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# MAKING THE TECHNOLOGY FIT THE PEDAGOGY

Keith Beechener  
Associate Teaching Fellow  
Centre for Open Learning of Mathematics,  
Science, Computing and Technology,  
The Open University  
Walton Hall,  
Milton Keynes  
MK7 6AA  
[k.m.beechener@open.ac.uk](mailto:k.m.beechener@open.ac.uk)

Wendy Fisher  
Teaching Fellow  
Centre for Open Learning of Mathematics,  
Science, Computing and Technology,  
The Open University  
Walton Hall,  
Milton Keynes  
MK7 6AA  
[w.a.fisher@open.ac.uk](mailto:w.a.fisher@open.ac.uk)

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## ABSTRACT

*In this paper we explore whether technology provides the teaching profession with a new form of pedagogy, often referred to as 'e-learning', or is merely an attempt to 'reinvent the wheel'. Salmon's e-tivities, Laurillard's conversational framework and others have helped to further the case in favour of a new pedagogy. Distance learning particularly has been able to derive considerable benefit from the opportunities involved.*

*However, is 'the Internet' nothing more than an all-embracing metaphor for a multitude of traditional teaching locations, for example the classroom, campus and the lecture theatre? We find these 'learning environments' can exist wherever we want them, as virtual, mobile, personal or even real locations. Has the online world bridged the gap for distance teaching, drawing it closer to traditional forms of teaching, and therefore traditional pedagogy? Does it mean that there are more opportunities for HEIs to move into distance learning provision?*

## Keywords

*Technology, elearning, pedagogy, distance learning, tablet PC, Web 2.0*

## 1. INTRODUCTION

This discussion paper has evolved from two separate projects at the Open University's Centre for Open Learning in Mathematics, Science, Computing and Technology (COLMSCT). We present two different approaches to the subject and argue for and against the premise that technology is merely a means to delivering the traditional, established pedagogies.

We will draw on our experiences of using new technology and online environments to support these differing views of technology-enhanced learning. In one example we highlight the opportunities afforded by the evolution of the so-called Web 2.0, as defined by O'Reilly (2004), and we discuss the unexpected and richer experience reported by participants in a trial of using tablet PCs to provide feedback to learners as part of assessment on electronic writing.

On the one hand we will suggest that technology has opened up a potential for new teaching styles through exploration of the processes involved in writing and which suggest that the underlying pedagogy may be extended. On the other hand we will look for established principles to explain what is happening in virtual environments without resorting to a desire to define new terminology.

## 2. TABLET PC FOR ASSESSMENT FEEDBACK

The UK Open University is by tradition a distance learning institution with 8,000 Associate Lecturers (hereafter referred to as tutors) providing individual feedback to their students via handwritten annotations on written or typed scripts, or electronic feedback via insertions using a word processing package. In a study using tablet PCs to provide a mix of typed text and handwritten comments we have found evidence that using new technology can lead to meaningful and unexpected insights into understanding the process of marking paperless assignments.

A literature survey into electronic annotation showed that previous work by Rau (2004), on the sharing of annotations over the web, and Ovsiannikov et al (1999), on the requirements for annotation web and word systems, indicates this more study in this area is needed. This study, in which tutors used a tablet PC, to mark paperless assignments submitted in Word (.doc) format, showed that digital ink technology allowed tutors to meet many of Ovsiannikov's *annotation requirements*. It also allowed tutors to provide personalised hand-written feedback at a point in an assignment that was relevant to the point that a tutor wanted to raise

with a student. The results show that using new digital ink technology to mark paper-less assignments had an effect on the pedagogies of those involved in teaching.

## 2.1 Equipment

For the purposes of this study tutors were loaned HP Compaq tc4200 tablet PCs for marking paperless assignments. These computers had Microsoft OneNote, Power-Point and Windows Journal software pre-installed. Using Windows Journal, a method was developed for creating a virtual layer above the original submitted assignment which was in either Word (.doc) or Hypertext Mark Up Language (HTML) format. A study by Freake (2008) shows that there are at least two alternative methods for annotating paperless assignments using a Tablet PC.

## 2.2 Research method

In a comparative study, separate summative assignments were marked by the ten tutors. For one part of the exercise assignments were marked electronically using desktop PCs in the normal method used by these tutors. In the second part the tablet PCs were used. New information and communication skills and competencies were supported using an on-line forum for the tutors. Postings to the on-line forum were analysed in depth. Perceptive analysis was gathered from students and tutors using questionnaires containing a mix of open-ended and closed questions. Tutors participated in semi-structured telephone and face-to-face interviews and small group surveys. The different data sets of quantitative and qualitative results were analysed using a 'grounded theory' approach (Strauss and Corbin, 1990).

## 2.3 Outcomes

The results of this study show that digital ink technology led to pedagogical innovation in assessment, although the underlying reasons for this are complex, relating to the tutors' perceptions of their relationship with technology, past experiences of assessment and skills in information and communication technologies.

Results shows that the main pedagogical innovations found in assessment were, colour coding of English, highlighting of spelling and grammatical errors, and identification of learning outcomes. Finally, as using a tablet PC allowed replication of paper and pen technology, feedback could now be located at a relevant point, on a paperless assignment, precisely where the tutor wanted to provide feedback to the learner. This was particularly relevant to annotating diagrams, scientific formula, and mathematical notation which has previously proved difficult to achieve with electronic writing.

# 3. THE VIRTUAL CLASSROOM

In the following sections we highlight some experiences of using new media tools in our distance learning environment and discuss some of the interesting and surprising outcomes. These tools have been used to support students undertaking foundation level study, often their first experience at degree level.

The online world is obsessed with jargon. Every new development or new media excites the imagination and results in someone devising a new word or terminology for what is essentially a clearly defined and understood process or tool. For example, the concept of a podcast is nothing more than recording your voice into a format for a particular kind of delivery using the Internet. What is so different from the basic process of recording onto a cassette tape for distribution to a group of learners. Indeed in some quarters the process of recording one's voice even in the digital sense is referred as *making a tape recording*, a description of the old analogue process.

## 3.1 Podcasts

In addition to individual personalised feedback on written assignments the use of audio recordings based on common issues for the whole of a tutor's student group has been used across a number of groups. The resulting recordings, produced as a series linked to each assignment plus some additional assignment preparation, were posted to a web resource which allowed students to subscribe to the podcasts. The objectives of the tutor were:

- to provide generic feedback to the whole group (this would have been done via written word in a forum message) on recent assignment performance and feed-forward advice for the next piece of assessment;
- to use the audio medium to add emphasis to certain parts of the speaking presentation (for example to express frustration at repeated failures in successive assignments, or to add humour with off-the-cuff remarks);

- through the use of the tutor's voice to give the students the impression of having heard it first hand, and almost as a personal message, rather than an impersonal posting in a forum;
- to provide a novel and persistent form of feedback.

In a survey of students completing these courses around 50% acknowledged having listened to the podcasts as a matter of routine and half of these admitted to having listened to the recordings more than once each time. Their justification was cited mainly as picking up useful hints, tips and ideas for future work. In a course currently underway (2009) some students are asking when the next podcast will be presented.

### 3.2 Web 2.0

One difficulty we find is in considering multiple online locations as a single *virtual* environment. Can we consider Web 2.0 tools such as a wiki, a blog, a forum, a website and an e-portfolio to be the same single environment particularly when each may require a separate set of actions to access it, either through entry of passwords, typing a web address or clicking away from the current page via a hyperlink? They may all be related to the same course or unit of study, but it may depend on the number of clicks to get from one application to the next to engage in a related activity.

In terms of its use in education the Internet is our achievement of a virtual classroom. We have experimented with a number of audio and video conferencing environments, such as FlashMeeting, Elluminate, Lyceum and Skype, when perhaps what we are craving is traditional face to face contact between our teachers and learners, even though it currently falls short as a realistic replacement. We may find ways of accommodating certain types of interaction within these environments, the whiteboard in Elluminate for example, but is this any different to the teaching style displayed in a face to face environment?

The use of forums and online conferences, or even text chat rooms, is again a substitute for the face to face discussions that would take place if the student group were present in the same physical location, and what is a web site or a wiki if not a replication of the classroom wall where students post the results of their individual or collaborative efforts. Salmon (2002, 2003) formulated a set of e-tivities and a form of e-moderating to exploit the use of these web tools *through* collaboration. Developing this idea further Oldfield and Morse (2007) suggest that "one of the more important outcomes [of e-learning] is learning *about* collaboration". The underlying principle however remains the same – the facilitation of learning by a teacher.

Laurillard (2006) in her discussion of a 'Conversational Framework' admits that "The characterisation of the teaching-learning process as a iterative 'conversation' is hardly a new idea." and she goes on to apply this teaching strategy across many scenarios including the online and virtual environments. Virtual worlds are discussed as simulations, another established teaching method.

This is all perhaps quite a simplistic view of the use of these tools but nonetheless it suggests that we are using the technology to fit with established pedagogy. Weller (2003) cites constructivism as the dominant teaching pedagogy applicable to the Internet but while advocating that there are opportunities for new pedagogies he also admits that they should be used "in conjunction with more traditional approaches".

### 3.3 Social websites

In a study of the use of online tools it was discovered that the learners in fact may hold the key. A group of 15 students studying a technology-related course at Level 1 were set an ice-breaker activity to post an image to an account on the Flickr photo sharing web site. The students were told to take a photo, with a digital camera or mobile phone, of a location they attended during the next weekend and they were given the account ID and password to enable them to upload their image. For those who had no access to a camera the activity allowed the posting of an image of the location from the web into the group forum as an alternative. The activity sought to meet three separate learning outcomes to be achieved at different stages of the course:

- creating a group resource online from a collaborative activity;
- understanding of social bookmarking through the use of tags;
- understanding of file compression and image manipulation (as Flickr creates a set of different sized images for each one uploaded).

Participation in the activity was 87% (13 students) with 80% (12 students) having access to a digital camera. One posting was made to the forum. An early upload in this activity was of a location that the student had attended at some time in the past and featured interesting scenery. This led other students to upload images of their favourite locations from holidays around the world. Only two of the group (13%) posted images they had taken of places they did indeed visit at the time of the activity. In effect the students had re-designed the activity to suit what *they* wanted to upload. It became a gallery of places they would have liked to visit that weekend.

In subsequent presentations of the same course the student groups were given a theme for the subject of their uploaded images – *roadside technology* (which linked to another learning outcome of the course of study). Adherence to the theme was better in both these subsequent groups, but amongst the submissions some students had found difficulty in finding something that met the theme. In one instance this resulted in a photograph of the London Eye which was justified because “it is a wheel and there is road nearby”, while another posted blurred images of road signs (at the roadside) taken with his mobile phone (the technology).

It suggests that in the online environment students feel more in command of what they are doing. It is *their space*, and the use of social tools will follow *their* rules. It may of course be relevant that in this particular exercise the original contributions were not part of assessed material. It is significant however that the teaching method adopted was one of providing the tools necessary for the job and allowing the students to explore the medium and the environment.

#### 4. CONCLUSION

In our scenarios we see evidence that new teaching strategies and methods are evolving, but it may be argued that these are just variations on a theme. With the tablet PCs we have the strongest indication of an emerging pedagogy with the styles of annotation and further research will be required to assess the full impact of the different choices made here. In the use of social websites the trend is to give, or relinquish, control to students to engage in their own learning journeys, but the danger here is how far they go unsupported and whether the resulting knowledge construction is relevant to the original aims of their course of learning. It may be the case that traditional assessment methods still need to be applied to test this. We remain unconvinced that merely *taking part* is enough in these circumstances.

We reserve our strongest case in favour of the argument that the use of technology is driven by pedagogy in the way that the new media of the Internet and Web 2.0 allow the replication of traditional teaching methods in a virtual or online environment. However we also concede that there may be scope to develop strategies that extend the learning in ways that were not previously possible as a result of the new ways of interacting with the digital interface. Furthermore we feel that our educators may in some sense be subconsciously holding themselves back by trying to replicate experiences within what they currently know, rather than challenging themselves to think of innovative ways of using the technology.

While distance learning in particular has been revitalised by this injection of technology, perhaps we may eventually see the majority of teaching and learning taking place synchronously online? Maybe distance teaching and learning was the new pedagogy of its time and technology is now reversing the trend? The real challenge is whether it is possible to embrace new technologies to support or develop pedagogies without having to re-invent the wheel.

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