Seventeen years in the evolution of an online instructor's views about ICT innovation

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This paper is a narrative account of the author's online learning first as a student then as an instructor from 1992 to the present with specific attention to the years from 1999 to 2009. During this time frame the author was constantly teaching/researching his own online courses in New Zealand and Canada with colleagues from New Zealand, Canada and the United States to draw out some of the meanings of online learning and teaching. In this narrative inquiry (Lieblich, Tuval-Mashiach, & Zilber, 1998), he argues that the cycle of innovation, development, and standardization, although rational, produces a negative affect for early adopters due to the strains that develop as a new technology is adopted and used throughout mainstream education. He also proposes a model called DRAGS to account for his experiences.

Keywords: narrative inquiry, history, innovation, implementation, blended space, social space

Introduction

Online learning has now been practiced and researched for a long enough period of time to provide a good basis for historical analyses of the field in its own right. The experiences of the author probably mirror those of other people who also learned and taught during that particular time frame. Using a narrative functions analysis within the narrative inquiry framework one can make meaning from a personal story by situating the specific experiences of an author within the wider contexts of education and society (Mishler, 1995). I hope that this paper will, therefore, also speak to the experiences of others.

Student days

My first taste of online learning was at the University of Toronto in 1992. As a new doctoral student, an online course seemed like an obvious choice for a veteran high school science and computer science teacher. Using the PARTI platform and the latest 1200 baud dial up modems, a group of us explored various aspects of online learning. It was all text. And slow text at that! The software did not support even basic facilities such as word wrapping. One had to estimate when to press enter at the end of the line and, once pressed, one could not go back and edit one's own words.

We used Rapaport's (1991) book, Computer Mediated Communications and learned about the platform we were using and other experimental systems like EMISARI and Confer. We learned about electronic bulletin board systems, file structures, information retrieval. We explored the problems and the possibilities of learning in this new medium such as connecting students in different schools together. We conducted collaborative online work by doing essay assignments once in pairs and once in teams of four. Like most of my subsequent online students, I went into the course expecting that it would be easy but found that, once engaged with my fellow students, there was far more work involved.

The technical issues of the course were interesting but the discussion system was what captivated me. The class membership was spread out over a distance greater than 1,600 kilometres and yet we could communicate so easily. I felt as if I came to know the other members of my class. And I loved the fact that my own ability to communicate in text was as good or better than my ability in the spoken face-to-face classroom where thinking on one's feet, so to speak, trumped all. Although I did not know it (much

pedagogy is invisible to students) the way that the instructors conducted the course was based on the best practices of the time (Barron & Orwig, 1993). Their conduct had a profound effect on the way it functioned and, therefore, my experience of it. There were two instructors, a PhD student and his supervisor, and they seemed to be online at all hours of the day and night, always helpful and unabashedly positive to us. They used light heartedness such as their mnemonic device to remember the University's dial-in number. They called it Pizza Pizza© plus two (the pizza chain had a well advertised musical jingle for their telephone number 667-1111 – the University's modem number was 667-1113). As the term wore on, the course requirements became less and less important to me. I stopped thinking about the marks I was earning and engaged in reading and discussing interesting topics raised by the two instructors and my classmates. Communication within the class became more and more enriching. I found that I really came to like my essay partner and thought that we produced a pretty good essay considering that we had never met.

The next assignment was done in larger teams. The original pairs were paired again to make up groups of four. Coordination was much more difficult and I found it harder to get to 'know' the new members of my team as I had my first partner. We were motivated as students, however, and worked hard, nevertheless. Despite this work, the personal connection did not seem as strong somehow and it was harder to negotiate things. In fact, as the term was coming to an end we had just negotiated an outline of the essay that we were going to write.

At that point I received word that my father was gravely ill and that I needed to return home. It was 1,000 kilometres away. The situation was dire. However, the project was not finished and although I was going home, without question, I was really torn by the thought of letting my team down. I told them by Email of the situation and said that I would try to work once I was home. I also offered to do the final edit to make up for not being there as the essay was being written and assembled.

It came as a complete shock, therefore, when every member of my team said to forget the essay, go home and not even think about it. They would do all the work. Furthermore, they would put my name alongside theirs on the essay so the instructors would have no idea that I was even away. I was to take care of my family and forget the course – and they would not take "no" for an answer.

I will never forget their kindness. It showed me the way that people can and do act online is the same as they can and do face-to-face – with love and compassion – when they have a sense that they know and like the other people. We were not just names on a screen to each other and the technological connection was not a meaningless, context-free one. We were connected by our interactions, our tasks, our efforts, our common humanity.

First online teaching experience

It was that ethic that I took into my first experience teaching online. I had come from Canada to New Zealand in 1998 and was asked to head up the School of Education's task force on web-based learning. I had a sense of what an online course might entail but it was clear at the meetings that many of those interested in web-based learning had not had an online learning experience on which to base their views. Some believed that it was not possible for undergraduates to take online courses because the motivation needed was so high that only graduate students could successfully muster the appropriate level. The group functioned well but, in the face of the unknown and some intractable and irreconcilable views, we eventually decided that I should develop and teach a web-based course as a model and that a member of the task force who had come from the University's Teaching Support Centre should help.

It was an academic match made in heaven as far as I was concerned. My colleague quickly became my mentor. She was experienced in web-based learning and introduced me to the notion of flexible learning – that an online instructor could focus on making the learning experience better for students by making sure there was flexibility built into it. This adaptability could come not only from time and space – students could do their work when they wanted and where they wanted – but also from the instruction. Deadlines could be changeable, of course, but modules could overlap one another so that students were thinking about more than one main idea at the same time. Discussions could take place in a collaborative, social space. Groups could be formed and re-formed easily. Students could be welcomed as partners in the instruction. My mentor told me that I was an 'early adopter' a term new to me (Rogers & Shoemaker, 1971).

Since it was now almost time for the mid-year break, I set about recruiting students to take the course. I visited the classes of every face-to-face course in the School, with the approval of their instructors, and

explained the nature of the online course. As a result, I managed to attract nine intrepid students. In my view they, too, were early adopters – magnificent students all. They needed no motivation to work hard nor to collaborate with each other. They produced a mountain of discussion posts, wrote great essays, participated fully in weekly chats and performed very well on the obligatory face-to-face course-based, final exam mandated by the University.

Since the course was about learning online the discussions centred on what the learning experience, in its various forms, was like for the students. It became, like my earlier online course as a student, experiential. Looking back, it was pretty minimal – entirely text-based, with online lectures, online discussion fora, and online real time weekly chats. There were two face-to-face meetings, the first to help students log in and get to know that the other participants were real students, and the second on the last day for a class party to bring closure to the experience.

My mentor did a specialized course reflection as the term ended and we found that, in general, the students said that they had had a good learning experience (Gunn & Barnett, 2000). The only real complaints they had were technical (they did not like having to use more than one login sequence for different aspects of the course) and systemic (they complained bitterly, and with justification, that it made no sense to attend a face-to-face exam about a course that had been delivered online). I went home for the break feeling high on the success of the experience and feeling that I had found my real strength as a teacher.

Nothing prepared me for the instructors' meeting to discuss course results upon my return. This type of meeting had not been part of my prior teaching experience. When it was time to discuss my course, someone noted that every student had earned an 'A' and asked me to justify that fact. I mumbled something about meeting criteria but was at a loss to explain. Another instructor then said they were worried that the online course might have set very low standards. Others asked how I knew that my students had actually done the work. I was not prepared for this critical but useful engagement with my course and I did not answer well. I knew that their concerns were wrong but I could not muster the facts or arguments to demonstrate what had really happened. In the end, another colleague came to my defense and said the criticism was not taking into account the immense amount of work it had taken to create and conduct the course in the first place. I was relieved when the discussion turned to the next course. However, I said to myself that this would never happen again.

Amongst the students, however, word had spread about the course and some 23 students enrolled the next term. This time I documented everything from the start. I did word counts, frequency counts, analyzed patterns, and kept copies of everything I could. By the end of the course I found that each student had been given over 200,000 words to read, that each student had contributed a mean of 6,500 words of their own to the discussions and had produced a collaborative essay of about 1,000 words with a partner. I gave value to the students for participating in the discussions and set up a rubric that required them to read each other's posts before they earned value for theirs. I documented the weekly chat sessions and the contributions by each student. Finally, I required that the students create their essays online and gave them half of the grade value for showing me their discussions, copying me on their emails to each other and so on – in real time – as they created their product. I also asked my mentor to accompany me to the next instructors' meeting for moral support.

Although the final grades were slightly lower than the first iteration of the course they were still significantly higher than the rest of the courses at the School. As the meeting opened I glanced through my notes. I felt confident that I could answer any query that anyone might have and was comforted that my mentor had assured me that my course was fine. When my course was tabled, I explained what I had done to document the rigor of the course and presented a few statistics. I was expecting some pointed questions. To my utter astonishment no one had any questions at all and discussion moved immediately to the next course.

I was under no illusion that my course was perfect – far from it. It was designed for a low bandwidth environment and so it helped those who were textually oriented far more than those who liked to listen to instructors or view graphics and video for understanding. I struggled hard to help students feel individually like they were an important part of the class and that they were valued for what they brought to it.

Since that time, and as a direct result of that experience, I have always ensured that I could answer any questions relating to my online courses, have listened carefully to what students said, and incorporated

many of their ideas into subsequent iterations of the course. Together, these skills and inclinations formed the basis of a critical, self study research method.

Teaching with other platforms

When I returned to Canada, I took with me the ethic of flexible learning, a lot of valuable experience, and a method to conduct research on my own teaching. However, when I set up the first Canadian version of the course, I had to make some major adaptations to myself as an online instructor (Barnett & Gunn, 2002). The physical environment was different. There was greater bandwidth available. There was an extravagance of technical support. However, there was a different, mostly manual, in-house platform at the Faculty. The course had to be offered in nine weeks rather than thirteen. Finally, there was a different underlying philosophy of online education that focused more on the technological components to support learning than focusing on the learning *per se*. For example, the system was centrally controlled and administered and all courses had to fit a designed interface pattern.

I found that the assumptions that I had taken for granted in New Zealand were not shared in my new workplace. For example, I was appalled to find that threading was not available in the discussions because those who had designed the interface thought that threading gave the instructor too much control over the discussion. Furthermore, there was no way to conduct online assessment. However, the log in processes and the system itself was rock solid. The interface was clean and much better than any of the commercial platforms then available. As a result course design was challenging – both enhanced and hampered.

In order to control my own teaching I asked for, and received, special permission not granted to others, to upload my own web pages to the system's server. However, I had to learn to use HTML and cascading style sheets effectively in order to teach. After a couple of years I became frustrated with the platform. For example, I had to recode my web pages every time there was a systematic change in the underlying required HTML codes, the server names, calls to the management system or changes in file locations. These changes all had to be manually updated for every web page in the course, often at the last minute as the term was starting. One year I had to change forty pages overnight just to get the course running for the first day of classes.

By this time, I was determined to continue to conduct self studies on the course and teamed with a colleague from another university to plan the research (Barnett & Duncan, 2007). The first thing was to change platforms so that someone who was not on the Faculty's databases could participate in the course. I was more than ready to do that.

The University used WebCT, a fully functional platform, and it was available for any course. My colleague could be given a University user name and password. Once again, I had the freedom to design the course and instruct it as I wanted even though the interface design, on the surface, was not as sophisticated. The change was, to say the least, controversial in the Faculty and I regretted losing the Faculty technical and administrative support. However, I did receive some help from the University's Information Technology Services group.

One of the technicians was extremely imaginative. When I asked how I could engage my students as instructors, she suggested that I use the University's platform on the separate continuing studies server. This environment was designed to allow easy access to non-University people for weekend and non-credit courses. There was no need for an official university identification that was part of the regular platform.

Each team of students could be granted instructor status for a course of their own on this server. Their work in such a course would be a project to create and teach a module. Their classmates could be designated as students in the course. Thus, in these courses students could be given differential status designations.

The overall course, therefore, consisted of the regular modules on the main platform and a set of courses on the continuing studies platform for the students to create their own online modules, moderate the discussions and provide feedback to their 'students', the other students in the course. I asked the groups of students to negotiate topics that they wanted to teach online and to create the background material, online tests and moderate the discussions.

The feedback from students was extremely positive about the experience of creating and teaching their own modules though by this time, the textual basis of the main course – even with huge numbers of hyperlinks — was not engaging to students who had become much more familiar with the online world and dynamic web sites (Barnett & Duncan, 2007; Duncan & Barnett, 2008, 2009) since the early days. One of the flaws in the course was that it was not as constructivist as it could be. Despite the presence of regularly updated materials and the ability of students to create their own materials, the course still did not completely belong to them. In September, 2008 I decided to change the nature of the course and make it constructivist. I created three modules – online communication, teaching, and assessment for the overall course. I put the rest of the modules in the hands of the students on the continuing studies server. I passed over to the students my basic background material on the topics that I had usually taught such as privacy, safety, access and equity and asked them to create the course modules that the rest of the students would take and on which their participation would be graded. I created podcasts for my three modules, some online videos to show to the students and conducted Wimba © live classroom teleconferences to help them to create their modules.

There were 30 students in the course and by dividing them into groups of three, we needed ten modules. I only had six content modules, in addition to the three I was still using, from the year before. This opportunity allowed me to conceive new modules that had not previously been part of the course. These modules included gaming, wikis, podcasting, synchronous tools, and virtual worlds. Since there was no time in the schedule for each student to take all 13 modules in 9 weeks, they were allowed to sign up for six of the ten modules. Once again I was surprised by the effort and ability of the students (Barnett & Duncan, 2009; Duncan & Barnett, In Press). Their modules were amazingly well done. However, it was the newer modules that demonstrated to me a whole new way to teach online.

As I survey the current state of information technology education, innovation continues. The use of virtual worlds in online teaching seems to be at a similar stage in its evolution as those first forays into online education in which I had been a student, in 1992. The possibilities seem limitless. There is freedom for innovation, creation, exploration and dissemination. I wonder what the future will bring.

Towards an understanding of my experience of technological change

So what does this all mean and how does one instructor's experience relate to the cycle of innovation? First I want to state that I do not seek to understand the psychology of early adopters and mainstream adopters (Rogers, 2003) nor understand diffusion patterns for technological innovations. However, there are documented cycles of innovation Straub (2009) and change (Fullan, 1991). Many of the models are rationalistic and do not take into account the affective component of people involved in innovation and development. Some like the Concerns Based Adoption Model (Hall & Hord, 1984) also tend to have a pro-adoption bias, assuming that whatever change is desired by decision makers should be adopted. Many times the research literature is about how to manage educational change, how long change takes, resistance to change, the voluntariness of technological change through societal permeation and the like. Incredibly, even though most of the work done on learning takes into account the centrality of its social and emotional components (Hoffman, 2009) we do not seem to apply this understanding to our own work. This paper, therefore, tries to break new ground in understanding the effects of technological change on the affect of a key group: the early adopters.

Change does not just happen, of course, and there has been a great deal of literature devoted to its study (See for example, Fullan, 1991; Hall & Hord, 1984; Levy & Merry, 1986; Sheldon, 1980). Usually a disruptive event triggers the beginning of the process (Sachs, 2008). In information technology education that disruptive event can be the emergence of a new technology whether hardware, software or practice-based. The availability of that new technology destabilizes the ways that people do, and have done, things. It triggers the imagination of a few people, the 'early adopters.' These are people who can see uses for new technologies more quickly. Others need more time to appreciate both the advantages and disadvantages. It is beyond the scope of this paper to analyze in depth why some people can foresee new uses while others do not. However, whether it was the emergence of new cheaply available personal computers in the late 1970s, the development of software to connect these personal computers to data lines in the 1980s, the development of online platforms for teaching in the late 1980s, or the growth of virtual worlds in the late 1990s, the pattern seems to me to have held true.

Perhaps, those in the mainstream choose not to engage immediately because they do not themselves see enough potential benefit of that technology though perhaps they do see the complexity of the change that might be required (Sollie & Duwell, 2009). The absence of widespread usage may appear to confirm that view. Early adopters, committed to a new technology, face what sometimes emerges as ridicule and push

ahead, do the tests, create the materials, and enact their visions because they can see the potential if only in a fuzzy sort of way. Their research is often published as case studies of their own work. I call this stage 'Derision.'

When new technologies are at first dismissed, references are sometimes made to prior technologies that failed. For example, I heard it said many times in the 1980s, "Computers are a fad… just like those old teaching machines." Others dismiss a new technology out of hand based on their own experiences and prejudices, "I did well enough without computers. Why do we need them now?" In the early 1990s, I was told that online platforms could never be useful except in graduate education because undergraduate students simply did not have the motivation, the inner locus of control, to work alone and study effectively online. I heard in the early 2000s that virtual worlds would never be useful in education.
As a result of forging ahead, successful early adopters invent new and often more effective educational uses for these technologies and, as a result over time, do not face the same derision. Instead they face criticism, in a stage I call 'Rejection', by those who quite rightly believe a new technology must be subjected to scrutiny for any number of reasons. They may see the new technology as a threat to their own work strategies. They may correctly perceive that the new technology may shift power balances in complex and unforeseeable ways. They may wonder whether the costs are greater than the benefits. At this stage, the new technology is not dismissed out of hand but attacked. "There must be something wrong if the students are doing well." "Perhaps the standards are lower, the teacher ineffective, the materials suspect." Many times I heard, "We should not be teaching students to teach online because schools will forever be face-to-face." At this stage, in other words, the new technology is put to the test to answer what are arguably valid criticisms.

If these criticisms are successfully answered, the use of the technology slowly (sometimes over many years) starts to become more widespread (Rogers, 2003). In many ways this stage of reserved reception that I call 'Acceptance', becomes the most productive as early mainstream adopters start their first ventures. By this time the early adopters have created enough methods, curricula and support materials to allow the mainstream educators to see a clear vision of what they, themselves, might be able to do. The early adopters become an acknowledged resource for the mainstream users. The interactions become more questioning than commenting. "What do I need to do to put my course readings online?" "Where do I find the help menu for the podcasting module?" "Should I use a wiki in my course?" "What are the benefits for me to teach using this new technology?" At this time the use of the new technology begins to flourish and become part of the mainstream as more and more people develop self efficacy (Bandura, 1977) in the use of the technology. However, as an inevitable consequence of this dissemination, technological use does not reside solely with the early adopters. At this stage we often see implementation studies begin to answer the overarching critical questions of how to best use the new technology in a more widespread way.

The stage then shifts to one I call 'Growth' as middle to late adopters also begin to use the technology. Incrementally, the early adopters cease to be the major source of expertise as each mainstream user is able to share their developing expertise with others. Sometimes power struggles develop at this stage between the early adopters who have come to feel that the technology is their own and mainstream adopters who have different notions about the ways to use the technology. However, numbers make a difference. The early adopters lose the uniqueness of their expertise and hence they lose control of the new technology to the larger numbers using it. Increasingly at this stage, administrators begin to worry about how the technology fits with their systems because they can see the technology starting to expand in a hundred different directions at once and get out of control. Administrative research comes to the fore.

The last stage is, therefore, one of systematization. Administrators plan the ways that the new technology will fit within their educational systems. They develop policies and practices to use the new technology widely, systematically and equitably. Administrators plan who will use the technology, the ways that the technology will be used, determine the supports to be put into place, and plan for the future. I call this the 'Systematic' stage. However, some early adopters, the original academic entrepreneurs, can become embittered by this loss. The professional freedom they originally enjoyed is largely gone. They may not work well within policies and practices they did not develop. As a result they may be pushed aside and their developments poorly acknowledged. They may not even be thanked for their crucial role in the creation and development of the new technology. Their only recourse is to seek out new technologies and new frontiers.

At this end stage, many early adopters lose their commitment to what is now more standardized and some find a new technology and start the process all over again (Straub, 2009). New case study research develops. Over time some early adopters, who have lived through several such cycles, give up.

My own place within the cycle

In my own career I have seen the cycle repeat itself many times. As an early adopter, I have felt the derision. I have faced the critiques. I have been the guru. I have seen my ideas and products used by others without acknowledgement. I have found myself 'moving on' new technologies. And I have fought discouragement.

My first experience was with high school microcomputer courses. I watched them developed primarily by science and mathematics teachers to teach programming. As the cycle came full circle, computers were incorporated into other curriculum areas and were reinvented as keyboarding courses, technical education programmes and general curriculum support. Science teachers were relegated to specialized use of computers for simulations and data logging tools.

I have seen online courses become standardized and regulated to fit within institutions' standards. I have seen websites made to adhere to University and Faculty brands. I have seen clickers, not the most versatile of technologies, become 'weighed down' by rules and regulations (Barnett, 2006).

At this time I see other new technologies entering the fray. Mobile computing is one and virtual worlds another. Both are entering the acceptance stage. When I first saw Activeworlds © in 2000, I thought that a 3D course would be a fine thing to try. Most everyone scoffed. At that time, they had not yet understood that online education itself would become a permanent fixture in education due to financial if not pedagogical factors. If I had not moved back to Canada at that point, I might have tried to adapt my online course to a virtual world.

The environment I entered in Canada was in the early systematic stage with online education. It was also making a lot of money (being the first and, at that time, only provider of online certified upgrading courses for teachers). There was, thus, no toleration for any online course or technology that was not part of the system. The administration had spent too much money and time on their successful centralized system to support an assistant professor trying out a new technology with their students.

I put my energies into resisting the standard system and fought to bring in a better educational platform that gave more control to instructors by modeling the uses of technologies that could fit within it. I did not pursue virtual worlds like *Second Life* but instead pioneered the use of video and audio discussion boards, conceived ways to give students appropriate control over their own learning, and conducted real time classes through the platform. After eight years this mix of technologies is now reaching the growth stage. My research has been to try to make my own methods less tacit and create a framework to give the Faculty a direction for development of the courses.

Conclusion

This story is, therefore, my personal understanding of technological innovation as I have experienced it. The model that I call DRAGS (for Derision, Rejection, Acceptance, Growth and Systematization) illuminates that there can be negative affective components of technological innovation on early adopters who take part in these changes. The ways that new technologies have been incorporated in the past in educational institutions has negatively affected early adopters who freely gave of themselves to envision, create, adapt, and develop them. Since technological innovations in education are likely to continue developing into the foreseeable future we need to rethink how to effectively integrate new technologies into educational systems by attending better to the feelings of the one group who are absolutely needed to promote them.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.

Barnett, J. (2006). Implementation of personal response units, in very large lecture classes: Student perceptions. *Australasian Journal of Educational Technology, 22*(4), 474-494. http://www.ascilite.org.au/ajet/ajet22/barnett.html

Barnett, J., & Duncan, H. (2007). *Process and product: Learning to teach online.* Paper presented at the Annual Meeting of the Canadian Association of Curriculum Studies (CSSE). May 28. Saskatoon, SK.

Barnett, J., & Duncan, H. (2009). *Raising the bar: Online course research in action.* Paper presented at the Annual Meeting of the Canadian Association of Curriculum Studies (CSSE), May 24. Ottawa, ON.

Barnett, J., & Gunn, C. (2002). *Taking it with you: Conceptualizing the issues in transferring knowledge of teaching online education courses to new settings.* Paper presented at the North American Regional Conference of the International Council for Open and Distance Education (ICDE) and the Canadian Association for Distance Education (CADE-ACED), May 25-29. Calgary, AB.

Barron, A. E., & Orwig, G. W. (1993). *New technologies for education*. Englewood, CO: Libraries Unlimited.

Duncan, H., & Barnett, J. (2008). *Preservice teachers and technology: Pedagogy and process.* Paper presented at the Annual Meeting of the American Educational Research Association (AERA), March 25. New York City, NY.

Duncan, H., & Barnett, J. (2009). Learning to teach on-line: What works for pre-service teachers. *Journal of Educational Computing Research, 40*(3), 357-376.

Duncan, H., & Barnett, J. (in press). Experiencing online pedagogy: A Canadian case study. *Teaching Education.*

Fullan, M. G. (1991). *The new meaning of educational change*. New York: Teachers College Press.

Gunn, C. A., & Barnett, J. (2000). Online learning: A quality experience. *New Review of Information Networking, 6*(2000), 81-98.

Hall, G. E., & Hord, S. M. (1984). *Change in schools: Facilitating the process*. Albany, NY: SUNY Press.

Hoffman, D. M. (2009). Reflecting on Social Emotional Learning: A Critical Perspective on Trends in the United States. *Review of Educational Research, 79*(2), 533-556.

Levy, A., & Merry, U. (1986). *Organizational transformation: Approaches, strategies, theories*. New York, NY: Preager.

Lieblich, A., Tuval-Mashiach, R., & Zilber, T. (1998). *Narrative research: Reading, analysis and interpretation*. Thousand Oaks, CA: Sage.

Mishler, E. G. (1995). Models of narrative analysis: A typology. *Journal of Narrative & Life History, 5*(2), 87-123.

Rapaport, M. (1991). *Computer mediated communications*. Toronto: John Wiley & Sons.

Rogers, E. M. (2003). *Diffusions of innovations (5th Ed.)*. New York. London: Free Press.

Rogers, E. M., & Shoemaker, F. F. (1971). *Communication of innovations: A cross-cultural approach* (2nd Ed.). New York: Free Press.

Sachs, J. (2008). The knowledge society as a trigger for contemporary change in education policy and practice. In C. Sugrue (Ed.), *The future of educational change: International perspectives*. London, New York: Routledge.

Sheldon, A. (1980). Organisational paradigm: A theory of organisational change. *Organisational Dynamics, 33*, 61-80.

Sollie, P., & Duwell, M. (2009). Evaluating new technologies: An introduction. In P. Sollie & M. Duwell (Eds.), *Evaluating new technologies: Methodological problems for the ethical assessment of technology developments* (Vol. 3). New York, NY: Springer.

Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research, 79*(2), 625-649.

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Please cite as: Barnett, J. (2009). Seventeen years in the evolution of an online instructor's views about ICT innovation. In *Same places, different spaces. Proceedings ascilite Auckland 2009*. http://www.ascilite.org.au/conferences/auckland09/procs/barnett.pdf