
The "Digital Generation", Technology, and Educational Change: An Uncommon Vision

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Australia is in a period of fundamental social and cultural reorganisation where individuals and institutions are coming to terms with the effects of rapid and widespread social change. This paper explores how a group of young, aspiring, primary school teachers, of a generation stereotypically identified as the "Digital Generation", understand technological aspects of this unique period. It emanates from a larger study where 70 young adults aged 15 – 24 engaged in a scenario planning exercise to ascertain their understanding of the future and how this might impact on their chosen profession. These aspiring teachers will be moving into an education system which is underpinned by a futures premise based upon the belief that education should prepare students for new workplaces, new technologies, and new cultures. The paper shows that while the participants exhibit many of the characteristics of the "Digital Generation", particularly in relation to their confident use of technology, paradoxically they do not align the changing nature of technology with changes in education. This is problematic if, as claimed, educational change comes about when individuals and institutions share a common vision and has ramifications for future educational reforms that depend upon the cooperation and collaboration of the classroom teacher.

The "Digital Generation"

This paper is about young adults and their relationship to information and communication technologies (ICTs). These young adults are members of the "Digital Generation", (Websters Online Dictionary, 2004) reside in the South East region of Queensland, Australia, and have expressed an interest in becoming a teaching professional. This paper derives from a larger study where 70 aspiring primary school teachers aged 15 – 24 engaged in scenario planning workshops, focus group interviews, and a telephone survey to determine their Discourses of the future. While there were a number of evident Discourses such as Discourses of education, youth, science fiction, and multiculturalism, this paper is particularly concerned with examining their Discourses of technologies and what these might mean for their future teaching careers. Initially, this paper describes the "Digital Generation" and then briefly outlines the study prior to examining and discussing the findings. This discussion centres on the respondents' technologies Discourse and what this might mean for current and future educational reforms.

There is some disparity on the age parameters for the "Digital Generation". Consequently, their estimated numbers differ. However, what is undisputed is that they are prolific (Shepherdson, 2000). Their numbers are estimated to be larger than their

"Baby Boomer" parents and will thus constitute the next "great" generation in the history of Western civilisation (Strauss & Howe, 1997).

This generation is often defined by their relationship to technology. While they have numerous descriptors such as the "Echo Boomers", "NeXters", "Bittersweet Generation", "Millennials", and "Generation Y2K" they are most commonly referred to as the "Digital Generation", "e-generation", "Generation Dotcom", "Cyber Generation", and the "Net Generation" (Websters Online Dictionary, 2004). Much has been written about this generation often with a view to determining marketing strategies and future strategic goal setting. Some authors (Little, 2000; Mackay, 1997) have written about them simply with a view to understanding their cultural characteristics and motivations. Inevitably, in any description, authors will note their intimate relationship to ICTs. For instance Gaylor (2002) argues that they are the first generation who has been weaned on computers and who have not only embraced technology but actually celebrate it.

The "Digital Generation's" propensity towards ICTs is not disputed. They have a particular affinity for the Internet and use it for a multitude of purposes. This generation find it indispensable for entertainment, shopping on line, homework and studies, banking, paying bills, communicating with peers, and developing community. Furthermore, it is employed by members of this generation at a very basic level to craft their personalities. Mcgregor (2001) and Shepherson (2000) note how the "Digital Generation" use technologies to create unique and pastiched identities that are cut and pasted from cultural and historical sources.

Undoubtedly, the "Digital Generation's" character has been partially informed by their proclivity towards ICTs. Gaylor (2002) says of them that they are techno-savvy, image driven, develop graphic skills before literacy skills, do not think in a linear fashion but rather think non-linear, loopy, in hyperlink, hopscotch fashion. Time, for them, is measured in microseconds, and survival is of the fastest not the fittest. They have a strong sense of immediacy, a desire for instant gratification, and a low boredom threshold. They are success oriented and believe change can occur overnight in an "anything can happen and probably will world". They learn by interaction and doing rather than sitting and listening and prefer to experience and feel rather than think and analyse.

The study

The study employed 70 subjects who resided in the South-East Queensland region and who were currently enrolled in, or were intending to enrol in a teacher-training program of study. There were 14 males and 56 females involved in the study. The mean age of the participants was 18.5 years. The study used a multi-method approach that included scenario planning workshops, focus group interviews, and a telephone survey. The initial stage of the study involved six scenario planning workshops where 23 young adults (4 males and 19 females) were guided in creating four scenarios of the future based on current trends in society and social and cultural uncertainties.

The scenario-planning data was organised by a process of coding and grouping the data to form thematically linked categories (Kirby & McKenna, 1989). These categories constituted what Gee (1996) would regard as a Discourse. The most frequent Discourse was that of technologies. This Discourse with its associated concepts and predictions was

presented to the 13 focus groups for their consideration. Seven males and 40 females were involved in analysing and extrapolating the findings from the scenario planning workshops. Two years after the initial data were collected; a telephone survey was conducted of the original focus group participants. The questions in the survey were based on the analysis of the data. This survey data indicated that there had been little movement or change in the respondents' technologies Discourse. This is discussed in the following section.

The findings

Like other members of the "Digital Generation" the cultural landscape for the young adults in this study has been one of increasing technological complexity. Some (Goff, 1999; Shepherdson, 2000) would argue that this should foster a sense of comfort with and ability to adapt to constantly evolving and novel technologies. While the data suggests that this attitude is apparent it also indicates an additional and alternative attitude. These members of the "Digital Generation" are a paradox. Their technologies Discourse reveals that they are ambivalent about technologies. While they demonstrated a "C effect"ii reaction to technologies, they also expressed a "B effect" or negative reaction.

The young adults in this study were technologically literate. All owned or had access to computers and the Internet and had incorporated these technologies extensively into their lifeworlds. Indeed, both their actions and their discourse indicated the extent to which they had engaged with information and communication technologies so that when explicating a point members of the group often supported their case by referring to these technologies. For example, individuals in the focus groups spoke of relationships and communication in terms of Internet chat programs such as ICQ and Powwow and instant messaging programs such as MSN and sms messaging. Charlene in the following example is representative where in response to a question about relationships, she responds from her technologies Discourse:

Also, um, people can lie on the Internet. You really don't know them. No matter how much you talk to them, or you think you know them you really don't. Yeah, and it's impersonal, and yeah, I think it causes relationship problems. . . . Cos, I know one of my friends, she's met three guys off the Internet, and they've all just been jerks to her when they've seen her.

Charlene's response indicates the extent to which the group have appropriated technologies as part of their repertoires of practice (Gutiérrez & Rogoff, 2003). Kasha's response to a question on the future of education is also an example of their technologies Discourse, when she notes that school work will be downloaded rather than hand written, "You'd be downloading, and downloading, and downloading".

It is their constant references to ICTs in explication of their beliefs, their current interactions with them, and their future predictions that they will continue to depend on technologies which signals their positive or "C effect" reaction to technologies. Their reality is one where ICTs are part of their lived experiences and integral to their understandings and practices. However, paradoxically when these members of the "Digital Generation" specifically speak about technologies, they express a "B effect"

reaction where technologies are described as malevolent and controlling. This reaction is evident in Charlene's comment where she explained that:

Technology, it can be a good thing, but I'm probably leaning towards more of a negative thing. I mean um, it just changes everything, and it'll impact on everybody in every level. Like everything will change. And I think um, it'll change relationships, it'll change everything.

Although these young adults extensively employ technologies and accept it as integral to their cultural landscape, they also distrust technologies and those who master and control technologies. Their fears of technologies are similar to fears expressed by youth in the 1980s where technologies and those who manufactured them were seen as sinister, uncontrollable, and intent on destroying the world. Youth at that time were fearful of technologies and expressed a Discourse of powerlessness that manifested as a belief that nuclear war would decimate the world (Wilson, 1985). Although the respondents in this study did not hold such a dystopian view of ICTs they did express some concern about the extent to which technologies affected society. These concerns specifically focused on the power that technologies have to instigate change and the inability of society to control technological change.

The respondents "B effect" reaction to technologies suggests some unease with aspects of change in a postmodern culture rather than unease with technologies per se. The current postmodern culture is epitomised by constant and rhizomic change (Bauman, 1998) and is especially identified with technologies and their ability to restructure and reorganise the social space (Noble, 1977). It is no surprise that the respondents in this study had pinned their anxieties about social and cultural change on the most obvious organising tool of the late 20th century – ICTs. These anxieties manifested as a lack of trust in technologies and centred around issues to do with privacy, surveillance, destruction of family and social relationships, crime, materialism, and social inequities. This reaction reverberates with youth's dire predictions of the future in the 1980s, which also stemmed from an inability to negotiate the then current cultural climate of rapid change and increasing globalisation, escalating racial tensions, and perceived social threats such as the HIV/AIDS pandemic (Eckersley, 1998; Mackay, 1986).

Although the groups' "B effect" reaction could be a reaction to the seemingly uncontrollable pace and direction of change in society (Eckersley, 1998), it does feed into and help maintain their technologies Discourse. The respondents' negative and positive reactions to technologies have produced a situation where the majority perceived technology as a negative force; yet incorporated it unquestionably into every aspect of their lives. These two reactions represent two different aspects of their cultural model (Gee, 1999) and seem to harmoniously co-exist.

Another interesting aspect of their technologies Discourse was their reticence to export their current proficiency with technologies into their predictions for the future of education and themselves as teaching professionals. Anna notes this in her comments:

Well I'd like to think we will [still have classrooms]. Like I'd like to think that we still will be a teacher in the person. Like sure, computers can be teaching you, but you need human contact. I think. Otherwise, I don't know, it's just unnatural to me. It seems unnatural.

Although the respondents' lived experience was one that evidenced technological literacy and competence, their future predictions of themselves as teaching professionals suggested limited technological engagement. Technology was predicted to be at the periphery of education and was mostly seen as a future subject area rather than as an integral part of teaching and learning. Essentially, its future role in the classroom mimics the present situation.

Discussion

Although the respondents' predictions for technologies in the classroom appears dismal, it is undeniable that the technologies revolution has impacted and will continue to impact the teaching profession. These changes are specifically seen in how the profession is constructed so that the new workplace is about "new kinds of people engaged in new social practices" (Gee, Hull, & Lankshear, 1996, p. xvii). Teachers are now expected to be technologically literate and able to negotiate and manage the complexities of a constantly changing, technology and knowledge-rich society (Australian Council of Deans of Education, 2001). This means embracing flexibility, being creative and innovative in content delivery, curriculum design, use of resources, and meeting students' needs. It also means being self-transforming, committed, self-supervising, self-satisfied, self-assessing of one's skills and performances, and cognisant of one's failings and limitations (Sachs, 2003).

Education Queensland (2000) expects teachers to be new kinds of people engaged in new social practices and have developed curriculum reforms (The "New Basics Framework") that presuppose teachers' ability to do so. This reform is based on five educational premises: the pedagogy premise; the futures premise; the equity premise; the research premise; and the professional learning community premise (Education Queensland, 2000, p. 6). The futures premise is of particular interest and is based upon the belief that education should prepare students for new workplaces, new technologies, and new cultures. If, as this futures imperative states, that the business of schools is to prepare students for a changing future world of work then the teacher's own ability to negotiate the new workplace with its new technologies is integral and will determine the success of this curricular reform (Slaughter, 1999). Indeed, Education Queensland (2000) has stated that their reforms are dependent on teachers to have competency with print and electronic media, to be critical thinkers and self analytical, able to cope with complex community changes and uncertainty and finally, to be educable for retraining across the lifespan through a range of media.

However, the literature on teachers and change is not encouraging. That teachers and educational institutions are resistant to change is well documented (Andrews, 1996; Fullan, 1993). It has been proposed that reform is hampered, among other factors, by a failure to understand the various cultures inherent in the institution, a failure to respond to the power relationships embedded therein (Hargreaves, 1996; Sarason, 1990), and by a failure to understand the nature of teachers' work and their emotional orientation towards their students (Hargreaves, 1996a). Lortie (1975) argues that the very nature of the teaching profession precludes it from attracting change agents. Teaching is a conservative occupation and tends to attract a similar sort of individual into its ranks. It

attracts people who approve and support existing practices in education rather than are critical of it. The following extract supports this.

- Researcher: Pretend you've come back here and you're talking to me now, and you're telling me what it [school] looks like. Would I recognise it? If I go there I'd say "oh yeah, same as always"?
- Rex: I think so. . . Schools haven't changed much over the last two hundred years. It's still school. It might be shinier, more flashing lights, but I think it'll be basically the same.
- Researcher: Still run the same? You know, morning recess, lunch, that kinda stuff?
- Rex: I'd say so.
- Kiama: Yeah.
- Researcher: So pretty much the same routines as the way it's been running? Is that gonna be good?
- Kiama: I think so. Worked when I was there.
- Midori: Yeah I think it'll be good. It worked when I was there as well so ((Laughs)).
- Researcher: If it's not broke don't fix it, or something like that?
- Kiama: Yeah something like that.

It is argued (Sarason, 1990, p. 101) that to be successful, proposed changes need to alter teachers' perceptions and practices and support them in a process of "unlearning". Failure to do so, may result in teacher scepticism of proposed changes, a tendency for them to focus on the increased burden, a sense of lacking ownership, feelings of being unsupported, and a failure to see the benefits of the proposed changes. Consequently, they may subvert mandated change and justify it in terms of the reformers' ignorance of the reality of the classroom (Louden, 1991; Sarason, 1990).

Although much of the literature on teachers and change has tended to focus on the generations preceding the "Digital Generation" it warrants examination in terms of its currency for this new generation of teachers. Education Queensland reforms are first and foremost about change and assume that those entering the profession either have a similar vision or are prepared to adopt their vision. If successful change, as Fullan (1993) argues, occurs when individuals and institutions work towards a similar vision and goal then the success of the "New Basics Framework" is heavily dependent on teachers contravening their historical negative attitudes and beliefs about change and developing an altered mindset that welcome change and risk taking. The "Digital Generation" is said to be significantly different in attitudes and values than their elder siblings or parents (Mackay, 1997; Strauss & Howe, 1997) and express a far more optimistic, flexible, and confident outlook on life. Indeed they are claimed to welcome change and incorporate constant change into their actions and thinking (Mackay, 1997).

The future vision currently being espoused by Education Queensland (2000) and other academic bodies (Australian Council for the Deans of Education, 2000) is one that predicts, among other things, "newness" and novelty. It is a vision of new industries, new work practices, new economies, new skills, and new knowledges. It is also one where institutional structures and social dislocations will evidence new forms. However, future "Digital Generation" teachers espouse a contrary vision in terms of education. Theirs is

one that does not predict new work practices or require new skills or new knowledges. Their future workplace is based on the replication of historical educational models. Arguably, the group's predictions of a technologically barren classroom of the future and limited teacher engagement with technologies has stemmed from their previous context of twelve years of classroom participation and observation rather than from their current lived experiences. These twelve years of apprenticeship (Britzman, 2003) have been characterised by very limited application of technologies by either teacher or student.

This presents a paradox. While on the one hand they certainly have personally complied with the requirements for the future teaching professional in terms of their technological literacy and their ability to encompass novelty and newness, they have not drawn upon these cultural resources and repertoires of practice to formulate their future careers. A "fish and water" response would have assumed that their future predictions for schooling would presuppose more technologies in the classroom and more teacher engagement with technologies as both a tool and tutor. However, this is not the case. Rather, their narratives of teaching, which reflect their past experiences in schools, seem to have more currency in terms of their predictions than their lived experiences. This becomes problematic in terms of neophyte teachers moving into the teaching profession and adopting Educational reforms.

In this instance, these future teachers maintain a narrative of teaching that no longer has currency for the future teaching professional. As they move into the profession, these narratives will be compounded by a culture of teaching that tends to apprentice teachers into conservative, risk free, and retrospective behaviours and thinking (Andrews, 1996; Smith, 1999). Given their inclination towards reproducing the status quo and their experiences in schools, that reinforce conservative practices, then it hardly seems probable that they will fulfill Sachs' (2003) requirements for an activist professional, educational innovator, and pioneer. These "Digital Generation" teachers will be no more inclined towards incorporating technological newness and novelty into their teaching than their currently practicing peers. Educational reforms under these circumstances seem doomed to fail.

However, there is no doubt that activist teaching professionals are preferred and it behoves both the Education department and institutions of teacher training to take up the challenge. It was noted earlier that teachers need training and support to change their perceptions and practices (Sarason, 1990). These measures should ideally begin in teacher training institutions. It is essential that teacher training institutions and Education Queensland are collaboratively involved in creating a similar vision and goal for education. Teacher training institutions are well placed to promote and foster this vision in their pre-service teachers and can do this through better preparing students with the skills, knowledges, and attitudes needed to be responsible, reflective, and proactive future educators. This preparation could include developing courses and programs that are futures oriented. Futures Studies are integral to understanding where society is and should be heading and the place of the 21st century teacher in that society (Dator, 1993). Unfortunately, Futures Studies is given lip service in the majority of Queensland Teacher Education degrees. A few curriculum courses such as "Studies of Society and Environment" and foundational courses that address social and cultural perspectives may

address aspects of Futures Studies but it is often very nominal. A course specifically targeting this important yet underdeveloped discipline is imperative if young adults of today and our future teachers of tomorrow are going to stay relevant to tomorrow's society.

Futures Studies promotes the central idea that young adults of today are the vanguard of the future and have a responsibility to ensure preferable and sustainable futures. It advocates a socially critical perspective where practices, beliefs, and behaviours are critiqued for their future currency. In terms of pre-service teachers this would involve taking a critical look at schools, teachers, and educational processes and practices, to determine how appropriate these might be for the future. Currently, introductory courses to education deconstruct education and the processes of schooling but this is often of an historical and passive nature and does not link to a futures perspective or future action. For example, very little is taught about how to be an activist professional and resist the stultifying effects of teacher enculturation.

The "Digital Generation" is idealistic, flexible, confident, and optimistic (Howe & Strauss, 2001). They see themselves as heroes who want to make a difference and change the world (Gaylor, 2002). Teacher education institutions would be wise to consider these qualities and use them to their advantage in creating the activist teaching professional of tomorrow. They would also be wise to consider them in terms of redesigning themselves for sooth they too become outmoded and on the periphery of the educational arena.

Conclusion

This paper has reported on the technologies Discourse of a cohort of 70 aspiring primary-school teachers in South-East Queensland. These young adults are technologically literate but paradoxically do not draw on this cultural resource when envisaging their future careers. Their imagined future teaching careers are ones which are informed by historical teaching practices and educational models. This places them at odd with Education Queensland reforms that presuppose new types of teachers engaging in new practices, new thinking, and new workplaces. This paper argues that teacher education intuitions are best placed to develop the activist teaching professional of the future and that Futures Studies courses are a vehicle in which to achieve this.

¹ This paper adopts a similar definition of discourse as that of Gee (1996) where Discourse with a capital D is taken to mean language plus actions, artefacts, ways of behaving, modes of thinking, and so on. That is, Discourse is the language one uses and all the "other stuff" which identifies a person as belonging to a particular group or scene. Alternatively, little d discourse is what one says, the words one uses in order to make meaning.

² Based on Zurbrugg (1993), "B effect", or negative, thinking is named in honour of crisis proponents such as Barthes, Baudrillard, and Bourdieu. Alternatively, "C effect", or positive, thinking is named in honour of John Cage, eternal optimist, composer, lecturer, and philosopher.

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