning object using any technology, and any pedagogical approach, they choose. The focus of the project is on enhancing learning through technology; as all the students would fit Prensky's (2001) contentious label of digital natives to what extent do they illustrate a shift in how technology can shift what learning and teaching are? A Taoist perspective highlights the ancient origins of student-centred learning as a point of resistance to the suggestion that technology has only recently created opportunity for social constructivist pedagogies. The paper's title refers to a forest, this refers to a collaborative endeavour that hoped to link the projects with an employer, offering a sense of authenticity to the projects as they had option to help the forest based charity enhance its online presence. Ultimately, few projects did, and the projects could suggest 'change' is not clearly student-demand led.*

## **KEYWORDS**

Socio-Constructivism; TEL; student-centred; Taoism; Higher Education

## Introduction

*When I hear, I forget*

*When I see, I remember*

*When I do, I understand* (*The Tao of Teaching*, Nagel, G. 1994. p.13)

Ancient Taoist principles may seem a distant point from which to embark on a study of a recent phenomenon, digital technologies, heralded as a revolutionary and transformative period in education. However, the focus on an involved and participatory element to learning and teaching is presented by advocates of technology as a new way of learning and appears fundamental to a range of approaches that inform this research and the Higher Education sector in general. The discussion here is on how learning through, and with, technology is experienced by students and the choices they make in creating learning objects and learning opportunities.

The paper is premised on a concern that amidst the developments within technology enhanced learning the push toward greater use of technology is perhaps operating from a position of a perceived student demand for technology that makes ambitious presumptions about student skills while prioritising technology over pre-existing skills and approaches to learning and teaching. The emphasis is on locating what students actually use, and what evidence there is to suggest that the digital age is witnessing a revolution in what students perceive as meaningful pedagogy.

In designing the module the element of student-centredness was a central concern, using Biggs (1996) principles of *constructive alignment* and making direct reference to a sector-wide emphasis on employability skills and awareness (Pegg et al, 2012). A partnership with a local charity created an element of authenticity to the projects offering students the opportunity to create learning objects that met the organisation's criteria for their own web presence. Current discourse in technology and corresponding pedagogical applications (Laurillard, 2008, Beetham & Sharpe, 2007) form key learning approaches in the module and these are presented alongside employability factors through discussion with the forest based charity.

The discussion here highlights similarities between the approaches of the three perspectives, student-centred constructivism, the emphasis on employability and technological applications.

### *Yin & Yang as a metaphor for pedagogical transformation*

Taoist conceptions of *Yin* and *Yang* offer defined, yet opposite sides of the same whole, and they offer a useful model for analysing the development of new ways of learning that encouraged the formation of this project. *Yin* encompasses a pedagogy based on

'leading out' (Nagel, 1994. p.2) and is based on '*sensuousness, intuition and subtlety*' (p.2) and can be equated with the student-centred approaches of social constructivism. Yang is based on pedagogy of '*telling*' and is '*absolute, rational and aggressive*' (p.2).

In this project the aim was on the *yin*, student centred learning, including choices in design, technology and form of assessment. The aspiration was for emancipatory approaches utilising the students' own skills and interest. Yet, the module was institutional by definition, and the majority of online delivery was through the VLE, a *yang* dimension.

For Mayes & deFreitas (Beetham & Sharpe, 2007) this conflict between pedagogical manumission and institutional control, or '*dimension of locus of control*' (Beetham & Sharpe, 2007. p.21) presents two polarities; Peer to peer learning (the *yin*) '*empowers learners...where they make their own design decisions*' which is opposed by the VLE (the *yang*) which aspires to, '*standardisation...at the institution-in-control end of the dimension*' (Beetham & Sharpe, 2007. p.21).

A similar dichotomy characterised the findings of the TESEP (Transforming and Enhancing the Student Experience through Pedagogy) research that located, '*...a kind of power struggle between a learner-centred pedagogy agenda...and a more traditional subject based curriculum delivery approach*' (Mayes et al, 2009. p.217). The conceptualising of such polarities has been described in terms of generational change (Prensky, 2001), considering that, '*Today's students think and process information fundamentally differently...our students' brains have changed*' (Prensky, 2001, p.1). This has been refuted by other research (Jones & Shao, 2011) that found no evidence suggesting fundamental shifts in pedagogical expectation although the principle found fertile ground for debate in the sector, being likened to an, '*academic moral panic*' (Bennett, Maton & Kervin, 2008. p.782).

Beyond age and location the pedagogical choices also offer a site of conflict between competing approaches. TESEP highlighted a '*modern pedagogical consensus for socio-constructivist thinking*' (Mayes et al, 2009. p.209) while similarly recognising the significance, real or imagined, that '*...technology was an enabling factor making it easier to implement the learning principles*'. (p.210). Such recognition of the potential benefits of technology in the *power struggle* is positive; yet, for Biggs (1996) although the emphasis on social constructivism was a necessary antidote to objectivist thinking and allowed acknowledgement that students bring, '*an accumulation of assumptions, motives, intentions and previous knowledge*' (Biggs, 1996. p.348) the '*dominant theory-in-use*' (Biggs, 1996.p.348) was one of transmission, repetition and memorising of information, with a concentration on quantitative measures of assessment.

Recent developments emphasising the significance of wider, transferable employment skills through Higher Education (*Students at the heart of the system*. dBIS, June 2011) focus on technology and pedagogy and the HEA guide *Pedagogy for Employability* (Pegg et al, 2012) identifies similar concerns. The contention here that, '*constructivist approaches to learning & teaching are well aligned...and develop employability because they encourage exploration*' (Pegg et al, 2012. p.32) finds its own *yang* in the perception of current practice too often being '*didactic [and] instructional*' (p.32) and that any move to newer pedagogies would necessitate. '*difficult transitions for teachers and students schooled in more traditional methods*' (Pegg et al, 2012, p.32).

Generating a module ethos that allowed for emancipatory uses of technology, essentially Yin in nature, was the ideal in this project. I was also aware of the constraints of the surrounding pedagogical landscape, the institutional requirements and the yang like didactic experiences that formed much of the students' educational modeling. The issue seemed to be, where, amidst the competing ideals, did the students see learning and pedagogy, and what role did they give to technology within this?

The research was framed by two specific questions:

1. What technologies did students select for the projects and with what rationale?
2. Did students demonstrate preferences for particular pedagogies that supported or challenged current practices?

## Defining the project

In this case study, Education Studies in a second year ICT in Learning & Teaching module are presented with a project based assessment that encourages the utilisation of technology, any technologies they choose, in creating a learning object. A critical evaluation tool I designed for the project frames evaluation in five distinct areas. These are:

*Technology* – looking at the choice of technologies used in the project, and the implications for production and consumption.

*Curriculum* – details of what they hope to teach, not necessarily from any formal curriculum, but more widely as the path of learning envisaged.

*Pedagogy* – the choices students made in terms of theoretical concerns over differing learning and teaching perspectives, both formalised learning theory and also considerations of formal/ informal alternative approaches.

*Assessment* – linked to pedagogy, the ways in which students anticipated assessment (self, tutor, peer) would help indicate the processes involved in designing the projects.

*Environment* – involving a broad appreciation of the places, environmental considerations, around where learning and teaching would take place, and the impact this would have on the learning experience.

The focus in delivery was on utilising technology in the module design. The module operated much as other modules on the programme with 2 hours of weekly class based delivery over a 16 week semester. Online delivery was considered, but had restrictive implications in terms of mandatory attendance, student expectations, no online classroom endorsed by the institution and limited access to the web across the cohort.

Materials were presented through video, animation, tutor/student created video, journal articles, blogs, tutor created eBooks, and social media. The Moodle VLE was the central platform for all delivery, although attempts at creating variation in online spaces such as wikis and social media (Twitternars – seminars using Twitter) were attempted, but with limited participation. A Blog was introduced to disseminate the projects and to encourage students to share their work and comment on each others materials.

## Methodology

The research involved analysis of a single year group on the BA in Education Studies, involving 19 students between the ages of 19 and 33. A Case study approach allowed study of the group, and the position of the researcher as module tutor had the advantage of familiarity and access, though had the added issue of reflexivity in relation to the likelihood of students being open about any negativity they may have felt toward the project.

To attempt to redress the extent to which the relationship of the researcher could affect the findings the project questions were selected to focus on the choices that students made in using technology, and the rationale for these choices, rather than looking for responses based on their attitude to technology or to the project format as a whole.

A range of data collection methods were used, and the focus on technologies and their use was taken as a guide to the ways the research could also utilise technology to gather respondent feedback. These included wikis, VLE forums and chat sessions, an online feedback survey tool, social networking sites (Facebook and Twitter) and email. The initial focus had to be move from what Weller described as 'cautious experimentation' (Weller, M. 2011. p.52) to attempt a clear utilisation of online and digital tools to collect data and to involve the respondents fully in the research process. Weller suggests a similar pattern to traditional research; plan, collect data, analyse and reflect (p.56) but with digital technologies being incorporated that are perhaps more '*challenging to our notions of scholarship*' (p.56). The research was firmly focused on qualitative data and the ways in which students experienced their progress through the module with a concentration on individual reasons for selection of technology and any pedagogical rationale.

Despite a willingness to explore new means of data collection and interaction, the more formal and institutional tools encapsulated by the VLE were most popular and had by far the greatest success. The introduction of a shared authoring wiki had least response, with two visits and no comments. The VLE forums were accessed by 100% of respondents, email by all but one. Twitter had formed part of the delivery in one session, and had 8 active students, although none after the session task had completed. Facebook was perhaps the most surprising, it had been introduced as a discussion topic and I had mentioned that I had a page but without any suggestion about utilising it in the sessions. Despite this, 14 of the 19 students befriended me (the other five do not have Facebook accounts). The number displayed is relatively low at 38 exchanges, although it was clear in later discussion and in f2f interviews that there is a separate private group that operates for the students in this group, and that was used as the most active communication and collaboration tool for the ICT module, for the

course in general, and for social reasons. During the research this became known as 'the secret group' and played no part in the data collection, though its presence indicates a wider use and awareness of digital tools and perhaps indicate a separateness between informal/ private application and the ways in which the module expected students to utilise technology.

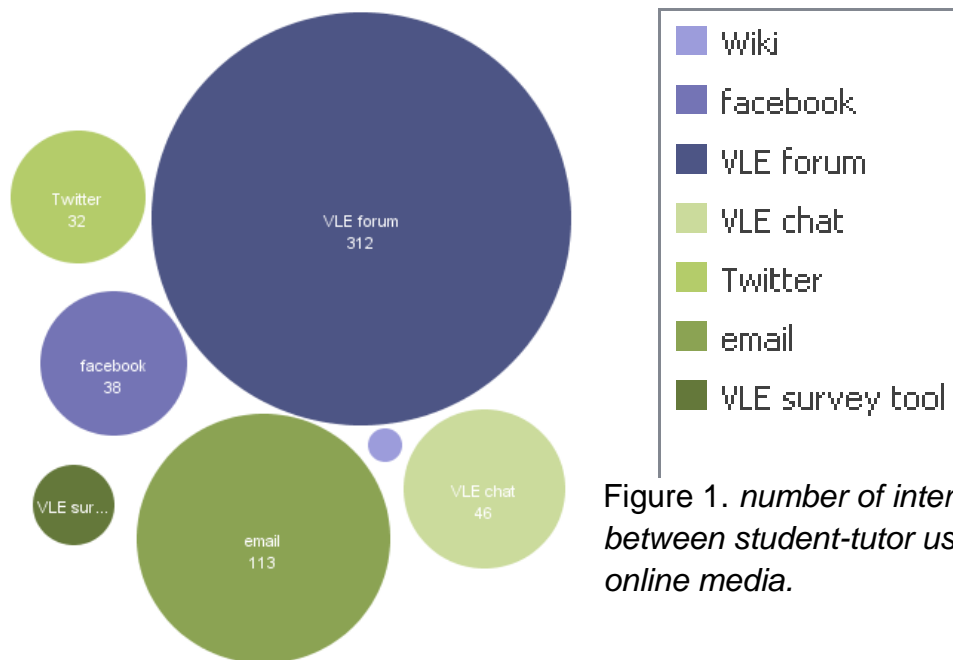


Figure 1. *number of interactions between student-tutor using range of online media.*

### Latent and manifest content

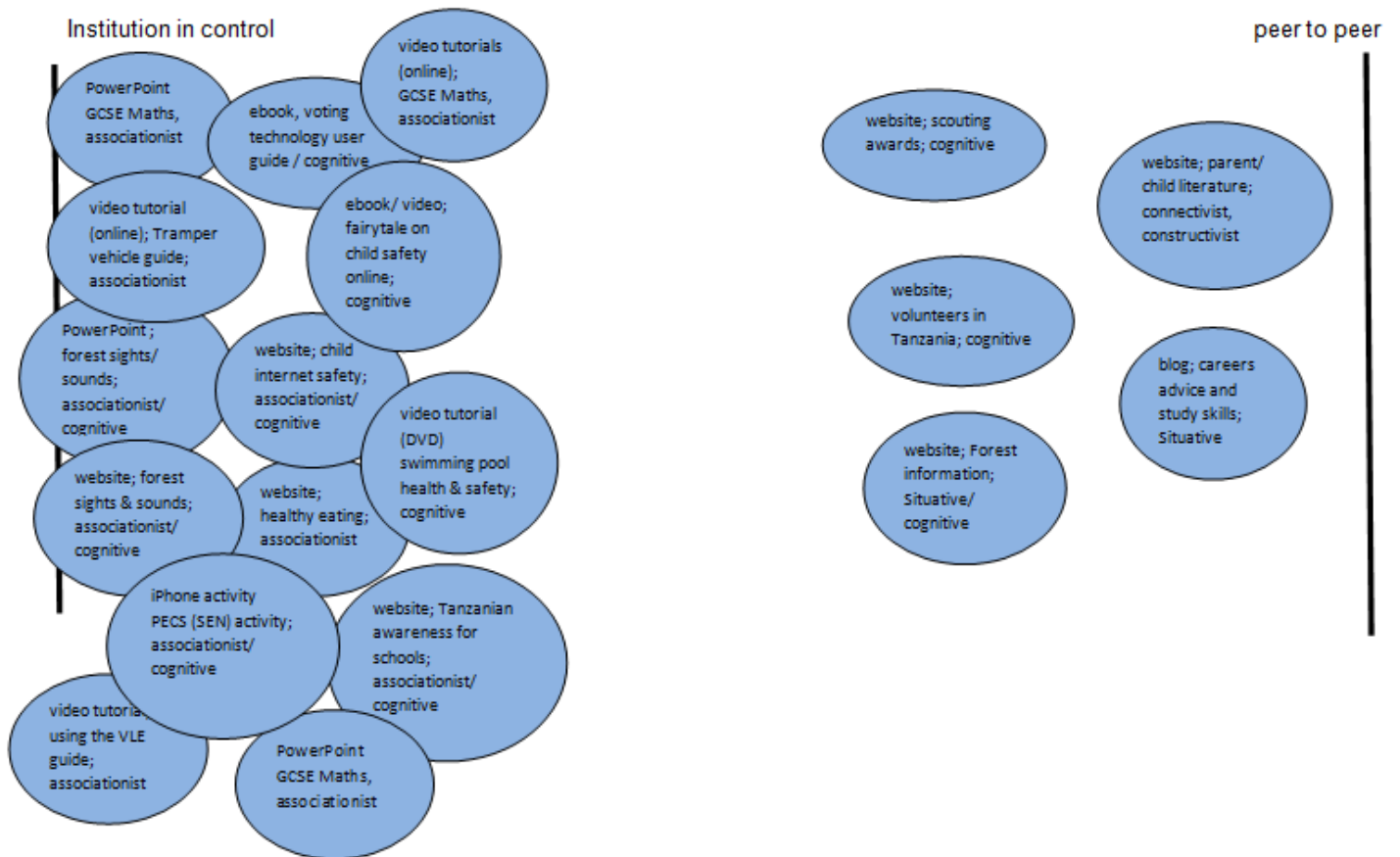
In exploring the range of technologies and the rationales for their use in this project it was clear that data collection was operating at two different levels. These levels could be related to the concept of *latent* and *manifest* content (Garrison & Anderson, 2003. p140). These distinctions are useful here as there are the *manifest* artifacts, the learning objects created in the projects, survey responses, forum entries and blog posts that, *'reside on the surface [and are] easily observable'*. There are also the less overt, less clear but highly significant hidden routes that lay behind the choices made and the form that the projects and comments took. This *'latent content'* is evident as *'...not overt products, but as covert processes'* (p.140) and here is necessary in allowing reflection on what considerations, what practices and personal approaches formed the choices of technology and pedagogies that the students took. This form of data came largely through the proposal documents, in which students were asked to evaluate their projects through the five stages of assessment, technology, environment, pedagogy and curriculum. In addition, interviews with students and qualitative data from the VLE survey tool were used to explore the ideas behind the products created.

Analysis of the data involved both manifest content, listing the forms of each project and the stated pedagogies of the students in relation to their choices. Latent content was found through the qualitative discussion through face to face, online transactions (VLE, facebook and email) to enhance the findings and attempt to reveal the processes behind the learning objects created.



## Findings and discussion

The first manifest approach here is locating the projects on an infographic illustrating the dimensions suggested by Mayes & deFreitas (Beetham & Sharpe, 2007) of peer collaboration at one end, and ‘*institution in control*’ (p.21) at the other. It is not suggested that there are clearly measured value markers between the two poles, but where evidence of institutional emphasis is found, this is used to justify alignment on the table.



### Video Tutorials & PowerPoint presentations

The alignment toward the institution on control end of the spectrum is significant and while the introduction of new technologies creates variation in delivery there is a very clear alignment with notions of a knowing teacher, a defined concept of knowledge and a clear requirement of what knowledge should be transferred in the majority of projects.

The selection of video tutorials and PowerPoint presentations was significant in being the choice for those students that considered they had the least interest in the use of technology. None of the students creating these video tutorials had social network accounts before the project, and their feedback on technology in education was mainly on its uses being *'probably significant in the future'* (male, 19), with a concern that, *'I'd prefer books really because I know what to do with them, it is clearer, but I know technology will be more and more useful, especially for the younger generations'* (female, 20).

A strong preference for *associationist* (Beetham & Sharpe, 2007) pedagogies was prevalent, alongside cognitive as an indication of the importance of *knowing* specific knowledge.

In essence, the introduction of technology here was based on the ways in which the students' targeted audience could access pre-defined information. In every instance, these projects didn't use forums or feedback/ collaboration opportunities. Despite discussion in the proposals regarding the potential for social media, the video tutorials were presented in 'stand alone' formats and designed for attachment to the module VLE, or in the case of the Trumper vehicle to the charities parent website. In creating the Trumper video, a *'right way of doing it'* was key and *'using the video was the best route, because even when the technology was being mastered, it is useful to know what each of the stages of learning needed would be'* (Student, male, 19). The choice of the topic was something again directed by a clarity related to the pedagogy involved, *'I looked to make a clear guide, clear instructions, that anyone could follow, without any need for discussion really'*.

Overall, the focus of the students creating video tutorials could be characterised by a limited inclusion of pedagogy beyond the associationist, behaviourist (Beetham & Sharpe, 2007. p.21) approach. It would be tempting to consider that the students here are in some way less focused on the uses of technology in their own lives, so also less able to see the potential uses for their own and prospective students learning in the future. Yet some of the issues they were best able to respond to responded to very real concerns, notably to do with access in their own communities. The health and safety in swimming pools tutorial was the only one example of the projects using CD-Roms, and this was based exclusively on the students' recognition of the restraints she had in her defined client group, *'I asked the children's parents if they would look at these [tutorials] if I put them on a website, or on a Youtube channel, but they didn't all have internet at home so I decided to make the material available on DVDs. It costs a bit more, but the parents all had something they could play discs on, but most could not get easy access to the internet.'* (Student, female, 22).

## Websites

The selection of websites as the main technology characterised all three projects at the peer to peer end of the spectrum with the clearest indication of a student-led approach. The ReadUnite website was interesting in that it was designed for peer to peer interaction, even though it had a section included for teachers. It was the latent content, the rationale for this, which set it apart from the *institution in control* projects. The student described the teacher section as a collaborative space where practicing teachers could add knowledge of how the curriculum operated, alongside new initiatives such as synthetic phonics. The inclusion created a space where, *'teachers could join in and make some suggestions about what books they use, and also add developed ideas about the way children are taught now, it's differences form when we learned literature... It's not telling, or teaching, it's for additional information and another way of looking at things'* (student, female, 27).

It was significant that after a trial period some of the elements were seen as problematic by the teachers, notably a self-assessment tool that gave details of reading age through an online questionnaire. The response was positive from the users, but, *'the teachers expressed some concerns that it was something they should do, not the children or the parents...I felt they wanted more control, but that is not the pointy of the website, it is meant to open up learning to all of us'*. This was the only project to consider connectivism as a learning theory, and while revision of the proposal aligned more with constructivism the notion of *'creating learning for all, so there was no group in charge, we all shared our own experiences and ideas'* offered an example of a developed awareness of pedagogical opportunity.

Four of the eight websites created represent *institution-in-control* perspectives. It was clear that technology choices alone could not be seen as determining a new way of approaching pedagogy. The focus was often on in-class delivery, and had a very prominent teacher presence, *'using websites makes the kids like it more, and gives the teacher chance to use modern resources, not just books'* (Female, 22, *Healthy Eating* website). It may be significant that the choices at this end of the spectrum did largely involve school-age children as users, and although this led to inclusion of a newer technology, it did not involve new forms of pedagogy.

### Back Channel Learning

When looking at the production of materials and the perception of how these represent exploration of technology it was clear that the actual product was not necessarily the most useful point of analysis. *Back Channel* originally described the ways in which people offered affirmation and challenge within spoken conversational exchange (Yngve, 1970) but has more recently become the practice of using social media/

computer mediated approaches to comment on a central discourse, '*...the new conversations that audiences create during a presentation*' (Atkinson, 2009. p.x). Here, I have used *back channel learning* as the descriptive term for the learning that goes on behind the actual development of the central project. It is, in essence, the learning that learners undertake independently, through social networking sites and an informal learning community for development of skills.

This was most notable where students who selected ambitious projects that they had not done so before, most significantly websites, selected these based on an idea that the information required to complete these projects was available online, through Youtube tutorials, blogs and related online, free to access help guides. Where students had chosen to create a website for the first time, the sense of being able to access a range of support and knowledge, and free to use website building functions, was significant in helping them feel confident in pursuing projects requiring 'not yet known' skills.

For a complex project, involving over 80 hours independent research and development, the issue was one of time and effort, but not access to skills and knowledge. A website for children using internet safety as a theme utilised a range of back channel learning,

*'the website took a long time, but the more I did, the more I wanted to use. I started with images, but then needed to know how to embed videos, that meant having to edit the videos to get the right length, and using camtasia, then going back (to the web) to find out how to change that into an MP4. I didn't know any of that stuff, but all of it was linked with each other to make the website how I wanted it to be...it was Facebook sometimes, the software had a blog attached for problems, then other searches gave me video examples, like Youtube things people had made'* (Student, Female, 20).

The volume of work indicated a commitment to utilising technology, motivated by the perceived relevance of the use of technology, but significantly it was an awareness of the potential for *back channel learning* that characterised the more ambitious projects. In six of the eight websites devised, the amount of work involved was considered to be over 50 hours. Even the one student that had previous web design experience, totaled over 50 hours as they expanded their skills to include additional fonts and new skills in embedding videos. None of the hours was spent in formal learning, using social media and collaboration.

In one example, the student had 'outsourced' the web design element of the actual web structure, but had then spent significant time themselves on sourcing material to include on the page. The form of *back channel learning* seemed shaped by the student's

exposure to a more expert discourse,

*'My partner did the outline for me, because I wanted this to look professional, to be something I could use in the future, not an amateurish thing. I started to look at doing it myself, there was too much to learn...so in the end I thought why not ask my partner, it seems sensible to use those skills... I had to develop material that matched the professional look of the site, so I used professional sites and used these to build up my own ideas.'*(Student, female, 27)

Significantly, not all students utilised this approach. The less skills students considered they had in technology, the less time they believed they had spent on the project. It may be that the opposite would have been expected, though what was clear was that in the cases where learning/ research/ development exceeded 30 hours, the majority of the work was informal, independent and online.

One student comments that, *'I still do not fully embrace technology (maybe that's an age thing!) and although I see that it clearly has a number of benefits I do not enjoy using it all the time. I think it divides the classes between those that are super comfortable with it and those who are not. Facebook was used by many for the peer reviews because it 'was easier' ...some people in our class do not use social media and so were isolated from the group and had to find an alternative way to meet and chat via technology'* (Student, female, 32)

Individual responses were apparent, though no patterns related to age, gender, ethnicity or subject area were identified. *Back channel learning* did make significant differences to the quality of the projects that were produced, however, and benefits of increased 'comfort' with utilising technology (in informal, non university setting access) made significant differences to the quality of projects produced at the technical level. What is less clear is the extent to which this exposure to outside learning is able to reflect higher order thinking skills in critical analysis in non-technology focused projects.

Initially, it seemed that this challenged Jones & Shao's (2001) research in H.E. that there is *'no consistent demand from students to changes to pedagogy ...no pent-up demand amongst students for changes in pedagogy or of a demand for greater collaboration'* (Jones & Shao, 2011. P.2). Despite significant use of informal learning via social media and web based resources, they did not suggest this was something they wanted, expected, or considered necessary within the course itself.

When asked what the most important things to consider when using technology would be, the responses indicated reservations of how reliable, and how effective, 'technology' could be.

## Own Learning and perceived issues for 'future students'

Some of the discussion related to the ways in which the students utilised technologies, seemed rooted to traditional 'talk and chalk' approaches. Initially, the findings seemed to suggest that in the face of the student demands for increased technology this may have been due to an anomaly, perhaps based on a non-traditional learning set, or a reliance on meeting their perceptions of what the course itself required, modeled by the other modules and their approach to assessment. However, other research indicates that this less than enthusiastic immersion in technology is perhaps not so uncommon. Bennett, Maton and Kervin (2008) highlighted how *'only a minority of students were engaged in creating their own content and multimedia for the web, and a significant proportion of students had lower level skills than might be expected of digital natives'* (Bennett, Maton & Kervin, 2008. p.778).

The forms of delivery, the inclusion of various perspectives of learning, from associationist to constructivist, situative and connectivist all appear across one or more of the projects the students created. There is nothing new here, as both Laurillard (2008, p.7) and Mayes and deFreitas (Beetham & Sharpe, 2007) highlight how various technologies have relative strengths and applications dependent on the contexts and learning situations in which they will be used.

The projects indicate that the focus on technology is at least as significant as the choice of pedagogy. Claims for technology introducing new ways of learning, coming through the demands of students to be able to utilise technologies they are familiar with, to drive learning in ways that meet these needs is compelling, *'Now that peer-to-peer learning is facilitated in a powerful way, and on a global scale, through new social networking tools such as blogs, wikis, social bookmarking and folksonomy, we see how learning can be socially situated in a way never previously possible'* (Beetham & Sharpe, 2007. p.23).

Yet, the extent to which the availability of these tools is making significant differences in what learning is was not clear during this project. The amount of work students spent on developing their own technical skills was significant, with clear evidence of how this learning was often self-directed and utilised greater access to the social networking than was evident in the projects themselves. Yet, this still formed less of the learning process than did discussion with friends and family and reliance on the tutor materials on the VLE. Recognising the implications of the VLE as a technological practice that is often seen as having an, *'emphasis on standardisation...at the institution-in-control end of the dimension'* (Beetham & Sharpe, 2007.p.21) contrasts with the emancipatory zeal of the collaborative tools, though the response of the students highlighted a limited appreciation of the new possibilities.

## Conclusion

The aim of the project assessment route was to allow students the opportunity to consider the ways in which technology could enhance learning. The amount of work that went into the projects indicated the benefits of using technology, both as a motivation as it linked to future career aspirations and also as a form of independent learning. What was significant was that although utilising technology in independent ways themselves few of the projects expected similar approaches from their prospective students; teacher-led instruction was the predominant theme even when this was done via technology.

The focus on their own areas of future employment was prevalent, and as this includes teaching in many cases the inclusion of established, traditional roles of teacher led delivery in the projects is perhaps not surprising. The inclusion of Taoist approaches hoped to place the concepts of social constructivist, student led learning in an extended time frame that resists the notion of technology offering a 'new' way of delivering learning. The projects were exciting in the ways that students involved themselves in utilising new skills and creating materials that they can develop in the future. Yet, the insistence on teachers as the focus that characterises current approaches to formal learning appear to maintain a strong hold on how learning is perceived. The '*dominant theory in use*' can be challenged by technology, although it seems that currently transmission and 'telling' approaches remain significant approaches to learning despite the variance in delivery that technology allows.

### Key findings:

- Student discussion highlighted recognition of technology having the potential for significant changes in learning and teaching, though the majority of projects maintained clearly defined roles of teacher and student.
- The students were devising technological solutions based on immediate concerns of their own environment and communities, rather than as a reflection of 'utopian discourse' or 'magical thinking'.
- Back channel learning was a significant element of some of the projects, particularly those utilising a multi-modal approach with several technologies involved

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