Designing for an online doctoral studies community using an open source platform

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Abstract: There is growing demand from professional educators for doctoral programs that they can access while continuing to work. A history of success in offering distance education programs underpins the doctoral program at USQ but a key challenge is to initiate distance students into the wider academic community in ways equivalent to those available to on-campus students. This paper describes the beginnings of a design-based research project to develop an online doctoral studies community space based on open source software.

Background

The University of Southern Queensland (USQ) began its existence in 1967 as an Institute of Technology offering diplomas to students seeking careers in science, engineering and business. From 1970 it operated as a College of Advanced Education, granting undergraduate degrees in the same fields and preparing teachers. It was redesignated as a University from 1990 and conferred its first doctoral degrees in 1996.

During its relatively short history USQ has developed a strong reputation for distance, and more recently online, education. Its performance in those fields has been recognised by an award for excellence in dual-mode education from the International Council for Open and Distance Education in 1999 and a national University of the Year award for developing the e-University in 2000. Of its 2004 enrolment of over 25 000 students, all but approximately 5 000 studied at a distance and 5 000 were located outside Australia. Over 1000 students were enrolled in programs offered entirely online.

The Faculty of Education at USQ has over 1000 students enrolled in course work masters programs. These courses were originally offered using print-based distance education but since 1996 some programs have been offered entirely online and many courses that still use print materials have adopted elements of online education to facilitate interaction with students, many of whom study abroad.

When the Faculty introduced its Doctor of Education program, commencing in 1996, its long and successful history of distance education encouraged it to offer the doctorate by distance education. This was considered to be an appropriate response to the emerging needs of professional educators for access to further education while continuing to work in the knowledge economy. The opportunity to study for and complete a doctorate without relocating has proved popular with students. The first graduate from the EdD program completed in 2002 and there have been graduates each semester since. However, there have also been withdrawals from the program and delays in the progress of other students. Although the program has enjoyed a measure of success it seems clear that there is scope to better meet the needs of at least some students.

Of approximately 70 students enrolled in doctoral programs (EdD and PhD) within the Faculty of Education in 2004, fewer than 10 were full-time on-campus. The majority of doctoral students are studying while working in locations as diverse as Brunei, Canada, Dubai, Japan, Malaysia, New Zealand, Singapore and Thailand. Most of the communication between faculty members and doctoral students is accomplished using email, supplemented by teleconferences for special events such as when students are required to make synchronous presentations of their work. On-campus attendance at key points in the program is encouraged and many students do come on campus for periods varying from a few days to several months and at frequencies varying from not at all to two or three times each year.

From its inception, the EdD program included a 4 to 5 day residential school scheduled to coincide with the beginning of the program for each cohort. Students were encouraged to attend the school at least once during their enrolment in the program, preferably at the commencement of their enrolment. Many students, especially those living relatively close to the USQ campus, returned to the school on second or subsequent occasions. The residential schools included sessions related to particular courses and a variety of other sessions intended to build skills for graduate study and a sense of belonging among students. More recently, as the proportion of international students has increased, attendance at the residential schools has been voluntary in recognition of the substantial costs that would be incurred by students attending. Students unable to join the group on campus have been linked in by teleconference for specific sessions.

Since the Doctor of Education program was introduced, there have been efforts to promote the use of computer-mediated communication (CMC). Individual courses offered in the program have always had access to CMC tools although the specific tools have varied, including listservs, newsgroups and WebCT course spaces. The first residential school included sessions in which students were introduced to the use of an email list that had been established for the purpose of promoting interaction among faculty members and students in the program. Subsequent residential schools have included similar sessions introducing the CMC tools current at the time. Despite the ready availability of these tools individual email between students and faculty members has remained the most consistent form of computer-mediated communication used within the EdD program.

Although there has been no systematic collection and analysis of data related to CMC use, observation and anecdotal evidence suggest that most students and faculty members in the EdD program were inexperienced with the relevant CMC tools and lacked confidence in the ability to overcome any technical difficulty without support. Many of the EdD courses are designed to support students working with an advisor in their own specific area of interest. Thus there is little or no requirement for group interaction. That and the limited CMC capacities of students and faculty members probably contributed to the preference for using relatively familiar tools such as direct email.

During 1999 and 2000, there were trials in which students and faculty members in selected courses were provided with webcams and opportunities to participate in low bandwidth videoconferencing using iVisit software. As with text-based CMC, lack of confidence with the technology limited its use except by one or two enthusiasts. When the faculty member who had promoted the technique moved to another university its use quickly declined.

In 2004, the annual EdD residential school was substituted by an online conference held over a two week period. The conference was mounted within a BlackBoard CMS, an environment that was familiar to some faculty members and students but a new experience for others. The conference included online “presentations” offered by faculty members about topics such as particular research methods, supported by topic discussion areas in which students could ask questions and share their experience. Despite the unfamiliarity of the environment for many participants, the majority of students and faculty members responded very positively to the conference experience.

Doctoral studies and community

Approaches to doctoral education vary. PhD programs in Australia, including at USQ, are typically based on the British model in which the degree is undertaken entirely by research with the guidance of a supervisor. Students are expected to have any necessary background in content and methodology at the time of enrolment or be capable of learning what is necessary without the benefit of coursework. Where there is a group of students studying related topics with the same supervisor or colleagues, they typically provide each other with some degree of mutual support in what might be described as a *community of practice* (Lave and Wenger, 1991). However, it is possible for a student in such a doctoral program to be isolated from peers.

The EdD program at USQ has been structured such that the first third, equivalent to a year of full-time study, comprises course work and the remaining two-thirds of the program is undertaken as a research project under conditions generally similar to the PhD. In that respect it bears some similarity to a North American doctoral program. However, because the program is designed to be undertaken part-time at a distance by students continuing to practice in their profession, even though students are taking the same courses, their opportunities for face-to-face interaction are limited or, sometimes, non-existent. In this respect it is quite different from an on-campus experience

in which students attend classes together, share workspace and facilities, work together in teams for teaching and research, and regularly engage in some joint social activity. Interaction among distance students working on their own research projects is unlikely to arise spontaneously and would need to be planned for and supported.

If the process of doctoral education were viewed as one of guiding individual students through a process by which they develop a capacity for independent research then the value of interaction among students might be questioned. However, in a broader view, communities built around the ideas of an academic discipline are the building blocks of doctoral education and initiation into the relevant community is the core outcome of the process (Upham, 2003). Traditional on-campus doctoral programs offer students frequent opportunities to engage with each other and faculty members in a variety of contexts such as research projects, teaching and social activities. Each of these opportunities contributes to the building of the academic community and may create links that persist into professional interaction beyond graduation.

Changes in doctoral education in Australia have been noted over the past decade. Pearson (1999) noted the rapid increase in numbers of students associated with increasing diversity in the population and the need for more flexible study arrangements arising from continuing commitments by more mature students to family and employment. These trends run counter to the traditional assumption of on-campus, full-time study with opportunities for socialization into the academic community through formal and informal interaction with supervisor(s), other academics and peers. Pearson warns against the easy approach to quality assurance through bureaucratic processes and argues for a more holistic approach including a participatory culture and sense of community of learners.

The importance of appropriate induction and support for doctoral students has been acknowledged (Asmar & Peseta, 2001; Neumann, 2003). Despite their prior successful experience of university study, doctoral study is a new, and sometimes confusing, experience. Asmar and Peseta draw parallels between school leavers entering their first undergraduate program at university and graduates entering a doctoral program. They found that, of 9000 graduate students at the University of Sydney in 200, only 50% "felt part of a group of staff and students committed to learning" and argued that there is a "demonstrated need for enhanced academic and personal interactions among graduate … students" which should be provided in a systematic way.

The EdD program at USQ presents similar challenges to those identified at other Australian universities (Pearson, 1999; Asmar & Peseta, 2001). In its first years, it attracted mostly Australian students who, although many lived interstate, were familiar with the processes and language of Australian universities, able to contact the university relatively easily by telephone, and reasonably likely to be able to attend the annual residential school. In recent years, the proportion of students in other countries has increased. They are frequently unfamiliar with Australian university terminology and processes, find telephone communication difficult because of the need to make international calls and synchronize across multiple time zones, and may be prevented by distance and cost from attending a residential school. Moreover, some face the additional challenge of having to work in their second or subsequent language.

It seems clear from observation and the studies cited above that induction into an academic community is an important element of doctoral education that is becoming more difficult to manage as the student population changes to include more part-time and distance students with significant responsibilities in addition to their studies. Because the traditional approaches to such induction are no longer sufficient in the changing environment, new approaches must be sought. Asmar and Peseta (2001) describe some practices that have been introduced, including the use of websites and mailing lists.

Sunderland (2002) discusses the trend towards part-time distance study in doctoral programs in the UK and describes how email has been used as an effective vehicle for support. In a study involving 14 Romanian academics pursuing doctoral studies by distance at a UK university, she found that email was able to support important affective functions as well as providing an effective channel for routine communication and broadening participants' identities as academics in a global academic community.

The challenges outlined above were recognized in a recent national report on doctoral education in Australia (McWilliam et al., 2002). Among its recommendations were that flexible teaching be used as "an opportunity to maximise networking, and to introduce participants to senior / international peers and/or researchers" and that

universities "further develop and maintain online resources and communication technologies in support of participants who are work-based."

USQ has built its reputation as a distance education university on the basis that the educational outcomes of its programs should not be differentiated according to mode of study. If this is to be true for doctoral graduates then it is important that distance students are initiated into the relevant academic community as effectively as those who are able to study on-campus. That will require that we provide them with opportunities to interact with other members of the academic community in ways that are equivalent to those available on campus. The use of online environments appears to offer the best available approach to supporting appropriate interactions of students with supervisors, other academics and peers.

Online communities supporting learning

The design of online tools and environments to support communities for learning has attracted considerable research interest over the past decade. Nevertheless, Barab et al. (2004) comment that few studies offer clear criteria for what is meant by community and there is little known about the educational value of community support for learning. They acknowledge the inherent difficulty of designing something such as a community and comment that the title of the book, *Designing for Virtual Communities in the Service of Learning*, reflects that difficulty.

Riel and Polin (2004) describe three "distinct but overlapping types of learning communities: task-based, practice-based, and knowledge based" (p 19). Task-based learning communities are assembled around an issue or problem, often in the context of a class, and typically last only as long as is necessary to produce an appropriate product or outcome. Practice-based learning communities arise voluntarily around a profession or field of interest and focus on the continued improvement of practices. Knowledge-based learning communities seek to advance collective knowledge and to represent it in a form that supports its use in further knowledge building. Riel and Polin go on to describe a "learning organization" as being formed in the intersection of task-, practice-, and knowledge-based communities (p 40) and provide as an example a graduate studies community which has been developed at Pepperdine University.

In their discussion of virtual learning communities, Swan and Shea (2005) identify asynchronous discussions as a key feature and draw on theories that have informed studies in that area, including social learning theories and the concept of immediacy which describes behaviors that reduce psychological distance between participants in traditional classrooms. Social presence has been advanced as an equivalent concept in online environments. They describe several studies that have demonstrated the impact of social presence on the development of a sense of community and suggest ways in which these findings can inform the development of virtual learning communities. They cite several studies that have found that higher measures for social presence in online courses are associated with perceptions by students of increased learning.

Designing communities for learning

Online communities have been used successfully to support learners in graduate programs (Ruhleder, 2002; Riel & Polin, 2004) but the individualised nature of doctoral programs, especially in the project phase, and the wide distribution of students in the EdD program may introduce different challenges for the design and support of an online environment for such a community. It seems likely that a doctoral studies community would need to exhibit the characteristics of a "learning organization" with elements of task-, practice- and knowledge-based communities (Riel & Polin, 2004). However, it is difficult to predict which particular "technological affordances" (Swan & Shea, 2005) that might be of most value in such a community.

Schwen and Hara (2004) discuss the application of research on communities of practice to the design of online environments. They distinguish between descriptive theory as in the original work by Lave and Wenger (1991) and prescriptive theory. The former is useful for understanding a phenomenon but may not be a useful guide to design. The latter is useful as a guide to design but may not provide a complete understanding of the workings of what is

designed. Ultimately they express reservations about attempts to design a community of practice according to a formula and propose a more evolutionary approach to development.

Barab et al. (2002) have approached the development of an online teacher community as an exercise in design-based research (Design-Based Research Collective, 2003; Bannan-Ritland, 2003). Such an approach seems appropriate to the development of an online community for a doctoral studies program. Hence a reasonable approach to the project is to begin with a system that offers basic facilities for members to share content and discussion and to adapt the system as needs and patterns of use evolve. The application of design-based research approaches should support both evolutionary improvements in the system and developing understanding of how and why various elements of the system contribute to its usefulness.

Software for online community building

Until 2004 most fully-online courses offered at USQ have used the Blackboard CMS. From 2005 online courses will be offered using WebCT Vista. Both Blackboard and WebCT offer many of the facilities, including content management and discussion areas that would be expected to form the basis for development of an online community. However, in each case the implementation is based on courses rather than a complete program and is geared towards presentation and discussion rather than a more open community interaction. Although it would be possible to create spaces outside of the course structure so as to facilitate longer term interaction that would necessitate changes to the routine operation of the system.

If the project is to be approached as a genuine design-based process then the software on which it is built will need to offer both a range of base facilities and the opportunity for adding or adapting facilities in response to understandings that develop as the project proceeds. Open source software with a modular design appears to provide the most appropriate starting point for development. There are several such systems, including but not limited to Drupal (http://www.drupal.org), Plone (http://plone.org/), Postnuke (http://www.postnuke.com/), and TikiWiki (http://www.tkiiwiki.org).

Drupal has been selected for the initial development. It appears to be a reasonably mature system (currently at version 4.5) with an active and supportive user community. In addition to the base system, which is under active development there is a substantial collection of modules that have been developed and contributed by the user community. These are easily added to the base system and configured to provide additional features. Thus a base system can be configured and introduced to the users, with additional features being added by activation or installation of additional modules as use of the system evolves.

To date a base system has been installed and configured with anticipated release to users early in 2005. The base system supports registration of members, news pages, discussion forums, personal blogs and associated syndication. Modules are available to support an events diary, synchronous chat, surveys and resource sharing. Which modules are implemented and how will depend upon how the nascent community responds to the environment.

Conclusion

The need to provide doctoral students with opportunities to develop continuing links to the wider academic community seems clear. Where students are prevented, by distance and personal commitments, from participating in a traditional on-campus academic community, online environments appear to offer appropriate opportunities for interaction. How best to configure and support such online environments to support genuine learning communities is uncertain. Building and studying an environment that can evolve to meet the needs of its users should provide value for the users and add to our understanding of how such environments can support learning.

References

Asmar, C., & Peseta, T. (2001). *'Figuring things out from my friends': Encouraging collaboration among first year students at*

undergraduate and postgraduate level. Paper presented at the Australian Association for Research in Education Conference, Fremantle.

Bannan-Ritland, B. (2003). The Role of Design in Research: The Integrative Learning Design Framework. *Educational Researcher, 32*(1), 21-24.

Barab, S. A., Baek, E.-o., Schatz, S., Moore, J., Sluder, K., & Scheckler, R. (2002). *Illuminating the Braids of Change in a Web-Supported Community: A Design Experiment by Any Other Name.* Paper presented at the American Educational Research Association Conference, New Orleans.

Barab, S. A., Kling, R., & Gray, J. H. (2004). Introduction. In S. A. Barab, R. Kling & J. H. Gray (Eds*.), Designing for virtual communities in the service of learning* (pp. 3-15). Cambridge: Cambridge University Press.

Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher, 32*(1), 5-8.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

McWilliam, E., Taylor, P. G., Thomson, P., Green, B., Maxwell, T., Wildy, H., et al. (2002). *Research Training in Doctoral Programs: What can be learned from professional doctorates?* Canberra: Commonwealth of Australia Department of Education Science and Training.

Neumann, R. (2003). *The Doctoral Education Experience: Diversity and complexity*. Canberra: Commonwealth of Australia Department of Education Science and Training.

Pearson, M. (1999). The changing environment for doctoral education in australia: Implications for quality management, improvement and innovation. *Higher Education Research and Development*, 18(3), 269-287.

Riel, M., & Polin, L. (2004). Online learning communities: Common ground and critical differences in designing technical environments. In S. A. Barab, R. Kling & J. H. Gray (Eds.), *Designing for virtual communities in the service of learning* (pp. 16-50). Cambridge: Cambridge University Press.

Ruhleder, K. (2002). Understanding on-line community: the affordances of virtual space. *Information Research, 7*(3).

Schwen, T. M., & Hara, N. (2004). Community of practice: A metaphor for online design. In S. A. Barab, R. Kling & J. H. Gray (Eds.), *Designing for virtual communities in the service of learning* (pp. 154-178). Cambridge: Cambridge University Press.

Sunderland, J. (2002). New Communication Practices, Identity and the Psychological Gap: the affective function of e-mail on a distance doctoral programme. *Studies in Higher Education, 27*(2), 233-246.

Swan, K., & Shea, P. (2005). The development of virtual learning communities. In S. R. Hiltz & R. Goldman (Eds*.), Learning together online: Research on asynchronous learning networks* (pp. 239-260). Mahwah, NJ: Lawrence Erlbaum Associates.

Upham, S. (2003). Can there be a renaissance of the PhD? *Journal for Higher Education Strategists, 1*(3), 243-260.