



## **Technology, human agency and Dewey's constructivism: Opening democratic spaces in virtual classrooms**

Emery J. Hyslop-Margison  
Ball State University, USA

This article examines whether the ubiquitous presence of technology in schools negatively affects democratic learning by promoting instrumental rationality and, hence, reifying social reality. The author suggests that structural critiques of educational technology ignore the considerable impact of human agency on shaping related learning outcomes. By combining Dewey's constructivism with Internet technology, the article suggests student agency and participatory democratic learning are actually encouraged. Rather than condemning educational technology as necessarily socially reproductive, then, the author concludes that democratic educators should appropriate classroom technologies and utilise them in ways to promote the critical consciousness of students.

### **Introduction**

Although some teachers may assume that educational technology is a relatively recent phenomenon, the relationship between education and technology began with the very genesis of formal schooling: "Educational technology can be traced back to the time when tribal priests systematized bodies of knowledge and early cultures invented pictographs and sign writing to record and transmit information" (Saettler, p.4). In spite of its enduring relationship with education, however, concerns persist over the impact technology has on fundamental principles of democratic learning. These principles advocate teaching practices that foster student agency and encourage political involvement (Hyslop-Margison & Graham, 2003):

- Respecting student rationality; that is, the capacity of students to critique subject matter. When students are deprived of this opportunity, they may become passive objects of education rather than participatory subjects in democratic learning;

- Providing students with alternative viewpoints. If students are expected to make informed, critical, and democratic choices, they must be exposed to differing perspectives;
- Refusing to naturalise social reality as fixed and predetermined. Democratic learning explicitly recognises the legitimate right of students to transform their existential conditions by distinguishing brute, or natural, facts from social facts (Searle, 1995).

Citizenship programs in public education typically teach political structures, electoral processes, human rights and civic responsibilities to students to prepare them for democratic life. This type of instruction, although certainly important, provides a necessary but insufficient condition to promote participatory democratic citizenship. The above principles of democratic learning are intended to supplement traditional citizenship education by creating active, critical participants in the construction of social reality. Democracies only operate effectively when students as future citizens are provided a reasonable opportunity to engage in critical dialogue about the issues affecting their lives.

Some critics claim that the ubiquitous presence of technology in schools impacts deleteriously on principles of democratic learning by promoting instrumental rationality, or uncritical means/end reasoning. If the predetermined strategic objective is "x", then, instrumental rationality plans the various steps to realise "x". Habermas (1991) argues that instrumental rationality leads to social reproduction because it subjugates the general populace to prevailing institutional interests rather than encouraging the active participation of citizens. Within present circumstances, for example, instrumental rationality ensures technology is primarily controlled by capitalists to attain their narrow economic interests and not utilised for the wider public good.

When instrumental rationality dominates classroom instruction, it threatens democratic learning by emphasising information transfer over critical dialogue and by naturalising social reality. Indeed, if students conclude that social transformation is out of the question, they may adopt an attitude of political ambivalence and, hence, neglect their citizenship responsibilities. Heather-Jane Robertson (1998) voices this concern, for example, by suggesting that technology inevitably reduces classroom instruction to simple information transfer, or instrumental learning, rather than fostering the critical dispositions and creative capacities necessary for meaningful democratic citizenship:

Education is more than just information without skills, or skills without common sense, or common sense without critical thinking, or critical thinking without creativity. The many tasks of education compete daily, not just in the minds of education ministers and parents, but for time and

attention in the classroom. Technology intervenes in this competition in particular predictable ways. Since information technology is the tool that seeks, finds, stores, organizes, communicates, and packages information, it is hardly surprising that information tasks jump the queue in technology-centered classrooms. (p. 137)

From Robertson's perspective, then, technology interferes with democratic learning by stressing information delivery over critical classroom dialogue. However, her conclusion that educational technology always generates "predictable" learning outcomes is highly contestable because it ignores the role human agency plays in constructing classroom knowledge and experiences. Technology, as described by Robertson, does not predetermine learning outcomes anymore than a trip to the school library since the latter also "seeks, finds, stores, organizes, communicates, and packages information."

Advocates of educational technology hold a predictably different view from that Robertson advances, by highlighting its ability to enhance student interest, and vastly improve learner access to various sources of subject information. They often cite the pivotal role technology plays in expanding distance education opportunities for post-secondary students, who would otherwise be denied the benefits of university level programs. The *North Carolina Educational Technology Plan* (North Carolina State Board of Education, 2000), a strategy for implementing technology in state public schools, sanguinely suggests that technology enriches student learning in a variety of ways:

Technology is a tool that enables teachers and administrators to work more productively, offering solutions for more interesting and effective lessons and classroom activities. Technology is a tool that enables students to interact with and explore the world, bringing a wealth of information and experiences into the classroom, thus potentially overcoming geographical isolation, physical barriers, and economic hardships. Technology is a tool that encourages student creativity and self-direction and helps students develop skills that prepare them for responsible citizenship within the nation and world.

Given these dichotomous perspectives on the political impact of educational technology, who should teachers concerned with fostering meaningful, participatory democratic citizenship ultimately believe? There is no simple response to this question since both positions reflect a potentially accurate yet incomplete understanding on the political impact of technology on citizenship education.

I will not argue entirely against Robertson by suggesting that educational technology is always politically benign or ideologically neutral in its applications. However, I do suggest that viewing technology in an

exclusively instrumental fashion oversimplifies the complex pedagogical relationship between educational technology, classroom dynamics, and the subjective construction of knowledge. I will begin by considering how two competing theories on the political implications of technology might help inform the present debate. In the ensuing section, I explore the interaction between teaching, classroom context, and human agency. Although instrumentally employed technology used exclusively for information transfer undermines democratic learning, if utilised appropriately, educational technology actually promotes principles of democratic learning. To demonstrate this possible outcome, I will outline several teaching strategies that integrate Dewey's constructivist epistemology with Internet applications to encourage democratic learning in virtual classrooms.

### **Theoretical perspectives on the political implications of technology**

Two philosophers of the historic Frankfurt School, Herbert Marcuse and Jurgen Habermas, reflect diverse theoretical perspectives on the political implications of technology (Feenberg, 1996). Founded in 1823 at the University of Frankfurt, the Frankfurt School included a group of philosophers and researchers who approached social science from a Marxist point of view. After a period of exile in the United States during the Nazi regime, the institute returned to Frankfurt in 1949 where Jurgen Habermas became the school's most celebrated figure. Habermas criticised many aspects of modern industrialised capitalist societies, including schools, for placing excessive emphasis on instrumental rationality and preventing communicative democratic discourse (Grodan & Kreiswirth, 1993). However, he did not believe that instrumental rationality and the attending reproduction of class based oppression were the inevitable outcome of technology within capitalist societies (Feenberg, 1996).

Habermas (1970) views technology as a tool that extends a pre-existing human capacity for instrumental rationality. He argues that technology is an ahistorical project of the human species, and is unconnected to any particular ideology or epoch such as the *Industrial Revolution*, or the present so-called *Information Age*. On his account, technologies entail a manifold of possibilities that are not wholly determined by either the technology or the historical context of its introduction. While not disputing the fact that technology is typically developed for specific economic, political, or ideological ends, Habermas claims that technologies themselves do not embody these objectives. To illustrate this position by analogy, a hammer is just a hammer and a steam engine is just a steam engine, regardless of whether it is employed in a socialist, capitalist, or democratic context.

Feenberg (1996) believes the most compelling criticism of Habermas's theory on the ideological neutrality of technology rests on its problematic ahistoricism. In other words, to support his contention that technology is value neutral, Habermas ignores the social, economic, and political context of its introduction. The steam engine, for example, was introduced into a burgeoning capitalist culture marked by class stratification and economic exploitation. Its development and widespread employment precipitated innumerable negative changes for 18th century workers including the demise of the craft guilds, rising unemployment among skilled workers, and the growth of child labour. Habermas's theory of neutrality, then, divorces technology from the political motives driving its application, and fails to consider the inescapable interaction between technology, social power, and economic exploitation in capitalist culture. Teachers concerned with democratic learning should be aware of these interactions, and acknowledge the widespread use of technology in capitalist societies to achieve power functional ends.

Marcuse was influenced by both Freudian psychoanalysis and continental existentialism, and developed the social analytical approach now commonly referred to as *critical theory* (Grodin & Kreiswirth, 1993). In sharp contrast to Habermas, he maintains that technologies are inescapably value laden, and designed by hegemonic interests to manipulate, control, and dominate public consciousness (Marcuse, 1964). On this account, the introduction of technology into education supplies the politically powerful with a trenchant tool to wrap students in ruling ideology. According to Marcuse, then, technology is the instrument and handmaiden of domination in capitalist technological society. Even though it serves power functional ends, it appears simultaneously to the general populace as the necessary outcome of reason and creativity, and the obvious path to the good life (Thomas, 1987).

Marcuse (1964) contends that instrumental rationality, the very feature of technology Habermas connects to neutrality, is historically contingent within capitalist culture. These contingencies necessarily propel technology toward purposes that protect hegemonic interests and reproduce class inequalities. Marcuse employs the example of assembly line manufacturing, introduced to increase human capital efficiency within a class structured labour market, to emphasise his point. He suggests that assembly lines reinforced class distinctions by exploiting the existing division of labour and further de-humanising vocational experience for working class people. Although other technologies might have been developed besides those favorable to a capitalist economy, within a class stratified social framework, Marcuse argues that technology is invariably designed and applied to exploit the economically disadvantaged.

Marcuse appears correct insofar as the neutrality thesis advanced by Habermas neglects the historical dimensions of technological development and its subsequent application in a class based society. On the other hand, the structural critique Marcuse adopts, with its detached deterministic air of inevitability, vastly underestimates the influence of human agency in affecting the political impact of technology. Technology is always designed and applied within some historical context, but its potential application is never completely dictated either by this context or its intended application. While assembly line technology was developed within a period of class stratification and worker exploitation, for example, labour automation might have also freed workers from the de-humanising consequences of menial repetitive work. Habermas's neutrality thesis, then, draws attention to the expanded scope of possibilities embodied within technologies.

Human agency inevitably influences the interface between educational technology and learning outcomes. Lave and Wenger (1998) found that learning outcomes differ according to the unique human interactions within each specific classroom context. Within any classroom situation there is a constant interaction between teachers and students who are both being defined by, and actively defining, their learning experience. Wertsch (1998) similarly rejects the view that learning tools shape classroom experience in the methodical, deterministic, instrumental fashion suggested by structural critiques of schooling: "Cultural tools may help set the scene within which human action will occur, but even the most complete account of these cultural tools and the forces of production that give rise to them cannot specify how they will be used" (p. 166).

These investigations of classroom learning undermine structural critiques of education by suggesting that human agency always mediates between cognitive functioning on the one hand, and the cultural, institutional, and historical context of schooling on the other. A complete understanding of the political implications of educational technology not only recognises and makes manifest the prevailing historical context, then, but also appreciates the role human agency and technology might play in its reconstruction. For example, the present degradation of labour market conditions, including worker exploitation and the destruction of the environment, are not rooted in technology *per se*. They are instead a function of the anti-democratic, market driven values that govern its current application (Thomas, 1987). Although educators ignore the impact of socio-historical influences on technology applications at their peril, they must also understand that these forces do not prevent technology from being used to foster meaningful democratic citizenship.

## **Constructivism, democratic learning, and Internet technology**

Constructivism is not a single unified theory. Similar to the differing perspectives on technology reflected in the views of Habermas and Marcuse, contrasting paradigms of constructivism perceive the personal construction of knowledge in significantly different ways. On Russian psychologist Lev Vygotsky's (1978) view, the mentor or instructor assumes the central role in constructivist learning by creating activities that eventually lead students toward specific subject mastery and cultural assimilation. Indeed, Vygotsky believes that social and cultural reproduction is the primary objective of constructivist pedagogy:

The internalization of cultural forms of behavior involves the reconstruction of psychological activity on the basis of sign operations. Psychological processes as they appear in animals actually cease to exist; they are incorporated into this system of behavior and are culturally reconstituted and developed to form a new psychological entity. The internalization of socially rooted and historically developed activities is the distinguishing feature of human psychology. (Vygotsky, 1978, p.57)

Through language acquisition and carefully guided instruction, Vygotsky's model of constructivist learning leads students toward predetermined objectives that reproduce social and cultural conditions.

Whereas Vygotsky emphasises cultural reproduction, or preconceived ends, in education, Dewey's (1929) constructivism concentrates primarily on means, and recognises the autonomous capacity of individuals to participate in shaping their social and cultural experience:

The assumption that gives rise to the procedures just criticized is the belief that social conditions determine educational objectives. This is a fallacy. Education is autonomous and should be free to determine its own ends, its own objectives. To go outside the educational function and to borrow objectives from an external source is to surrender the educational cause. (p. 73-74)

Glassman (2001) elucidates the critical distinction between these two theories of constructivist learning:

Dewey sees the child as a free agent who achieves goals through her own interest in the activity. In contrast to Vygotsky, Dewey emphasizes human inquiry, and the role it plays in the creation of experience/culture and, eventually, social systems. One of the major purposes of education [on Dewey's view] is to instill the ability and desire for change in experience, and possible resultant changes in social history, through individual inquiry. (p.3-4)

In Dewey's model of constructivism, then, the teacher becomes a facilitator to help students design their own learning experience around their personal priorities, interests, and objectives.

The constructivist learning milieu envisioned by Dewey promotes principles of democratic learning by viewing the creation of knowledge as an interactive process in which students construct understanding based on their own existential experiences. From Dewey's perspective, student learning requires interpretation, as opposed to assimilation, of cultural experience, and personal meaning is constructed in collaboration and through dialogue with others. Within this type of classroom environment, learning occurs through discovery, experience, and modeling, and meaning is negotiated democratically between learners holding potentially diverse perspectives.

One central way in which Dewey's constructivism promotes participatory and meaningful democratic citizenship is by refusing to naturalise prevailing social and cultural conditions to students. Instead, the perspective, experience and agency of the learner supply the main impetus for independent knowledge construction, and possible social change:

Constructivism shifts the emphasis from the natural world to the mental processes of interpreting sensory inputs. Facts are contingent on one's perspective and setting. Constructivists depict accumulated knowledge as a compilation of experiences as personally understood - not fixed or known in advance. (Jones & Maloy, 1996, p. 23).

Dewey's constructivism fosters student agency by emphasising the role of the epistemic subject in creating knowledge and shaping society rather than simply assimilating externally generated information, cultural norms, or social priorities. Learning correspondingly shifts from mere instrumental rationality, or acquiring pre-established understandings and truths, to promoting the epistemic independence of students. Consistent with the principles of democratic learning, a constructivist classroom environment encourages students to formulate their own answers to questions by accessing various perspectives, viewpoints, and positions. When habituated to such opportunities, students in a classroom predicated on Dewey's constructivism should develop the necessary dispositions to become self directed learners who exercise a significant degree of autonomous decision making power over their personal learning experience.

One of the most popular technologies employed within contemporary classrooms is the Internet, or World Wide Web. However, classroom applications of the Internet have been widely criticised for promoting corporate ideology and instrumental learning in schools (Robertson, 1998).



But the Internet is not simply a technology to manipulate students toward specific ideological ends. It also provides an effective medium to foster counter-hegemonic dialogue, political resistance, and participatory democratic citizenship. One obvious democratic advantage afforded by Internet based learning is the access it offers students to a range of competing subject viewpoints. The use of hypertext, which typically arranges information in various layers of complexity, enables students to self direct their online problem solving activities by channeling their inquiry in a number of different directions. When utilised effectively, Internet based activities strengthen the depth and scope of student inquiries, and promote democratic learning by offering students access to different perspectives, values, and entire bodies of knowledge.

Collaborative Internet based learning is another teaching strategy consistent with Dewey's constructivism, because it engages students in active learning while encouraging communicative dialogue and community problem solving. Working groups that include males and females, or a mix of cultures, learning styles, abilities, socio-economic status and age, create a rich and multi-perspective approach to classroom learning. The Internet facilitates collaborative learning by linking students who might otherwise be denied the advantages of a democratically structured classroom. For those students who already interact with others, the Internet expands and extends these possibilities by facilitating out of class discussion. Chat rooms, where simultaneous communication occurs, message boards and email, where dialogue is more asynchronous, and listservers that enable designated groups to chat with each other represent additional Internet based technologies that connect learners and encourage group discussion. Of course, quality student participation in these virtual venues is not a necessary outcome of Internet technology, but must be actively facilitated by teachers through appropriate course organisation, instructional design, and active participation.

Another attraction of the Internet for democratic educators is its relative independence from tightly regulated administration and authority. Historically, teachers have been pretty much able to regulate what their students read, what viewpoints they encounter and, hence, channel students in very particular, pre-determined, and socially reproductive ways. Although some Internet material is of dubious educational value, there is a broadening girth of sophisticated, even scholarly, information now available on the web. These multiple perspectives provide students with a solid epistemic foundation to construct their own independent understanding and viewpoints. When used in this autonomous fashion, then, the Internet supports classroom practices consistent with the principles of democratic learning by respecting student rationality, and exposing learners to various perspectives.

As with any information source, epistemic discernment is critical when utilising the Internet, and both teachers and students should avoid reliance on single or questionable sources of information. Along with its potential advantages for democratic learning, then, Internet based learning entails significant teaching challenges:

We need to learn how to evaluate what others say. We cannot accept everything on the Internet as truth. Because it is virtual, teachers still need to make decisions about when and how to use technology based experiences and information, and we still need the human learning requirement of face-to-face interaction with other human beings. (Soloman, 1998, p. 140)

Although the relatively unrestricted nature of the Internet ensures that a range of perspectives and viewpoints are accessible, a necessary condition for healthy democratic dialogue, teachers increasingly confront the daunting task of helping students sift through information without imposing their personal bias. Hence, the role of the teacher in a virtual classroom based on Dewey's constructivism is significantly expanded rather than diminished.

## **Conclusion**

As Marcuse suggests, technology often has been historically applied as a tool of class and social exploitation. Democratically minded teachers, then, avoid using educational technology simply as a vehicle to transfer information that uncritically reproduces social and cultural norms. However, structural critiques of technology, such as those forwarded by Marcuse and Robertson, fail to consider the primary role human agency plays in shaping possible learning outcomes. I have suggested that combining Dewey's model of constructivism, with its fundamental respect for learner agency, and various Internet based learning strategies offers an effective means to open new democratic spaces within virtual classrooms.

Educators who reject classroom technologies as inherently negative and reproductive adopt a regressive posture resembling the 19th century English Luddites. This group came together in a secret organisation dedicated to destroying the technologies developed during the Industrial Revolution. In spite of their concerted efforts, the Luddites were largely unsuccessful at stalling or preventing the technology generated labour market changes of the period. Indeed, as history clearly illustrates, the Luddites were not the forerunners of an emerging working class consciousness, but a group of somewhat isolated individuals who resorted to archaic, and ultimately fruitless, forms of protest against technology. Contemporary educators concerned with the political implications of classroom technologies should not repeat their mistake by rejecting

technology outright, or by believing they can prevent or limit its introduction into schools. Educational technology is an inescapable feature of present day schooling. Teachers concerned with democratic learning must accept this reality to influence its classroom application. Rather than condemning educational technologies as instruments of social and economic depression, they should consider ways to employ them to achieve objectives that respect the principles of democratic learning.

## References

- Dewey, J. (1929). *The sources of a science of education*. New York: Horace Liveright.
- Feenberg, A. (1996). Marcuse or Habermas: Two critiques of technology. *Inquiry*, 39, 45-70.
- Glassman, M. (2001). Dewey and Vygotsky: Society, experience, and inquiry in educational practice. *Educational Researcher*, 30(4), 3-14 [viewed 16 Dec 2003, verified 16 Mar 2004] [http://www.aera.net/pubs/er/pdf/vol30\\_04/AERA300402.pdf](http://www.aera.net/pubs/er/pdf/vol30_04/AERA300402.pdf)
- Groden, M., & Kreiswirth, M. (Eds) (1993). *The John Hopkins guide to literary theory & criticism*. [viewed 21 Sep 2003 at [http://www.press.jhu.edu/books/hopkins\\_guide\\_to\\_literary\\_theory/frankfurt\\_school.htm](http://www.press.jhu.edu/books/hopkins_guide_to_literary_theory/frankfurt_school.htm); verified 16 Mar 2004 (contents only) at <http://www.press.jhu.edu/books/groden/>]
- Habermas, J. (1970). *Toward a rational society*, J. Shapiro, trans. Boston: Beacon Press.
- Habermas, J. (1991). *Moral consciousness and communicative action*. Cambridge: The MIT Press.
- Hyslop-Margison, E. J., & Graham, B. (2003). Principles for democratic learning in career education. *Canadian Journal of Education*, 26(3), 341-361.
- Lave, J., & Wenger, E. (1998). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.
- Jones, B. L. & Maloy, B. L. (1996). *Schools for an information age: Reconstructing foundations for learning and teaching*. London: Praeger.
- Marcuse, H. (1964). *One-dimensional man*. Boston: Beacon Press.
- North Carolina State Board of Education (2000). *The North Carolina Educational Technology Plan 2001-2005*. [viewed 3 Jul 2003, verified 16 Mar 2004] <http://www.tps.dpi.state.nc.us/techplan2000/techplan2000.html>
- Robertson, H. (1998). *No more teachers: No more books*. Toronto: McLelland & Stewart.
- Searle, J. (1995). *The social construction of reality*. New York: Free Press.

Soloman, P. G. (1998). *The curriculum bridge: From standards to actual classroom practice*. Thousand Oaks, CA: Corwin Press.

Thomas, M. J. (1987). *Ethics and technoculture*. Lanham, MD: University Press of America.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

Wertsch, J. V. (1998). *Mind as action*. New York: Oxford University Press.

<p>Dr Emery J. Hyslop-Margison Assistant Professor of Social Foundations of Education Department of Educational Studies Ball State University Muncie, IN 47306 USA Email: <a href="mailto:ejhyslop marg@bsu.edu">ejhyslop marg@bsu.edu</a> Web: <a href="http://www.bsu.edu/edstudies/">http://www.bsu.edu/edstudies/</a></p>
---