Pushing beyond the comfort zone: Bridging the gap between technology and pedagogy

Dorit Maor
School of Education
Murdoch University

The use of online pedagogy within universities is increasing. However, this expansion is not accompanied by an associated increase in investment in lecturers' pedagogy to assist them in the transition. At present, lecturers lack the tools to describe or illustrate the meaning they try to make of this transition between online pedagogy and technology. This paper describes the changing relationship between pedagogy and technology that a group of academic staff demonstrated in a one year Action Research project. Diagrams, produced by the lecturers, demonstrated a tension between the two continua of pedagogy and technology. This way of representing their views is presented as a potential tool for assisting lecturers to construct meaning as they continue to adopt technology in their online teaching, while also providing a benchmark for their online pedagogy in order to ensure quality teaching in higher education.

Keywords: professional development, online, pedagogy, technology

The gap between pedagogy and technology

This paper focuses on the journey undertaken by a group of lecturers at a Western Australian university as they explored the relationship between their pedagogies and technology. It describes an attempt to overcome the gap between pedagogy and technology by identifying the disparity between these two and reducing the gap. For optimum teaching purposes, the ultimate goal would seem to be to match one with the other. Social constructivism has been selected as a theoretical framework with the potential to provide a bridge between pedagogy and technology. Social constructivism is based on the notion that learners personally construct knowledge, and that learning continues to grow and develop because it is socially situated within a community of learners (Jonassen, 2000, O'Connor, 1998; Tobin, 1993; Von Glaserfield, 1990). According to Garrison and Anderson (2003), the value of e-learning is not in its faster access to information, but in its capacity to facilitate communication, thinking, and to construct meaning and knowledge. This idea suggests that it is important for the e-learning lecturer to push the boundaries of his/her comfort zone and integrate the relevant technology and constructivist pedagogy.

In spite of the trend towards online teaching, many higher education faculty members are not yet using this technology and, if they are, they are unsure how to use it effectively (Conard, 2002, Harasim, Hiltz, Teles & Turoff, 1995). Therefore, this project attempted to engage higher education lecturers in constructing new meaning about the integration of pedagogy and technology in their online teaching, by providing opportunities and an environment in which they were able to do so and step out of their comfort zone (Hara, Bonk & Angeli, 2000).

The use and understanding of technology in teaching can be seen as a separate issue to that of teaching in itself, and this distinction can increase the gap between pedagogy and technology. If the primary focus of the lecturers is on pedagogy, and technology is just seen as another mode of delivery designed to enhance the teaching and learning experience, then technology and pedagogy can be seen as existing separately, with one having minimal impact on the other. However, if elements of technology and pedagogy can be seen as mutually supportive and interdependent, then it should be possible to construct new meaning about teaching online that is integrative and serves to bring about a bridging of the gap between pedagogy and technology that initially was demonstrated by the lecturers. This paper presents the meanings constructed by several lecturers around pedagogy and technology, and how they integrated the two. The paper focuses on the group representations of technology and pedagogy, rather than on the individual representations of the lecturers.

The project

A group of university lecturers, who were engaged with online teaching, formed a community of learners over a one year period for the purpose of examining and thereby improving their understanding and use of social constructivist pedagogy and technology. For a full description of the research design and methodology, see Maor (2004). This paper attempts to answer the following research question: How did being part of a community of learners affect their integration of pedagogy and technology for teaching online?

Participants

The lecturers chose to take part in monthly workshops and online discussions while also teaching in their respective classes. Initially, 10 lecturers were involved in the project, each having different levels of experience and expertise with pedagogy and technology. After 12 months, six lecturers were still involved and, of those, four were able to give diagrammatic form to their ideas about pedagogy and technology in a way that illustrated both a continuum of pedagogies and a continuum of competence in their use of technology. These lecturers, two males and two females, were from the disciplines of Environmental Science, Law, Information Technology, and Education.

Data collection

The workshops were designed to elaborate on relevant practical and theoretical issues (Oliver & Herrington, 2001) and to engage in problem solving strategies related to pedagogical issues. The presentations and discussions involved in various aspects of online learning, including the principles of social constructivism, online learning and technology, collaborative learning, social learning and reflective discourse, Web CT tools, online assessment and action research methodology. The major pedagogical issues explored were participation, collaboration, interactivity and the role of the lecturer in the online environment (Maor & Zariski, 2003). The sessions, held for 1.5 hours each, were recorded and later transcribed. Online and offline discussions about theoretical and practical issues were also included in the project. In addition, pre and post questionnaires provided a variety of valuable information about the lecturers' experience with the technology and online teaching. The final data collection involved a reflective exercise, in which the lecturers were asked to 'step out of the box' and use their creativity to construct a diagram that would serve as visual evidence of changes in the way they perceived, used and improved upon their pedagogy and technology during this one year action research project. An attempt was also made by the lecturers to develop a 'group' diagram to explain the dynamic relationship between technology and pedagogy, since the lecturers highlighted this aspect as an important outcome of their involvement in the project.

Results

Data collected from the pre-workshop questionnaires revealed that the four lecturers who gave the diagrammatic representations had teaching experience ranging from six to 30 years. However, specifically in terms of online teaching, the length of experience ranged between no experiences to six years for the participants. At the time of the project, two lecturers were using aspects of online technology as part of their teaching, in particular, email, asynchronised discussions and online study materials. The IT lecturer reported also using synchronised discussions.

When asked how they saw their use of online technology, two lecturers reported using such technology to complement their face to face teaching, while one lecturer expressed that they used the technology as an addition to teaching an external unit. One lecturer reported using online technology for both purposes in their teaching. Further examination of the lecturers' reasons for using online technologies indicated a number of explanations, including enhancing the breadth and availability of study material, less paper flow, encouraging discussion for students especially those in external study modes, allowing for flexibility in learning for students and teachers, and enhancing collaboration.

The analysis of data from the reflective exercise used social constructivism as a framework, as this was seen as the most suitable theoretical vehicle for developing high quality interactive online learning environments where a community of learners is operating (Bonk & Dennen, 1999; Jonassen et al., 1995). As such, each individual diagram demonstrated the lecturer's position in relation to pedagogy and technology, his/her connection between pedagogy and technology, and the changes that were experienced

during the research project. The individual diagrams comprised two parallel continua, one representing pedagogy (the type of social constructivist approach) and the other representing technology (competency in using and understanding the online technology), and signified a tool that would enable the lecturers to make meaning of their participation in the project. The results of these individual maps are reported elsewhere (see Maor, 2004).

Group map: Integration of pedagogy and technology

Based on the individual maps, a group representation diagram was constructed by the researcher that demonstrates the key elements of pedagogy, technology and the optimal situation of integrating the two components. The left Yaxis on Figure 1 describes the types of pedagogies (role play, negotiation of meaning, reflective practice, action research, project work) that the participants were engaged in through the workshop and the right Y axis describes the online computer technologies (email, Asynchronous asynchronous discussion, synchronous discussion, online project work) that were demonstrated and discussed during the research. The integration of the two continua represents the ideal situations in which the processes of collaboration, affective support discussion and group work through the online technologies is taking place to create a community of learners. The diagram has integrated the elements of meaning constructed by the lecturers during the process of self reflection to complete a general view that represent the community.

Figure 1 demonstrates how two different types of online lecturers changed through the process. For example:

- A lecturer, who at the beginning of the study ("Position A") was implementing a constructivist pedagogy in their teaching but did not know how to integrate it with technology;
- A lecturer, who at the beginning of the study ("Position B") was utilising the technology, but used it without any pedagogical considerations.

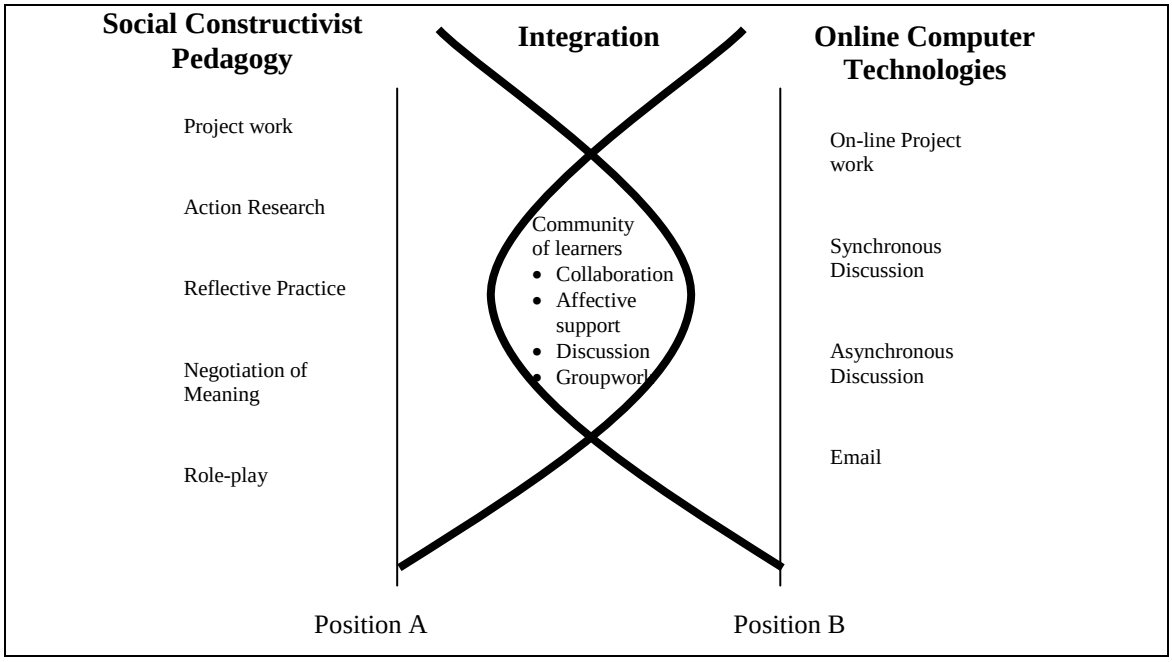

Figure 1: Group representation

Other lecturers started at different levels of competencies of using technology and pedagogy. As the workshops progressed, the data showed that users "moved along the curve" in Figure 1 towards the centre, at which point users integrated their knowledge of pedagogy and technology. The central circle (see Figure 1) demonstrates the relationship between pedagogy and technology underpinned by a strong community of learners who engage in relationship building, dialogue and interaction that assist in the integration of both technology and pedagogy. The connection between pedagogy and technology through

the lecturers' participation in a community of learners creates a dynamic environment, which has been represented on the group diagram by the two curves joining and integrating to create new ways of teaching online.

The shape of the curve is due to the fact that, when new learning was acquired, the lecturer tended to get over excited and adopt the new technology. For example, when using online teaching, a number of the participants used email, discussion forums, online readings, web resources, and i-lectures, making the technology determine their teaching. After the initial adoption and with higher use of the technology came the reflective process, in which the lecturer integrated the pedagogy into the technology, or made an attempt to use the technology where and when appropriate. The researcher experienced the same processes with lecturers who were high on the pedagogy continua and later adopted the technology. In both cases, there was an attempt to create the integrated approach, in which the boundaries were questioned and were pushed beyond the comfort zone. Where a fit between pedagogy and technology was created, it assisted in the formation of a community of learners among the university lecturers. When the continua were not matched and remained polarised, as in the example of lecturers who were advanced in either their pedagogical experience or their technological competency, the task of integration was more challenging (Maor & Zariski, 2003). The question of whether the final group diagram can be used as a benchmark to achieve a community of learners within e-learning environments, and to improve individual integration of pedagogy and technology, requires further study.

Discussion

The formation of a community of learners for the purpose of researching pedagogy and technology within an e-learning environment enabled the examination of lecturers' changes in relation to their comfort zone both in technology and pedagogy and, in particular, in creating new boundaries by the interrelationships between the two components. The diagrams illustrated the impact of being part of a community of learners by encouraging the integration of concepts through an increased use and understanding of pedagogy and technology. As the lecturers participated in the monthly workshops and online discussions, they were exposed to critical issues about implementing online teaching and to the ways in which technology can best be utilised to suit their pedagogical needs. The presence of the group added more to the overall impact of the project, pushing the lecturers beyond their comfort zone as expressed in the tendency towards moving the continua closer together (see Figure 1).

Although this research project has demonstrated that the lecturers were ready to invest their time and participate in the face to face workshops to improve their pedagogy and technology and to listen to others with similar concerns in relation to online teaching, it was suggested that this would not be sustained unless there were regular injections of face to face dialogue, reflection and deliberation. It is the underpinning assumption of this paper that what makes both pedagogy and technology function more effectively is the dynamic relationship between the two continua. To link both pedagogy and technology, a relationship is needed between the two (Maor & Zariski, 2003). Synthesis of the pedagogy and technology continua means reducing the gap between them and even integrating them into one. One lecturer, for example, showed the maximum amount of integration during this project, perhaps because he already had high levels of use and understanding of both pedagogy and technology. Therefore, by maximising the opportunities for dialogue within a community of learners, the quality of teaching in e-learning may be raised.

Conclusion

The initial finding of this study suggests that there is a tension between pedagogy and technology, which is created by a lack of ability to use constructivist pedagogies to teach online or a lack of technological capabilities to implement the pedagogies that match the learning objectives. This paper suggests that attention needs to be paid to the integration of both pedagogy and technology by pushing the boundaries of comfort zones of university lecturers.

Reflections on the integration of pedagogy and technology can best take place within a community of learners where opportunities are provided to construct meaning about this process (Hendriks & Maor, 2004). While using the diagram to inspire themselves to adopt other ways of implementing pedagogy, lecturers are able to locate themselves on the continua and select the appropriate pedagogy to fit their

technology. The diagram, therefore, can be used as a diagnostic tool to identify lecturers' positions in relation to their pedagogy and use of technology, and as a developmental tool to show how they can develop towards a more integrated approach in online teaching by moving beyond their comfort zone. It must be acknowledged, however, that the approach outlined in this paper represents a new development in examining this important area and, as such, needs to be further explored and discussed among the research community and practitioners of online teaching in higher education.

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Dr Dorit Maor, Lecturer in Tertiary and Adult Education, School of Education, Murdoch University, South Street Murdoch WA 6150 Email: d.maor@murdoch.edu.au URL: http://wwwstaff.murdoch.edu.au/~dmaor/

Please cite as: Maor, D. (2004). Pushing beyond the comfort zone: Bridging the gap between technology and pedagogy. In R. Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21st ASCILITE Conference* (pp. 572-576). Perth, 5-8 December. http://www.ascilite.org.au/conferences/perth04/procs/maor.html