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ABSTRACT

This study explored first-year distance education students' experiences in an innovative early childhood "Teachers as Researchers" class that required a collaborative student research project. Distance education students comprised about 25 percent of the total class, and requirements for on-site and distance students were kept as similar as possible. Study data consisted of: (1) Student Evaluation of Teaching (SETS) questionnaires administered centrally by the university and completed anonymously by students; (2) students' postings on the class's electronic bulletin board; (3) reflections from students about their experiences in the collaborative research process; and (4) responses to an exam question in which students were asked to critically review what they had learned about themselves as researchers and the research process. Findings revealed the following themes: (1) learning as negotiating meaning from experience; (2) learning as "becoming"; (3) learning as enhancing practice; and (4) learning as social practice and belonging to a community. While the students reported many benefits to the technology-supported collaborative learning, pitfalls were also present in the form of communication difficulties, ineffective use of time, and equity issues. (EV)

COLLABORATIVE LEARNING ON-LINE: OVERCOMING THE TYRANNY OF DISTANCE

Jennifer Sumsion and Catherine Patterson

"My first experiences with the web were full of anxiety. Now I just love ... coming home to see if I have any [email] messages. I can't imagine how I could have done the research without knowledge of databases. That sort of knowledge is priceless really, especially for a distance education student". (Efia)

Introduction

As one of Australia's leading early childhood teacher education programs via distance learning, our faculty is committed to ideals of distance education as a vehicle for enhancing social equity. We acknowledge that work commitments, family responsibilities, and geographical distance would otherwise prevent many of our distance education students from enrolling in a teacher education program. Yet despite our commitment, we find it challenging to ensure that our distance education students have access to a learning environment and learning experiences of equal quality to those available to our internal, campus-based students.

In an earlier study of a cohort of our students, Dickson, Fleet and Watt (2000) identified literature indicating distance education study is often related to lower academic achievement. The authors cite studies by McClelland and Kruger (1993) and Long (1994) who concluded that an external mode of study may have adverse effects on successful rates of student progress. As a result, our faculty is constantly searching for innovative

approaches to facilitate the learning of students studying off-campus.

Rapid advances in Information and Communication Technologies (ICT) have spawned a multitude of claims about the potential of these new technologies to transform the quality of distance education. Others, however, warn that this potential is unlikely to be realized unless innovations in distance education are pedagogically rather than technologically driven (McLoughlin, 2000). In this article, we report on a pedagogically inspired initiative that sought to make maximum use of ICT to enhance students' learning. We focus specifically on distance education students' perceptions of their learning as an outcome of this initiative.

The Initiative

In 2000, we introduced a semester-long course *Teachers as Researchers* into the first year of our teacher education program. Of the 300 students enrolled, about 25% were distance education students.

The course contained three innovative components. First, it was designed to foster inquiry oriented learning by teaching introductory research skills. Students were encouraged to become critical consumers of research; to recognize the importance of teacher research; and to develop an expectation that they would engage in research as early childhood educators.

Second, it was designed as a hands-on learning experience. Each student became a researcher through their involvement in a student-designed small group project that investigated some specific aspect of students' learning during their enrolment in the course. The students' research projects were embedded within a larger-scale 'umbrella' project investigating students' learning in the unit undertaken by the faculty teaching the

course. In this way, the course itself was presented as a two-level research project to which both students and faculty contributed as active researchers.

Third, the course included a substantial element of training in ICT skills to assist students to make effective use of on-line teaching and learning and to enable them to undertake their research projects. The sessions were conducted by university library staff and the IT training component was threaded through the course in a way that followed the sequence of skills and understandings presented in lectures and the course materials. It was designed to provide a systematic, comprehensive and integrated coverage of IT and (re)searching competencies.

These three innovative components had been carefully established through a series of teaching team meetings. The team included faculty with varying early childhood academic expertise and research backgrounds. This rather disparate group was united by the shared ideal of making the course accessible and engaging for students in the first year of their undergraduate program.

Underlying Assumptions About Learning

The design of the course reflected our assumptions that learning is an active process of constructing meaning, and is most likely to occur when learners share ideas and engage in collaborative inquiry and problem-solving (Walker, 1995). Like Wenger (1998) and others writing from constructivist perspectives, we believed that for learning to take place, learners needed to be involved in experiences they considered meaningful. Learning is enhanced when learners feel part of a community that values their learning and when they see themselves in the process of "becoming" (Wenger, 1998, p.5). Learning, therefore is a social practice of developing and refining our identities,

knowledge and practice.

Translating Assumptions into Practice

One of the challenges we faced in designing the course was to provide opportunities for distance education students to engage in collaborative learning. We wanted the distance education students to feel as much a part of a community of learners and researchers as their internal counterparts. Every effort, therefore, was made to keep the learning experiences and assessment requirements of the internal and external students as similar as possible. For example, external students participated in the library ICT training sessions during their compulsory on-campus sessions early in the semester. Audio-tapes of internal lectures were mailed to external students. Lectures were also available through audio presentations on the course web site. In addition, lecture outlines, suggested readings and general information were available on the web site along with contents of the weekly tutorials for internal students and associated learning tasks. The web site was designed to encourage the sharing of information and approaches to problem-solving and research experiences. Students were encouraged to interact with faculty and other students in small tutorial group fora on the bulletin boards. As well, a general bulletin board provided the opportunity for students to hold conversations, collaborate with each other and publish the findings of their study.

The eight-member teaching team found themselves inspired and excited by the students' reactions to the course. Although it took faculty an unexpectedly high level of commitment to respond almost daily to bulletin board inquiries, they were fascinated to witness the development of sophisticated use of technological skills and resultant increase in self-confidence experienced by many of the distance education students. Although

some students chose to withdraw from the course, the data collected from continuing students at various stages of the semester revealed their pleasure and pride in their accomplishments.

Collecting and Analyzing the Data

In this paper, we report on data collected from the 75 distance education students who completed the course. Data consisted of:

1) Student Evaluation of Teaching (SETS) questionnaires administered centrally by the university and completed anonymously by students;

2) students' postings on the bulletin board;

3) reflections from students about their experiences in the collaborative research process;

4) responses to an exam question in which students were asked to critically review what they had learned about (a) themselves as researchers and (b) the research process.

We were aware of the limitations of including data that were assessed as part of the course requirements (points 2-4). For this reason, we began our analysis with the anonymous data (i.e. the SETS). We were reassured to find that the qualitative responses to the open-ended SETS questions closely corresponded to the responses in the other sources of data. This suggested that the bulletin board entries and the reflective writing were, for the most part, trustworthy data.

We categorized the data using content analysis techniques, guided by the question, "What were these students' perceptions of their learning in the unit?" Students' responses corresponded closely to the components of learning identified by Wenger (1998). We frame the following discussion around a modified version of these components using data that seemed to us to most effectively illuminate the points made by many students.

Pseudonyms have been used throughout to ensure confidentiality.

Learning as Negotiating Meaning from Experience

Learning, or making meaning of experience is an ongoing process of negotiation, according to Wenger (1998). Negotiating meaning, he writes, frequently demands "sustained attention and readjustment, as in negotiating a sharp curve" (p. 53). Our students, especially those who had little, if any, prior experience with computers or ICT, were faced with the need to negotiate a steep learning curve. For many, a first step in negotiating meaning involved confronting their considerable anxiety about the course requirements. The following comments give some insight into the extent of this anxiety:

> *"My initial thoughts when I read the outline for this course bordered on hysteria. I felt really pressured to become familiar with an element of life that I had deliberately avoided".* (Dana)

> *"At the start of the semester I could barely switch on a computer. I didn't think that I was going to be able to see it through".* (Anne)

Negotiating the steep learning curve demanded by the course also required students to overcome their resistance to hands-on learning. Davida likened this process to *"...diving into the deep end of the swimming pool knowing that I was unable to swim, and desperately dog paddling to stay afloat".* Although they felt out of their depth, most students found that learning through doing generated a growing sense of confidence and achievement. Using terms such as *"more rewarding", "more fulfilling", "very absorbing"* and *"living and breathing the unit so that it becomes your life",* they referred to a new intensity to their learning. As Josie said:

> *"Embarking on this process catapulted me into a new dimension of learning. Tough*

as it may be, a hands-on approach is ... effective and memorable".

Students attached great significance to ICT. Their fear of being "left behind" technologically provided intrinsic motivation that assisted in negotiating the learning curve. As one student noted:

"Technology is moving fast and if you don't join in you will be left behind. This is the cyber world. ... It is a little overwhelming at first, but so is everything else that is new ... I don't want to be left behind in this fast moving world". (Felicity)

Becoming technologically literate, for many students, was important for their self esteem. It was also important for their professional development for, with few exceptions, students saw engaging in ICT-supported research as highly relevant to their roles early childhood educators. Many referred to the nexus between teaching, learning and research. Laura explained:

"Teaching is a continuous learning curve, so to help children learn most effectively we must continue to be learners ourselves and ... research is an integral part of the learning process".

Seeing a purpose to their learning further assisted students in negotiating the demands of the course and making meaning of the experiences they encountered.

Learning as "Becoming"

Wenger (1998) asserts that "we define who we are by where we have been and where we are going" (p. 149). He argues, therefore, that learning has a profound impact on personal identity. Moreover, he contends that our identity is "fundamentally temporal" (p. 155) for it is mediated through our ongoing leaning experiences. In this sense, our identity is constantly in the process of becoming. Many

students described how their learning in this course transformed their previous perceptions of themselves as passive learners with little capacity to engage in ICT-related research. As Melinda explained, *conducting a research study personally was something that I could never have seen myself doing. I had these mental barriers to overcome in order to participate in this course".* When students overcame these "mental barriers", they found themselves constructing new identities as informed, capable and confident learners. The following excerpts give some sense of this transformation:

> *"Learning that I was capable of conducting research has given me confidence and opened up a door for me to explore my interests and questions".* (Emily)
>
> *"Having these skills has enabled me to work much more independently, I haven't had to just rely on others. I am proud of the fact that I can now research issues successfully on my own".* (Irina)

Many students likened their learning to an explosion of what, to them, had been previously unimagined possibilities. The following examples illustrate their expanding horizons:

> *"My ability to access and share information has exploded into a plethora of opportunities"* (Efia).
>
> *"My learning has been explosive...I have found a whole new world out there".* (Rae)

These excerpts reflect students' excitement about their learning trajectories and the ways in which they were renegotiating their identities as learners.

Learning as Enhancing Practice

Students also referred to acquiring knowledge and developing skills that contributed to their growing competence in "valued enterprises" (Wenger, 1998, p. 4). The need to collaborate with group members to produce a web-based research report, for

example, forced many students to quickly acquire new technical skills. Christy commented:

> *"It forced me into mastering new techniques that otherwise I would never have learned – how to place an attachment, cutting pasting, spreadsheets, graphs etc that I would probably never have discovered if I didn't need to".*

Students referred as well to developing skills in critical thinking, as the following comment illustrates:

> *"It really opened my eyes to the many preconceived ideas we all have, and it confirmed that things are not always as simple as they seem".* (Lea).

Students also referred to learning the importance of *"background reading", "clear goals", "staying focused"*, and *"being organized"* and other generic and transferable learning skills. Above all, they referred to learning about working in groups. These developing competencies assisted students on an individual level. To paraphrase Wenger (1998, p. 86), they also enabled students to sustain sufficient mutual engagement to collectively pursue an enterprise (in this case, the group research project) that resulted in significant learning. Learning as social practice is the focus of the following section.

Learning as social practice and belonging to a community

Engaging in on-line collaborative learning helped many students overcome a sense of isolation. They appreciated the ready on-line access to lecture notes, library resources and to bulletin board facilities that enabled communication with other students and faculty. As one student said, these facilities enabled distance education students *"to feel part of the action"*. Their responses supported Wenger's (1998) argument that active participation in a social community is fundamental to learning.

The bulletin board was instrumental in developing a sense of community amongst the student cohort. Students used it to share their experiences, anxieties, and frustrations, and to seek and give advice and reassurance. In this sense, it fulfilled a counseling as well as a more formal communicative function. As Wenger put it, "surviving together is an important enterprise" (p. 6).

For many students, an even closer sense of community developed within the small research project groups. Some students established friendships that they envisaged would be long lasting. As Marty noted:

> *"I find that studying via distance becomes very isolated, but this project allowed us to have regular discussions not only about the project, but other aspects of the course as well as our personal lives. We were able to develop good friendships that I feel will continue through the remainder of our university life and hopefully professional life".*

The students appreciated the sense of community and reported many other benefits from working in groups. Typically, they referred to "*the new ideas and different perspectives*" brought by different group members, that required them to "*think about things from different angles*". They found the exposure to different viewpoints intellectually enriching. As Sue noted: *"[We were] ... pulling and pushing each other to new levels of awareness".*

While many students found the group work enabled by ICT was an *"enriching experience"*, at times it was challenging, interpersonally. They found they needed to negotiate, delegate, mediate, and to take into account different learning styles and preferences. To do so required trust in each other and commitment to the group. In return, many students commented that they were more motivated than they would have been had

they been working independently: *"I got more involved and wanted to go far beyond what I would have done on my own"* (Sue). Similarly, many students also reported a sense of synergy in the outcome of their group assignment: *"By working as a team, we kept each other going, and we achieved more than we would have as individuals"* (Roz). Almost without exception, students saw the relevance of these experiences to their professional lives as early childhood educators and their leadership responsibilities in promoting effective collaborative teams.

Pitfalls

While students reported many benefits to the technology-supported collaborative learning, there were pitfalls involved. As the following discussion indicates, these centered on communication difficulties, effective use of time, and equity issues.

Communication Difficulties

Although students appreciated the on-line communication facilities, many students emphasized its limitations. These were summed up succinctly by one student who commented:

> *"The bulletin board has been an effective and time efficient way of communicating with faculty and students when brief and simple messages or questions are involved, but not to resolve complicated issues and clarify in depth understanding. For me, face-to-face discussion is the only way to communicate when working with detailed information which requires in-depth thought. Without this, it is very difficult to process and understand each others' perspectives and learning needs and to ensure that there is common understanding of all the issues involved".* (Emily)

Most, if not all, students preferred to have some face-to-face meetings with their

research group where at all possible. "*When we met and worked face-to-face we could move mountains*", one student said. Achieving a similar sense of synergy on-line for most students was more difficult.

Some students suggested that communication difficulties resulted from differing levels of familiarity and experience with ICT rather than inherent limitations of these technologies. As one student reported:

> *"I felt quite frustrated by the lack of communication in the early stages. I sent many emails suggesting meeting up, or asking for ideas about the questions, keeping others up to date about the number of responses ... and received few or no replies. ... I am lucky enough to have easy internet access, and log on to the bulletin board ... regularly [whereas] the other members in my group are new to using computers. I think this difference in experience led to my feeling of frustration".* (Julia).

Other students, frustrated by what they saw as an inappropriate use of the bulletin board facilities, referred to an excess of "idle chat" and a paucity of "constructive comments". Several students commented that *"wading through the countless mail on the bulletin board"* was an ineffective use of their time.

Effective Use of Time

For several other students, user error resulted in a great deal of wasted time. As one student wrote:

> *"I spend hours in this site, but it's not reflected because my stuff keeps getting sucked into a black hole in the computer. I'm feeling panicky and frazzled".* (Efia)

In contrast, others, perhaps those who were more proficient found ICT "*a really efficient time-saving resource*". As Lianna explained: *"I can do all my initial searching at home and go to the library knowing exactly what I need".*

Difficulties of access and time inefficiencies caused by software compatibility, server problems, or similar technical difficulties were reported by only a handful of students.

Equity Issues

Similarly, few students reported difficulties in gaining access to a computer with an internet connection. The following student was one of the few exceptions:

> *"Initially, I had no personal access to the internet. I had never used it before, so it was time consuming and it cost a small fortune at an internet café. ... After some time, I realized that I couldn't get through this subject without readily having access it, so I updated my computer to a newer model [to] access the internet from home. This was a huge turning point for me. I have learnt so much that I never knew existed".* (Christy)

This student clearly had sufficient financial resources to update her equipment. Further investigation of equity and/or access problems as possible reasons contributing to the high initial rate of student withdrawal from the unit is needed.

One student who considered on-line learning a less expensive alternative to more traditional modes provided a different slant on the potential equity issues of on-line learning. She commented:

> *"Without the IT skills I gained in the workshops I probably would have spent many $$$$ travelling to the university library to sift through book after book to research my assignment. I would have had to arrange childcare and a part time replacement for work, as well as having to travel long distances to get there".* (Kylie)

Indeed, the benefits of access to library facilities for students with family responsibilities was mentioned by several students who spoke of sitting at their computer late at night with their baby on their lap.

Discussion

As one student noted: *"There will always be advantages and disadvantages to this mode of learning"*. Although there is an overall impression of enthusiasm and personal growth from many students, we are left asking if we are expecting too much by enabling and requiring this kind of collaborative work from distance education students. Is a 'group assignment' an unrealistic expectation? Could their time be better spent working individually?

In the early stages of the semester, there was quite a high withdrawal rate by distance education students. Initial analysis of information from these students suggests they experienced 'difficulties in understanding course content' and thought the workload was 'too demanding for first year students'. These comments may relate to the way in which the course content was interwoven with technology training sessions and the requirement that students would use the technology to complete the course content. The equity issue of access to computers, plus the lack of confidence could have been a major concern for these students, although internal students experienced similar frustrations with the computers. This aspect of the course needs to be examined further.

The distance education students, who completed the course, however, appeared to gain a great deal. It would not have been possible to offer this course to them without the new technologies because it would have overwhelmingly difficult to form research groups, complete collaborative assignments and engage in the research process within the limited time frame.

Through ICT, students were able to work collaboratively and participate in a research community. We found distance education students were not disadvantaged in their

academic progress, as their final grades were equivalent to those of the on-campus students. For the students as well as the teaching team, ICT lived up to its promise by enabling this type of learning-through-doing, and providing a worthwhile professional experience.

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