Sustaining innovations in educational technology: Views of innovators at the University of Cape Town

Glenda Cox
University of Cape Town, South Africa

Educational technology is increasingly being used to enhance teaching and learning activities in higher education. One of the persistent challenges has been how to encourage, support and sustain these innovative practices which rest largely on the individual lecturer. At the University of Cape Town, the Centre for Educational Technology (CET) has endeavoured to encourage and support pedagogic innovation through various mechanisms including the allocation of teaching with technology innovation grants. Findings of a recent survey of these grant recipients reveal how lecturers are sustaining these innovations over time. Using Archer's (2003) social realist approach this study is showing that lecturers' ultimate concerns, expressed in their reasons for changing the way they teach, have resulted in "projects" that have been successful and which have led to established practices. These projects have been sustained because they were created as a result of a specific pedagogical need and have been embedded in the courses for which they were created. Lecturers' practices have been supported by working in teams, sharing their teaching practice with others and receiving both financial and technical support from CET. This suggests that the key to maintaining innovative use of educational technology for teaching and learning in higher education should be centred on the notion of pedagogical sustainability.

Keywords: pedagogical sustainability, innovation in teaching with technology, active agents, grants, Archer

Introduction

Educational technology is increasingly being used world-wide to enhance teaching and learning activities in higher education. The use of educational technology in teaching in higher education is incremental rather than radical with pockets of innovation characterising change (Salmon 2006; Laurillard 2006). One of the persistent challenges has been how to encourage, support and sustain these innovative practices which rest largely on the individual lecturer. At the University of Cape Town, the Centre for Educational Technology (CET) has endeavoured to encourage and support pedagogic innovation through various mechanisms including the allocation of teaching with technology innovation grants to individual lecturers or groups of lecturers. These grants, which were first awarded in 2005, have been made possible by donor funding which ceases at the end of 2011 (with the end of the grant period prompting this research). The grant is a relatively small amount of money intended as seed funding. The innovations funded include simulations, video material, interactive tutorials, models in science disciplines, role play in social sciences and design and editing programmes (to name a few).

This paper focuses particularly on the innovators' views of the sustainability of their innovations. It builds on previous work in an attempt to understand how grant holders sustained their innovations despite the fact that there is little recognition or reward at the university for this kind of teaching innovation. These innovations were not required by the university; the choice to change practice was

made by the individuals. Given that this is a research-focused institution and creating innovative teaching materials is not prioritised and barely rewarded, what drives these academics to create innovations and to sustain them?

Framing the research

While the literature on technology and innovation in higher education is extensive, there is little which considers the role of incentives (and in particular grants) in encouraging innovation.

Studies on innovation and change are relevant to this research. Hannan (2005) for example looks at the wider contexts that enable or inhibit change in higher education through innovation in teaching methods in the UK. He considers the experiences of 'innovators' at research led universities compared to those at institutions that have teaching and learning as a high priority and concludes that innovation can only be a rewarding experience if institutions "make efforts to enhance the learning of their students a top priority" (p. 984). Also useful are Rossiter (2007) and Salmon (2006) who have developed useful frameworks of institutional change in order to embed educational technology.

Especially pertinent is the work of Alexander (1999) who studied the outcomes of 104 teaching development grants in higher education in Australia. Eighty seven % of the practitioners reported that their intention was to improve the quality of teaching. However these intended outcomes were not always achieved, this was explained as being the result of two factors- firstly many of the projects were not fully implemented and secondly the evaluation evidence was insufficient. Since this earlier study other authors have developed detailed evaluative frameworks for educational technology (Reeves and Hedberg 2003) which might be useful for considering the value of teaching grants.

In this research I am using Margaret Archer's work on critical realism as a lens to understanding the role of agency and structure in sustaining innovation at the institution (Archer 2003; Archer 2007) . Archer's critical realist framework is adopted to surface the relationship between 'agency' in this case individual lecturers (ultimate concerns, projects and practices) and 'social structure' (eg. institutional culture, departmental practices, support and infrastructure). Archer's "active agents" follow a trajectory which starts with their concerns "those internal goods that they care most about", which results in elaborating a project and if the project successfully addresses the concern it is "translated into a set of established practices"(Archer 2007, p.42). This theoretical lens helps to uncover why lecturers innovated and how they manage to sustain innovations.

The findings are also framed by themes which emerged in the qualitative answers of the survey forming part of my conceptual framework relating to sustainability. Firstly pedagogical sustainability, participants described how the innovation was relevant and included local content, they emphasised that there needed to be clarity in design, integration into the course and the stated purpose was to enhance student learning. Secondly, structural sustainability included all references to management, peer, research assistant and CET support, both technical and financial, that enabled the intervention to be sustainable. And the last category was 'agential' sustainability when the participants talked about the importance of their role in sustaining the intervention.

Research design

Recipients of grants from 2005 to the end of 2009 were invited to complete a survey. Fifty four grants were allocated during this period to 47 individuals (several academics received more than one grant) and 30 completed the survey, 2 were on sabbatical, 2 were no longer at the university which translates into a 70% response rate.

The questions were themed around individual agency (own views, concerns, projects, practices) and the social structures that enable and constrain the individual (departmental practices, disciplinary conventions, institutional practice). In the survey, 21 questions were closed questions and 18 were long answer, open-ended questions. Three of the questions at the start of the survey were about rank, experience and age. The grant recipients were mostly Lecturers (37%) and Senior Lecturers (43%), only 17% were Associate or Full professors. There was a range in age groups from 20-30 to 70 years old, however 74% were older than 41. There was also a range in teaching experience: from 30% at less than 5 years, 43% at 6-15 years and 26% have 16 or more years of teaching.

For the purposes of this paper the relevant 4 long answer questions were analysed. The qualitative answers were coded and placed in emerging themes and compared to current literature introduced in the opening paragraphs (Le Compte 2000).

Findings and discussion

Importantly, 73% of these teaching interventions were still in use (all the rest were still in development). Nineteen participants gave 22 reasons why the intervention has been sustained. The reasons were coded and themed into three categories with sub headings: pedagogical sustainability, structural sustainability and 'agential' sustainability. Eleven of the responses referred to aspects of teaching and learning being crucial while 10 other responses indicated that the intervention would not still be in place if they did not have the support from the top and /or their peers and/or the Centre for Educational technology:

> The needs were very carefully defined, and the result was tested on students and modified to ensure it was clear and helpful. (Science faculty recipient, simulation)

> Support and motivations of staff members involved. (Commerce faculty recipient, excel prototype and online tests for large classes)

Why did these grant recipients decide to change the way they were teaching to include technology? Individual agency is implicit here as these individuals (and their colleagues) wrote the proposals and developed these materials. All of these interventions received money for resources to develop the materials (structural support). Similar categories to the ones used for sustainability were used again here namely: pedagogical drivers, structural drivers and agential drivers. Thirty one reasons were given for these changes in teaching practice. The change of practice was mostly due to pedagogical need with only 5 responses suggesting that there were structural drivers and only 2 responses indicating explicit individual agency.

In order to understand how these grant holders went about developing these innovations I asked them how they liked to work: 73% developed teaching materials with peers in their departments, 20% preferred to work alone and only 7% worked with colleagues outside of UCT:

> My course is inter-disciplinary so I like to collaborate both in and outside of the department. (Law faculty recipient, DVD for teaching)

These results suggest that these individuals enjoyed working in teams and were willing to help and be helped by their peers to develop new ways of teaching.

All the participants here can be described as active agents, in Archerian terms. They gave clear reasons why they changed the way they were teaching. Archer's (2007) trajectory of individual agency can be applied here. The 'concerns' of these agents were mostly around a "need" to "shift", "enliven", "transform", make "efficient" and "humanise" their teaching practice in order to improve student learning. There was no indication that these innovations occurred due to external pressure or as a result of any top-down mandate. The 'projects' were the interventions developed by these active agents:

Lastly, because these interventions addressed real concerns they have been sustained ie they have continued to exist. In Archer's (2007) words they are 'established in practice'.

> The software was designed to be a corner stone of my practicals and I have put a lot of time into it... (Science faculty recipient, software)

What was the motivation? The grant holders were not innovating because they wanted to try out new technology, the innovation occurred because there was a desire to improve their teaching:

> [I did it] to transform the classroom from a receptacle-model to a collaborative teaching and learning environment... (Engineering and Built Environment recipient, software)

Conclusion

The innovations that resulted from the grants are aligned with identified needs in specific courses and are embedded in curricula. The alignment with pedagogical need and the peer collaboration in departments have made these innovations sustainable. In this institution the changes to teaching are incremental but as educational technologists we need to promote and sustain collaboration and knowledge sharing. We need to support these individuals and their desire to change their teaching practice, encouraging pedagogical and curriculum drivers rather than technological developments. Our support will help grow awareness of these small often isolated innovations so that they can be more effective and sustainable. We also need to lobby for more funding for these kinds of innovations.

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Author contact details:
Glenda Cox
Centre for Educational Technology
University of Cape Town
South Africa
Glenda.Cox@uct.ac.za

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