

Technology Education as 'controversy celebrated' in the cause of democratic education

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Abstract

This paper is motivated by the challenge that Technology Education seems to encounter in the area of curriculum stability and identity. The search for 'common ground' amongst colleagues, theorists, or governments would suggest that finding agreement is an almost impossibility.

The position is developed that, when Technology Education is viewed from a range of perspectives, controversy is an ever-present phenomenon. The spirit of the paper sees this phenomenon as an asset to the field and to society in general and, as such, it is something to be celebrated.

The paper discusses the role of controversy in democratic and educational life using the notion of democracy-as-controversy. In turn, technologies are framed as sites of controversy and the concept of technologies as 'controversial propositions' is offered.

The paper illustrates the range of sites of controversy present in Technology Education itself, including: competing stakeholder claims, curricular and epistemological contestations, professional values differences, and pedagogical genres.

In 'celebrating controversy', it is argued that, despite systemic and governmental pressures toward conformity, controversy as core phenomenon of Technology Education should be embraced. This can be seen as (assertively) the emergence of 'technology wars' or (benignly) as Technology's own complicated curriculum conversation (after Pinar et al. 1995).

Introduction

'Between two children choose both. Between the lesser and the bigger evil, chose neither'
(Novak, 2009).

Three framing remarks are necessary. First, this paper is not primarily intended as some kind of remedy for a perceived problem (although it could be taken in that direction). That would be both reactive and an inadequate construction of the phenomenon under discussion. Rather, the idea is to open up a particular possibility for 'seeing' TE in a way that can help celebrate matters such as flux, change and problematics as *catalysing ingredients* of a worthwhile holism. In times of political, systemic, curricular and even collegial pressures toward conformity and acquiescence, Technology Education might do well to celebrate controversy as a rich asset.

Second, the discussion is above all a curriculum discussion where ‘curriculum’ is understood in an expansive sense and as a site of political contestation. This is returned to below. Similarly, ‘Technology Education’ is itself understood in an expansive way. The term is used to represent both a *subject* and, more openly, a broader *field*. Also, whilst the term ‘Technology Education’ is used hereafter, it is intended to represent inclusively subjects such as Design and Technology, Technology Studies, and others. There are multiple jurisdictional variations in both naming and scope of coverage in relation to this ‘curriculum drama’ (Layton, 1994a:13).

Third, the author is mindful of how many Technology educators (and others) can become isolated and encamped, with allegiances spoken or unspoken. The paper is in part informed by the witnessing of a spectrum of professional discourses which, when probed sufficiently, amount to controversies. Layton’s (1994b) work gave strong evidence of this spectrum and these matters are arguably even more a concern today.

On controversy...

For this paper, controversy is chosen over other words characterising dissonance. There is no shortage of related terms, for example: contestation, debate, discussion, argument, disagreement, discomfort, confusion, contradiction. Controversy is used because it articulates both a sense of the public arena and matters of societal impact as well as a recognition of unresolved value differences. Thus, where there is controversy groups of people sharing particular values counter others who hold opposing values.

Controversy can often be seeded in the fact that *concepts* fundamental to the controversy are themselves ‘initially ambiguous’ (after Gallie, 1956) and, further, views can be held aggressively or defensively. (Polemic is sometimes used as a term for a disputatious position taken with regard to a controversy.)

Writing for the educational context, Stradling et al., (1984:2) offer ‘...the term *controversial issue* for those problems and disputes which divide society and for which significant groups within society offer conflicting explanations and solutions based on alternative values.’ We could use such a clarification to identify some of the ‘problems and disputes’ that might constitute today’s controversial issues. However, there are also the temporal and the geographical to consider. Some controversies, for example of a political or religious type, have spanned centuries. Some remain within particular societies: for example, over the nature and provision of health care or education or around issues of sexuality or law.

Stradling et al., (1984) also offer the phrase ‘conflicting explanations and solutions’ to highlight how controversies might be perpetuated because of inadequate information – or its inappropriate or under-use. Simon’s (1957) explorations of ‘bounded rationality’ illustrate the phenomenon whereby two parties faced with the same evidence are able to arrive at differing conclusions. It is not uncommon for a controversy to be aggravated by the improper or partial use of information by one party. Here, we are reminded of the reality that what happens (or does not happen) within controversies is education- and, significantly, values-dependant.

It should also be said that it is hard to imagine life without controversies and that pursuit of their eradication might be fruitless or, if attainable, lead to what might be called ‘a life of vanilla and beige’. It is worth noting controversies’ positive value, for example, as articulations of dialectics where, from thesis and antithesis come new settlements themselves bringing new values disputes with new opportunities where creativities come into play that bring new ways of seeing things or moving forward – where controversy’s literal meaning of ‘turning against’ brings rewards.

Thus there is a sense in which controversies are what might be called ‘necessary tools’ and the concept of *democracy* serves to illustrate the point. ‘Democracy’ here is taken to be an idealised concept seen as ‘the most ethically defensible form of government’. Thus, *as an ideal* it is unattainable because it remains imperfect, in continuous need of refining, advocacy and defence. Given such a dynamic, it remains ever-contested. However, the requisite arguments in such contestation are *ethical* ones – simply put as answering the question of ‘how should we live?’. (Such a simple take

on *democracy* is not only contestable within democracies but can be controversial beyond them.) However, as a working notion, it can be seen that multiple controversies are ‘necessary tools’ to the healthy pursuit, and defence, of the democratic ideal.

If the tools of controversy are necessary ones, then it occurs that they might be either under- or over-used. Under-use can occur when a democracy’s members are disinterested (a matter for education and the media perhaps), distracted (eg time is prioritized otherwise), or enculturated away from discussing certain matters (“We don’t discuss politics or religion here”). But inaction can also arise from the paralysis of analysis – the phenomenon of information- and/or issue-fatigue through the talking-out or confusion arising from interminable analysis of issues. Thus, we begin to see why it might matter that we educate citizens in the value and workings of controversy as a tool for democratic life. Without this, democracy is prone to apathy and atrophy. Understanding, and being engaged with, controversies matters.

Technologies as sites of controversy and as ‘controversial propositions’

At the very least, technologies are sites of academic contestation (if not yet fully controversial). Technology as a field of psychological, sociological or philosophical study remains under-explored. Knowledge formulations remain tentative and relationships amongst technologies, people, other species and environments remain under-theorised and under-researched. While deep and significant work has been carried out with regard to technologies per se, (see, eg Winner, 1977; Csikszentmihalyi & Rochberg-Halton, 1981; Bijker et al., 1989; Green & Guinery, 1994; Mitcham 1994; Feenberg, 1999; Dusek, 2006) much has yet to work its way through education and the media into the public psyche.

So long as the phenomenon of Technology (big ‘T’) and the actualities of multiple technologies (little ‘t’) remain in the uncritical shadows then they also remain under-exploited as sites of controversy. Sclove’s (1995) ‘living with the sleeping elephant’ analogy is realistic so far as public engagements with Technology or technologies are concerned and, while we might slumber on along some *seemingly* deterministic path, when our awakenings happen they do so as controversies.

This is not to imply that we can avoid controversies by designing technologies using the ‘right’ intentions. Ihde (2006) demonstrates the phenomenon of the ‘designer fallacy’ (the idea that designerly intentions in any way guarantee outcomes). Elsewhere (Keirl, 2009) has suggested that technologies, rather than being understood as entities, can be considered as having five co-dependent phases to their being, namely: *Intention, Design, Realisation, Use, and Consequences*. In such a portrayal, matters of ethical decision-making, values clashes and, thus, controversy are lurking at every phase - they are not solely presentations of the last phase.

Thus, the commonly held orthodoxy that technologies are *neutral* is seen as a fragile orthodoxy now disavowed from many perspectives. Winner’s (1977) ‘reverse adaptation’; Schumacher’s (1986) ‘Small is Beautiful’; Mitcham’s (1994) ‘four manifestations’; Sclove’s (1995) ‘elite Luddism’; Nixon’s (1996) ‘function creep’; Tenner’s (1997) ‘unintended consequences’; Eisen’s (1999) ‘suppressed inventions’ are a sample of the problematics of technologies that harbour controversies. In turn, such focussed conceptualisations feed meta-analyses of how technologies (in the collective sense) can be deemed ‘autonomous’ (Winner, 1977); ‘polyvalent’ (Sclove, 1995); or, ‘multistable’ (Ihde, 2002).

All these studies and analyses offer openings for seeing technologies as sites of controversy and, given the under-exploration of the controversies (covert and overt) that technologies embody, it is argued that all technologies might be seen as (no more than) *controversial propositions* brought into being with uncertainty of outcome - be it environmental, social, legal, ethical, political or whatever. There are surely educational implications here.

Democracy, education and curriculum as (controversial) technologies

As human-designed entities intended (sic) to address some purpose and achieve certain (sic) ends, democracy, education and curriculum can readily be seen as technologies. (They certainly all qual-

ify as controversial propositions). If democracy is the ideal condition of an ethically defended co-existence, then education is its instrument and, in turn, curriculum is education's instrument. As White (1973) cogently argued, education is a necessity of the wellbeing of both democracy and its citizenry: 'There is at least *one* policy which *must* be in the public interest in a democracy. This (policy) is an appropriate education for a democracy.' (White, 1973:237 original emphases). Put otherwise, education is needed *about* democracy (what it is), *in* democracy (how to practice it), and *for* democracy (how to maintain it).

In line with this, it is argued that if democracy itself is controversial and embraces controversies for its very health and existence, then so should the related education ('Education system' is eschewed here) and, in turn, so should the related curriculum. However, while there are plenty of controversies *around* matters of education and curriculum, that is not the same as an *education in* controversy.

An expansive view of curriculum

In such a view, 'curriculum' is recognised as a site of political contestation. Reid and Johnson (1999) reject notions of curriculum as a 'thing or artefact' and adopt their particular 'rhetorical structures' around the notion of curriculum as '...socio-political discursive practice...something that is being made through such varied processes as debate, struggle, dissent, agreement, experience, success and failure.' (Reid & Johnson, 1999:ix). These authors draw on the work of Pinar et al., (1995) whose research sought to include the 'null' or unstudied curriculum and '...the "hidden curriculum" consisting of the "ideological and subliminal messages presented within the curriculum"' (Reid & Johnson, 1999:ix).

The same source (Pinar et al., 1995) articulates Pinar's potent construct of 'curriculum as complicated conversation' (rather than as some quantifiable entity readily deliverable and capable of measurement and surveillance by non-educators). Curriculum critiques such as these articulate the expansive view of curriculum, help challenge taken-for-granted assumptions about schooling, and destabilise 'givens' such as 'subjects' which are often confusions of traditions, privileged knowledge and political footballing.

Ideology and the curriculum

Much curriculum contestation has links to issues of globalisation. The obvious example is that of 'testing the basics' and the creation of league tables first within countries and, subsequently, internationally around 'literacy' (however construed) and 'numeracy' (however construed). National language, Maths and Science are now the official tail that wags many a curriculum dog. Such a competitive ideological agenda (see Apple, 1979; 2001) shaped by the capitalist club (the Organisation for Economic Cooperation and Development [OECD]) offers no guarantee of curriculum harmony.

Three curriculum 'wars' are readily identifiable and each is ideologically fought. First, the literacy wars (Snyder, 2008) pitch critical literacy theorists against those whose traditional approaches seek to maintain a status quo of literacy basics for the masses alongside a rich, elitist literacy reserved for the few. Second, the science wars engage epistemological differences – the positivist traditions versus postmodern and feminist challenges to the 'scientific method' and claims to 'objectivity' and 'truth'. Third, the history wars witness oppositions over the aims and methods of history education in schools. Nationalism is often a core driver where a particular (group's) view is privileged over that of another. Sensitivities also surround historical method and questions of interpretation of findings.

Controversy and critical pedagogies of process

It follows from what has been said that, if curriculum is highly contested then the associated pedagogies might be too. So far as an education in controversy (in the democratic sense) is concerned, the associated pedagogy is unlikely to be one in facts, figures or any other perceived 'truths'. The

question is a classic educational one around the relationship between content and process, what emphasis to give each, and what actually counts as knowledge and learning. When Stradling et al. (1985) were writing, they devoted specific chapters to teaching about: Northern Ireland; teaching for (sic) unemployment; sexism in the curriculum; Third World issues; and, nuclear weapons. They could have seen these as ‘topics’ for study but, as they show, whatever might be meant by ‘topic’ or ‘study’ would not be enough. *Process* matters because these are controversial *issues* and, as they say, ‘It is this kind of issue, arising out of a conflict of values, which confronts the teacher with the most fundamental pedagogic problems.’ (Stradling et al., 1985:2).

To take a process-based approach is, drawing on Stradling et al. (1995:3-5), a means to an end. It is to develop academic and study skills; it provides *context* for practising life skills of communicating, empathy, understanding, influencing others, cooperation, activism and so on; and it uses case study experiences for ‘comprehending theories, concepts, and generalisations’. All such ingredients contribute to the democratic end of an education in controversy yet, laudable as such an end may be, it does not sit well with today’s politically driven assessment regimes.

Stradling et al. (1985) offer three central concepts to the pedagogy of teaching controversial issues: balance, neutrality and commitment. (These are not explored here as they warrant debate when, for technologies per se, ‘balance’ and ‘neutrality’ are potential mirages.) In recognizing the political nature of education such a pedagogy embraces continuous value-challenging and contestation through critical pedagogies of process which help counter indoctrination, passive enculturation, uncritical socialisation and, the concern of this paper, the blind or somnambulant (Sclove, 1995) adoption of technologies.

Technology Education as a site of, and for, controversies

Having argued that technologies, democracy, education and curriculum are all sites of controversy, how does their confluence manifest itself in Technology Education? The following are some examples of sources of controversy - actual or potential – in the field:

- Just as Technology per se is philosophically controversial and emergent, so too is technology education
- Technology Education engages multiple, competing epistemologies. The pursuit of a ‘body of knowledge’ for the field is arguably also a mirage.
- Technology Education finds itself in a fluid condition unable to ground itself amongst multiple binaries such as arts-science, utopia-dystopia, subject-object, skills-design, vocational-liberal, academic-practical). (Keirl, 2010),
- Technology Education is a site contested by multiple and, at times, ideologically incompatible, *stakeholder interests* – differing political-economic formulations, professional interest groups, the green agenda, feminist interests, democracy defenders, liberal educators, civil libertarians, and so on (after Layton, 1994a).
- Technology education is ever-vulnerable to being uncritical in its relationship with emergent technologies. Controversy exists when what is done in the name of education is merely socialisation towards technologies or training in their use.
- There are multiple ways that Technology curriculum can be designed and managed (see, eg de Vries, 1994:32).
- Local Technology Education can be shaped by a particular technological focus (eg materials, processes, systems or concepts) whilst ignoring other possibilities.
- There is an ever-playing tension between D&T as a (specialist) subject and its role as a part of the general education of all children, thus...
- ...interpretations of technological literacy and technacy are not consonant (see eg ITEA, 2000; Petrina, 2000; Seemann 2003; Dakers, 2006; Keirl, 2006)
- Implicitly from the above, a rich spectrum of pedagogical genres is available to and used by technology educators. The take-up of some pedagogies varies according to the

personal-professional values held by individual teachers.

- Finally, any design-based pedagogy or process is, itself, a site of controversies – of competing variables and solutions that are ever-provisional, never simply ‘right or wrong’.

Technology Education as controversy celebrated in the cause of democratic education

Despite systemic, curricular and governmental pressures toward conformity, there is much to be gained by embracing and exploiting the controversies that inhabit Technology Education. It has been argued: that controversy and its maintenance is key to healthy democracy; that another key to a healthy democracy is a democratic education; and, that Technology Education is a site rich in controversies where (democratic) education *in, about and for* democracy, controversy *and* technologies themselves can be carried out simultaneously.

It would seem that Technology Education can celebrate controversy in four broad ways. First, pedagogically by being design focussed, process-centred (see eg DETE, 2001), and nurturing critical dispositions in teachers and learners alike.

Second, through curriculum policy, as player in the compulsory education of *all* students for democratic global citizenry as well as being a field of practice offering focussed pursuits to particular cohorts of students.

Third, professionally through strong engagements with research, development of theory, and policy formulation. Thus Technology Educators are constructed as richly multi-faceted, for example, as leader-learner (Lingard et al., 2003); ethical (Campbell, 2003); activist (Sachs, 2003); reflective (Schon, 1987; Killen, 2006); and, socially critical (Smyth et al., 2000).

Fourth, by practising, advocating and defending a technological literacy which honours all of the above whilst also articulating Technology Education per se as a *required controversy* playing a key role in a democratic education for democratic life.

All of these ways of celebrating controversy themselves contain multiple embedded controversies. This is intentional and necessary. To do otherwise would be to nullify the paper’s thesis. Besides, it should be clear that any perceptible alternative to ‘controversy’ - for example the idea that consensus or agreement over any aspect is attainable – is anathema to the paper’s spirit. This is not a matter of choosing between pessimism and optimism – another binary within which technology plays. If the language of the military metaphor is preferred, then the paper can be seen as a clear contribution to the ‘technology wars’. If vanilla is the preference, then the paper is offered as a part of Technology Education’s much needed complicated conversation.

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