Educational Technology as a Subversive Activity: Questioning Assumptions Related to Teaching and Leading with Technology

Matthew J. Kruger-Ross and Lori B. Holcomb

Abstract

The use of educational technologies is grounded in the assumptions of teachers, learners, and administrators. Assumptions are choices that structure our understandings and help us make meaning. Current advances in Web 2.0 and social media technologies challenge our assumptions about teaching and learning. The intersection of technology and education is subversive as it urges educators and learners to deconstruct and critically reflect on unexamined assumptions about learning.

In 1969 Neil Postman and Charles Weingartner published a book titled *Teaching as a Subversive Activity*. Postman, a university communications professor and cultural critic, teamed with Weingartner, a high school English teacher, to author an extended critique of the American educational system with the ultimate aim of arguing for schooling based more on inquiry and learning to learn rather than the transmission of knowledge. The book's tone and recurring themes reflect both authors' strong feelings about what schooling should be about, especially given the inclusion of the word subversive in the title. Postman and Weingartner argue that schooling should encourage active questioning and a complete redefinition of the educative process, therefore framing teaching as a subversive act.

A common dictionary offers some form of the following when "subversive" is researched: "to overthrow, overturn, or cause the destruction of." Given the timing of its publication relative to the cultural uprisings occurring simultaneously, the book served as a rallying call for many in the education profession who began to question the behaviorist and positivist influences in the classroom. Redefining teaching as an activity meant to subvert the dominant educational paradigm was well timed. To this day, Postman and Weingartner's text stirs strong emotions in readers, ranging from inspiration to strong disagreement. Additionally, the work of Papert (1987a, 1987b), Turkle (1984, 1995, 2011), and Wesch (2009) all discuss and challenge the influence that technology has had on our lives and more specifically on teaching and learning. Yet, the intersection of education and technology has not been explored deeply enough. At its core, educational technology is a subversive activity; it holds the potential to overthrow, or cause the destruction of, education.

Web 2.0 and web-based technologies are redefining educational boundaries and at the same time, uncovering assumptions about educational technology. While research into

ways of using technology in teaching has been fruitful, this article aims to go one step further by examining how everyday assumptions and beliefs of educational technology are taken for granted. Universities need to better understand assumptions their faculty, staff, and students have towards educational technology in order to more effectively utilize Web 2.0 tools for teaching and learning. While research has shown that Web 2.0 tools structure learning initiatives, it is the instructor and students who truly drive innovation.

Beliefs and assumptions that are made about reality are directly informed and created within existing and mostly unexamined worldviews (Jackson 2008). Worldviews are culturally situated constructions meant to assist in the social harmony and day-to-day functionality of human life (Jackson 2008, Mezirow and Taylor 2009). Simply put, humans cannot help but make assumptions as they go about their daily lives. This becomes problematic, however, when the uncritically analyzed results in understandings, ways of thinking, and beliefs that are limiting. Brookfield (1995) describes three categorizes of assumptions that are helpful in thinking critically:

(1) Paradigmatic assumptions: Basic axioms that construct our world, paradigmatic assumptions are the most basic scripts we create from the messages we get from significant figures in our lives.

(2) Prescriptive assumptions: Based on and widening paradigmatic assumptions, prescriptive assumptions reflect what we think should happen in a certain situation.

(3) Causal assumptions: Based on the other two assumptions, causal assumptions deal with "if... then" issues. Included in what we think should happen in any situation is our knowledge about what will happen if we take one path or another (Brookfield 1995, 2–3).

For example, the always persistent drone of curriculum standardization and high-stakes testing within K-12 education rests on a number of uncritically examined assumptions. These include, but are not limited to: everyone, everywhere has the same understanding of *curriculum*; standardization of a curriculum is possible; standards are key to learning; testing which results in numerical data is the best way to assess learning; testing can be *high-stakes*; learning can be measured; all students are able to learn the same standards and demonstrate their learning in the same ways. This process of reading between the lines does not uncover good or bad assumptions. What it enables is for opportunities to stop and reflect on what might be possible were we to change an assumption.

Unlike any other time in history, students now have the ability to access a vast array of information at any given time and incorporate that information into their everyday lives through social media technologies. For example, students can download, remix, and publish information in an array of multimedia-enhanced formats on their personal or professional blogs. Wikis are the grandest experiment in an online community to date—a nod to the belief that together we are smarter and more capable than when we

work alone. Data, information, news, web sites, and statistics abound, thus extending and broadening the opportunities for learning. Faculty members are able to create and teach courses across multiple time zones with ease. But what is being assumed about teaching, learning, faculty, students, and technology in these instances?

The unexamined assumptions of higher education students and faculty must be explored as they enter an ever-emerging world of ubiquitous technologies and media. Some questions helpful in accessing these assumptions might include: when information is everywhere and who authenticates it? When students can watch lectures from professors at MIT and UC Berkeley on YouTube, are they learning? How is such learning verified? What counts as education? Indeed, what's worth knowing? These questions define an area within the universities that needs to be addressed outside of media and communication studies and embraced by all members of the academic community. By exploring and answering these questions, we may be able to gain a greater understanding of how the underlying assumptions of teachers and students determine the use of educational technologies.

Transformative learning, a model of learning that has grown from the discipline of adult education, may provide a useful lens through which to view and examine the current climate of educational technology in modern metropolitan universities. Urban universities, at least within the United States, have the enormous potential to set the standard for excellence in research, teaching, and learning. In turn, they require bold innovative leaders and visionaries to inspire and cultivate faculty and staff who are able to harness and utilize new technologies. Key faculty and supportive administrators must lead the way in actively encouraging critical use and incorporation of educational technologies into the educational context. They must demonstrate that while it may seem that Web 2.0 and web-based technologies are driving new contexts for learning and teaching, it is the people—the teachers and the students—that have the final say in the innovations of urban universities.

Situating Education and Technology

Despite the emergence and integration of technology into learning environments, universities have been slow to adapt their pedagogical approaches. In particular, the field of distance education is a rapidly growing field (National Center for Education Statistics [NCES] 2008) yet the integration of technologies, has been varied. Research (Hannay and Newvine 2006; Larreamendy-Joerns and Leinhardt 2006; U.S. Department of Education 2011) has shown that the use of technology in the online environment has a positive impact on student performance. The effectiveness and spread of online and blended learning opportunities is made most evident in the U.S. Department of Education's recent meta-analysis (2011). Summarizing forty-three of the fifty studies that focused on postsecondary learners, the meta-analysis found that online students learned *better* than face-to-face students learning the same content. Additionally, students who engaged in both online and face-to-face methods *learned more than* the student who only had access to face-to-face instruction. Still, many faculty and students are still hesitant to use technologies to support and enhance learning.

A Theoretical Framework

There are many theories and perspectives on learning. To assist in examining the subversive nature of educational technology, Mezirow's transformative learning theory (1978, 1990, 1991, and 2000) provides a unique and compelling conceptual framework. Transformative learning theory grew from Mezirow's research on perspective transformation experienced by adult female students who returned to college to earn or complete their education. In short, transformative learning describes a learning phenomenon that occurs when a learner is able to identify, name, and eventually transform the primary assumptions, habits of mind, and frames of reference that constitute their worldview, or more commonly their outlook on life. For example, a student might encounter a point of view in a course reading that conflicts with her understanding of herself. As a result, this conflict could cause her to reexamine (and possibly revise) her own point of view. This process of reexamination and redefinition could be described as transformative learning. Another example could include having a student participate in a scholarly debate by studying and arguing for the side that she does not agree with. In this example, if the student, by learning more about and arguing for a standpoint that she does not believe, is able to see the topic of debate from a new perspective, then it could be described as an example of transformative learning. For the argument of this article, educational technologies are considered as transformative in that they cause teachers and students to reexamine and critically reflect on teaching and learning. Thus, this theoretical framework enables urban universities to address the needs of their unique student body through an appropriate context (Atkins 2011).

A new and different conversation surrounding the use of educational technologies is available through transformative learning theory. This critical and radical theoretical framework marks a departure from more traditional conceptualizations of learning and knowing. Rather than approaching technology (including its affordances and challenges) as a given, transformative learning offers access to the negotiated and malleable qualities that are often overshadowed. Instead of assuming that technologies are value-neutral and do not affect pedagogy, transformative learning suggests further reflection and clarity is needed. Consider the questions previously posed: Is learning possible via YouTube? Regardless of the answer, there are individual background assumptions that need to be critically examined. If learning is *not* possible through YouTube, what is being assumed about learning, the learner, or the content of the video? If learning *is* possible, what assumptions guide the understanding of the affirmative? To complicate matters further, what does the question itself assume? Does the original question "Is learning possible via YouTube?" need revision?

Mezirow's conceptualization of transformative learning is grounded in Habermas' theory of communicative action (1978). Habermas suggests that there are multiple ways of learning. *Instrumental learning* is best understood as learning to control and manipulate others or the environment. A second type of learning is *communicative learning*, which is concerned with understanding what others mean when they are communicating. The third domain of learning Habermas references is *emancipatory*

learning. Habermas also notes two additional ways of learning including *normative learning*, the learning of behaviors and values, and *impressionistic learning*, where the learners are concerned with their impression on others. While each of Habermas' types offer interesting perspectives on learning, communicative learning serves as the launching point for Mezirow's transformation theory.

There are many common terms used to describe our preset ways of seeing, thinking, and talking about things. Geertz (1973) uses *ideology* while Jackson (2008) uses *worldview*. Within transformative learning, this idea is called a frame of reference (Mezirow 2000). A *frame of reference* can be broken down into two components: habits of mind and points of view. Frames of reference are best understood as cultural paradigms—large interconnected beliefs and values that literally structure how people view and engage with reality. Mezirow (2000) uses the phrase *habit of mind* to describe what we are referring to as an assumption. A learner's frame of reference is the basis for all of their individual assumptions. Offering a different account of assumptions from Brookfield's three categories (paradigmatic, prescriptive, and causal), there are six traditional categories of assumptions considered within transformative learning theory: sociolinguistic, moral-ethical, epistemic, philosophical, psychological, and aesthetic (Mezirow 2000).

Cranton, a scholar and author who researches transformative learning theory, writes in her book *Understanding and Promoting Transformative Learning* (2006), about the interconnection between her own habits of mind and how they influence her frame of reference:

> My way of seeing myself (psychological habit of mind) is influenced by my cultural background (sociolinguistic habit of mind). By growing up in an isolated and poor community that did not value education (sociolinguistic), I ended up with great gaps in my knowledge (epistemic habit of mind). Moral-ethical and aesthetic habits of mind are obviously deeply influenced by sociolinguistic, psychological, and epistemic factors. If, for example, I know little about classical music or art (epistemic perspective), my tastes and standards about beauty (aesthetic perspective) will be very different from those of a person well informed in the arts. Philosophical habits of mind may provide an umbrella for many others of our perspectives (28).

Returning to the question of the educational value of YouTube, an example that engages in critical reflection on the assumptions made about the technology— a key methodology of transformative learning—may help ground this highly conceptual overview:

> John, a faculty member, understands the teaching-learning process as an exchange between himself, an expert in molecular biology, and his students. He has committed his life to the advancement of his research and delights in sharing his passion with his students in the courses that he teaches. John requires his students to purchase a textbook for his course and evaluates his

students' learning through a midterm and final exam. He believes students should work hard to complete the readings and prescribed assignments on time, as this is how he became successful. Some students have asked whether or not it is acceptable to consult new media resources such as YouTube to help them understand the core concepts of his class. John strongly discourages his students from interacting with YouTube as he does not trust the information being presented.

For some, this scenario is expected and is a part of the norm. However, when viewed with transformative learning theory in mind, it demonstrates how many of John's unexamined habits of mind have helped to construct his perspectives on and preferences for teaching and learning. John's understanding of his role as an expert is grounded within the western cultural paradigm that values those who "know" a lot about a particular topic (Kincheloe 2008). His ability to know something objectively (epistemic habit of mind) becomes translated into John's course structure (based in his philosophical and psychological habits of mind). For example, it is assumed that tests accurately measure learning and that all students will need to behave as John has to be successful. Both examples of testing and academic success are constructed and based on unexamined habits of mind. More to the point of this article, John's assumptions about learning, knowledge, and teaching inform his feelings and actions with regards to students' use of YouTube to support their own learning.

An Alternative Model

One of the primary challenges of Mezirow's transformative learning theory is its focus on rational thinking rather than emotional, spiritual, or extrarational experiences (Dirkx 1997). Coming from a more holistic, interconnected, and community-based ecological perspective, Jackson (2008) demonstrates how learners' frames of reference, or worldviews, are pieced together in stages. The following model (see Figure 1) denotes how a worldview translates into a lived experience. Progression between the stages is not necessarily linear as the model may suggest. Rather, the figure is meant to guide conversations around how primary assumptions are self-reflexive. Mezirow's transformational terminology of frames of reference, habits of mind, and point of view may best be correlated with Stages 1 and 2 of Jackson's model.

Figure 1: Jackson's stages of lived experience
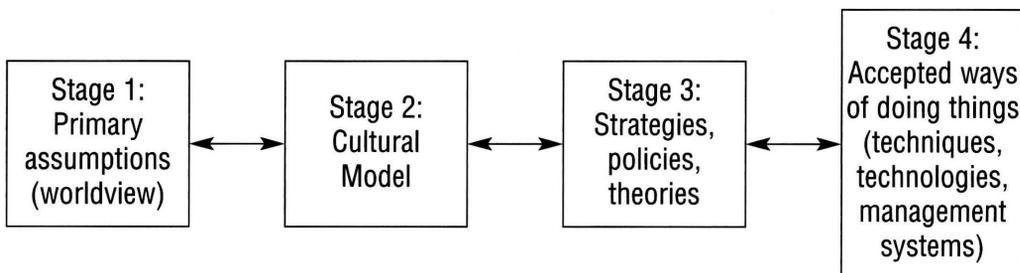
John, the molecular biology faculty member from the previous example, would on the surface seem to be within Stages 3 and 4. He operates his classroom because "that's the way things are" and assures that his classroom procedures are based on university policy. As we have seen, transformative learning theory can help step farther back into John's worldview (or frames of reference) to truly grasp how John understands, and therefore constructs, his classroom. The key to transformative learning, the remarkable and promising, is what happens in Stage One, whereas much of the current learning theory and conversations around improving education primarily occur at Stages Three and Four and rarely Stage Two.

For example, within much of higher education, there is an ongoing debate on learning management systems (e.g., the opensource Moodle versus the commercial Blackboard) and which is more fiscally responsible for universities on tight budgets. While worthwhile, this conversation is being conducted primarily within Stage Four and only occasionally in Stage Three. Transformation and empowerment are found within Stage One, but debates surrounding the primary environment where students and instructors interact rarely consider the primary assumptions inherent within the learning management system. For example, what assumptions are being made about teaching and learning online when a majority of student and teacher interactions is conducted through text only? What assumptions support the push for online learning within higher education? Also interesting is use of the word "management" in reference to learning and what assumptions are made by using such a term. Can learning be managed? In what ways does assuming that learning can be managed render transparent other understandings of learning? Again, asking critical questions within transformative learning is not meant to suggest that some ideas or policies are good or bad. Rather, questioning assumptions creates opportunities for new and different ideas that were unthinkable before.

Being situated in the adult education field, Mezirow's transformative learning theory has dominated adult education research for decades. It has been explored within a variety of contexts and from many angles (Brookfield and Preskill 2005; Mezirow 1990, 1991, 2000; Mezirow and Taylor 2009; O'Sullivan, Morrell, and O'Connor 2002). Only recently has transformative learning theory been considered within the context of online teaching and learning (Yuzer and Kurubacak 2011). Given the dramatic shifts in technological development, transformative learning theory seems quite promising in assisting educators and researchers in reframing and reconceptualizing understandings and assumptions about technology in higher education.

Transforming Technology and Education
It becomes clearer through Jackson's (2008) stages (see Figure 1) that much of educational technology activities occur in Stages Three and Four. Policies are written and posted, technologies are handed out (physically and electronically), laws are made, conferences are held, and conversations and professional development are conducted. However, little to no conversation with regards to the intersection of technology and education has occurred that reaches into the primary assumptions, Stage Two and even

Stage One, of teachers, administrators, students, community leaders, and instructional technologists. Within this distinction, transformation is needed.

The usefulness of Mezirow's transformative learning theory becomes clear in connection with the concerns associated with the integration of technology into education. The nature of technology, its ontology (what it is and is not), is grounded within individual and shared assumptions, frames of reference, and worldviews. Web 2.0 and web-based technologies are not fixed physical objects. When asked to point to the floor, ceiling, or the window, an individual has no trouble completing such a simple task. The floor, ceiling, and window are all concrete physical objects that can be seen, touched, and felt. Newer technologies, however, are negotiated and renegotiated daily in the lived experience of human beings. Following the same line of thought, would it be appropriate to ask someone to point to Google Docs, Moodle, or Twitter? One could point towards the direction of a computer or other device, but do these technologies exist solely within the computing device?

Numerous epistemological (how and what we can know) and ontological (what is real, what can be) concerns have emerged given the influx of newer technologies and are largely ignored (Dede 2008). As such, many of the conversations surrounding technology within the educational context are propagating grave misunderstandings concerning the nature and reach of educational technology. For example, the question of who authenticates knowledge and knowing has been altogether erased. The gravity of having such an enormous amount of information at students' fingertips at any given time has not truly sunk in for some. There are many signs of the lack of critical analysis into the assumptions made about educational technologies. Due to issues associated with accuracy and authenticity, many schools have banned the use of Wikipedia within the classroom and also as a reference tool. Students are required to purchase exorbitantly expensive textbooks, while all of the information needed is readily available in a variety of free formats online. Social media tools, such as Twitter, YouTube, Facebook, Google+, and any number of ever-evolving and ever-emerging technologies, are disregarded and labeled as frivolous wastes of time. Still, some would rather argue about whether or not the English language is dying because of text messaging, instead of addressing how this technology is redefining the educational playing field (Humphrys 2007).

One of the key concerns with being able to fully grasp the impact of educational technologies on education is that many approaches to teaching with technology are past-oriented. It is as if the educational community is continually checking the rearview mirror for previous research and lessons learned while missing what is happening on the road at present. Transformative learning is distinctly present- and future-oriented. Warlick (2007), an author and presenter on K-12 educational technology, often describes in his talks the current landscape of teaching as "the first time in history when our job as educators is to prepare our students for a future that we cannot clearly describe." This is where educational technology leadership is needed. Instead of reacting to technologies after they have been discovered and made a permanent fixture of students' lives, teachers of and with technology should be at the

forefront, trying these technologies in the classroom and encouraging their students to do the same. Faculty members who include educational technologies in their courses should transform the relationship between themselves and developers of technologies by providing constructive feedback and suggestions for possibilities with future technologies. They also should encourage ongoing critical examination of the assumptions made about the possibilities and drawbacks of web-based technologies.

Another concern relates to how technology is embraced by teachers and students. The phrase "teachers/students using technology" is used incessantly, but when compared to how these individuals actually interact with technology the true meaning is revealed: instructors and students are being *used by* technology. Technology then, by its very nature, is something that determines how learning is structured. By choosing a technology, we are acknowledging certain boundaries set by that technology. This understanding is neither good nor bad, but by distinguishing these boundaries, technology can be more closely and critically examined. For example, by choosing to require students to use a wiki for a particular course assignment, assumptions made about the assignment that are inherent to wiki technology. Wikis, as they currently exist, do not allow for simultaneous editing, nor do they have the customizability that many web designers have grown accustomed to. While seemingly minor boundaries, they constrict and limit how students interact with each other and with course content in ways that may have, until recently, remained transparent.

Transformative learning theory and critical reflection call teachers and learners to recognize the assumptions that inform their practice. Returning to the example of learning management systems, questions regarding how these systems structurally limit and/or sponsor community and learning online points to assumptions, issues, and concerns that have not yet been fully critically examined. These concerns are critical as urban universities chart their course into an unknown future.

Educational technology, whether or not fully understood within the context of transformative learning theory, is subversive. It is subversive in a way analogous to Postman and Weingartner's description of the purpose of education as inquiry-based and critical of unexamined assumptions (1969). The intersection of technology and education should be alive with continuous conversation, critical reflection, and resolution. The problem of education and educational technology is "wicked" in the vein of Rittel and Webber's (1973) conceptualization of a "wicked problem." Wicked problems are difficult to define, and therefore are increasingly difficult to resolve. Rittel and Webber go so far as to suggest that social problems are never solved, but rather resolved over and over again. This is where leadership in educational technology is needed.

Conclusion

Educational technology leaders embrace the unknown future not as something to fear, but as something to create. They acknowledge and affirm the integration of technology into teaching and learning. The beliefs and assumptions that ground the practice of

educational technologies are always open for further reflection. Upon critical examination, when the assumptions become no longer useful, the educational technology leader is confident in reframing and transforming the assumptions. They are comfortable discussing the socially constructed nature of knowledge and are quick to empower all those who engage with technologies in the support of learning and teaching. Reacting by banning technologies from classrooms, removing laptops from classrooms, and censoring content and information within the field of educational technology will not do. Web 2.0 technologies and their offspring and future kin will continue to push the bounds of what we think we know and what we assume about knowing and being. While educational technology is subversive in regards to unexamined and uncritically challenged assumptions about education, a transformative encounter with educational technology might mean the harnessing of subversive technologies for social emancipation.

The technologies will come and go, but it is the people that make up the classroom, not the laptops. It is the instructors and the students that are most important, not the projectors or iPads. No amount of technology can make up for poor pedagogy—and the integration of technology into poor pedagogy without consideration for the related epistemological and ontological concerns is a recipe for disengaged and disinterested students. When something changes, it is easy to determine from where the new emerged from the pre-change. Yet with transformation, this distinction is not readily available— indeed by definition the new appears generate from nothing. In this context, nothing is not meaningless and empty, but rather an opening for creation and imagination.

For those subversive readers ready to transform with Web 2.0 technologies, consider the following action items as a starting point:

- Reflect critically on the use of educational technologies. Cranton (2006) defines critical reflection as "critically questioning the values, assumptions, and perspectives presented in the world" (94). Transformative learning assists in uncovering how unexamined assumptions can limit what is possible or what is knowable. By discovering and naming these assumed boundaries, teachers and learners can become more empowered users of educational technologies.

- Connect, engage, and share with others. While self-reflection is an excellent position to begin from, to fully realize the potential of transformed assumptions it is helpful to connect and share the experience with others. This process could present itself as a written reflection or publication, to a conversation with a colleague or a topic discussed in a graduate seminar.

- Expand traditional understandings by consulting research literature or learning a new Web 2.0 technology and how it might be integrated into the classroom. Transformative learning is concerned with examining the unexamined. Choosing one of these activities is an excellent way to push the boundaries of assumed beliefs and values.

Educational technology, being a "wicked" problem, may be due for a transformation itself. Wicked problems are rarely solved and are more likely to be resolved repeatedly, continually avoiding a final resolution (Rittel and Webber 1973). Educational technology and the integration of Web 2.0 and web-based technologies into education are not so much problems as they are the state of things. What would be possible if educational technology was not a problem to be solved, but an access to new understandings of ourselves and our world?

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