

Keirl, S., (2018), 'Social and Ethical Issues in Technology Education: Section Introduction' in de Vries, M.J., (Ed.), (2018), *Handbook of Technology Education*, pp. 803-806, Springer, Dordrecht. ISBN 978-3-319-44688-2

Section Introduction: Social and ethical issues

Steve Keirl
Goldsmiths, University of London
London, UK
s.keirl@gold.ac.uk

This section of the handbook presents a few of the many social and ethical issues with which the field of (Design and) Technology Education [(D&)TE] finds itself entangled. I say 'entangled' because these issues apply strongly within the field yet reach far beyond it. A major educational challenge involves weighing up how to integrate such issues in educationally valid ways into a complex and crowded curriculum. Since the curriculum (at least in democratic societies) is to serve individuals, society and, increasingly, the global good alike then that challenge is significant. There are nuanced questions to be explored around why something is an issue; why we should engage with it as a profession; and, how we might explore it in meaningful ways with our students.

There are two ways that 'issues' might be understood here. First, we can consider issues to be *matters about which people have concerns*; and, second, issues *come from a context*; they *issue from* or out of some prior source or phenomenon. Technologies themselves are one of the great sources of social and ethical issues in our world simply because they intertwine our lives. It is because technologies are never neutral (Feenberg, 2002) and because designers' intentions can never guarantee intended outcomes (Ihde, 2006) that close examination of the phenomenon of technologies-in-the world illuminates how they are, in fact, controversial (Keirl, 2012). Where there is technology there are concerns. However, focussing on technologies and their progenitors is only one perspective. When people have concerns about something, those concerns are informed by personal sets of values, by social norms and by ethical standpoints. Thus, differing values frameworks inform differing value judgements and where values dissonance exists then issues arise.

It is also important to understand how social and ethical issues arise when change occurs. Significant values differences can emerge when change is proposed, when ways of living are challenged, or when senses of injustice are aroused and this is as true of technologies as it is of life in general. Whether by subtle or explicit means, emergent technologies and systems alter lives and societies; and tensions arise when unknown futures begin to present themselves. There are educational opportunities for values interrogation and ethical reflection at any phase of a technology's emergence – whether at its mere conception in someone's mind; in its design phase; during processes of manufacture; in how, when and why it is used; and, in the consequences of its existence (Keirl, 2009).

How, then, do we bring to education these general observations about the social and ethical issues that accompany technologies as they intertwine with our lives? Clearly, the responsibility cannot lie with (D&)TE alone. Equally, (D&)TE cannot deny responsibility towards playing a role in such an education. Two points need to be made here. Firstly, if (D&)TE is conceived narrowly as a specialised subject in the curriculum it will have great difficulty addressing social and ethical issues within such confines. Here, (D&)TE is reconceptualised not only as a subject but also as a contributor to the general education of all students as some form of technological literacy. Secondly, because the social and ethical issues that accompany technologies entangle both (D&)TE and society at large, we can see

that other subjects and other literacies can contribute to students' understanding and learning. As the following chapters show, the issues that each engages interweave the curriculum in many ways. There are threads that bring the chapters together because of their distinct focus on (D&)T Education but the authors also show how these threads reach across general education too. These chapters not only present significant (D&)TE research but, in doing so, they show (D&)TE's positive engagement with what are major challenges for education and societies alike.

Mishack Gumbo offers a comprehensive critique of the issues that arise from the damaging dominance of Western educational practices and their displacement of Indigenous Knowledge Systems. Here we witness how nobody wins when rich forms of knowledge and ways of knowing are undervalued and marginalised. In such circumstances, the cultures and the ways of learning of both dominant and dominated are devalued. Gumbo brings together rich perspectives, international research and best practice to bear on what is a challenging problem for (D&)T educators. The Western model of a compartmentalised curriculum does not sit well with the deep holism of indigenous learning just as many senses of globalisation cannot accommodate holistic ways of being-in-the-world. Nonetheless, Gumbo shows the potential for scholars, teachers and communities to work together to bring positive change by presenting practical pedagogical strategies to achieve holistic and integrated (D&)T curriculum models.

The matter of holistic curriculum approaches is also engaged by Margarita Pavlova when she suggests a holistic and multifaceted approach for (D&)TE to play its part in advancing the sixteen Sustainable Development Goals of the United Nations (2015). Key to achieving a globally sustainable future is *values transformation* which she recognises as offering particular challenges to (D&)T educators. She points to the curriculum challenge for (D&)TE of embracing not only sustainability problem-solving by 'technical fix' but also the need for 'value change' to help develop young people as responsible citizens. Pavlova also argues that local contexts must be understood and that the curriculum challenges for (D&)TE in one country will differ from those of another. She elaborates the pedagogical issues that accompany such challenges and illustrates the kind of pedagogical repertoire that may be drawn upon to achieve sustainability goals. As with all issues-based curricula, Pavlova calls for sustainability to be a whole-school concern.

Gabriele Graube and Ingelore Mammes outline the phenomenon of 'Industry 4.0' and the '...increasing interlinking of production and information as well as communications technology.' Their chapter points to the omnipresence of digitalisation and its influence on design, technology and society alike. A particular education is needed for understanding what it means for each of us to be actors in multiple socio-technological systems and (D&)TE surely has a role to play here. The authors offer valid reflections on industry – whether as system component, as source of employment, or as itself a rapidly changing entity – and they argue for closer rapport between industry and schools in advancing understandings of the digital dimension of (D&)TE. Once more, the issues are of real concern for all players - for the individual who must locate themselves within increasingly complex socio-technological systems; for the curriculum and its delivery; and for society at large which finds itself in an unprecedented form of ongoing change.

The bringing together of technology education and technology communication into a *braid* is the focus of the contribution from Maarten van der Sanden, Dury Bayram-Jacobs and Giovanni Stijnen. These authors face the realities of the complex ways that technologies and people interact and they present the case for (D&)TE's role in supporting social learning to advance responsible research and innovation. They, too, argue for a holistic approach to (D&)TE that engages professionals and scholars in working for the benefit of individuals, society and innovation alike. Van der Sanden et al. discuss innovation, social learning, ethics and technology communication along with notions of distributed ideas, beliefs and learning.

Their discussion underpins two recent successful projects as examples of transformative practices that break disciplinary boundaries to advance the goal of social ecosystems of distributed learning.

Some of the issues in this section of the handbook address emergent phenomena but the issue of gender is not new to the field. As Sonja Niiranen shows, this perennial issue remains a major concern for (D&)TE. This is not to say that things aren't changing because she evidences some good news in employment fields along with ongoing challenges. Her study celebrates the many strategies that are available to schools and teachers as well as the necessity for political and social commitment to confront the ongoing gendered relations that exist with technologies. Once more this is a matter for whole-school and societal action but this does not mean that (D&)TE educators don't have a significant role to play in meeting the challenge. Niiranen shows clearly that curriculum arrangements, teacher attitudes and pedagogical strategy can all make real differences – not least when difference and diversity are celebrated through technological literacy, creativity and innovation.

Collectively these chapters present rich and necessary (D&)TE research. They embrace holism, curriculum integration and interdisciplinary approaches into very real matters of concern – issues. The chapters are not exclusive. Many other concerns and issues await research and integration into (D&)TE curricula. The reach of such issues stretches from the lives and education of individual students out across society into the world beyond and back again. It is not the role of (D&)TE to 'solve' these 'problems'. Rather, the sample of issues addressed here shows how (D&)TE can play a role in contributing to better worlds in empathetic and meaningful ways.

References

Feenberg, A., (2002), *Transforming Technology: A critical theory revisited*, Oxford University Press, Oxford.

Ihde, D., (2006), 'The Designer Fallacy and Technological Imagination' in (Ed.) Dakers, J.R., (2006), *Defining Technological Literacy: Towards an epistemological framework*, pp 121-131, Palgrave Macmillan, Basingstoke.

Keirl, S., (2009), 'Seeing Technology Through Five Phases: a theoretical framing to articulate holism, ethics and critique in, and for, technological literacy' in *Design and Technology Education: An International Journal*, (2009), Vol 14, No. 3, pp 37-46. URL: <http://jil.lboro.ac.uk/ojs/index.php/DATE/article/view/1274/1239>

Keirl, S., (2012), 'Technology Education as "controversy celebrated" in the cause of democratic education', in (Eds.), Ginner, T., Hallström, J & Hulten, M., *Technology Education in the 21st Century: Proceedings of the PATT 26 Conference, Stockholm, Sweden, 26-30 June, 2012*, pp.239-246, Linköping Electronic Conference Proceedings No 73, Linköping University, Sweden. URL: <http://www.ep.liu.se/ecp/073/028/ecp12073028.pdf>