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An Inquiry into Educational Technologists' Conceptions of Their Philosophies of Teaching and Technology

Enquête sur les conceptions philosophiques de l'enseignement et de la technologie élaborées par les technologues de l'éducation

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Abstract

It has been suggested that when we know our philosophy of teaching and technology we then have the ability to articulate not only what we are doing as educational technologists, but what we want to achieve with the technologies, and why. And while most educational technologists would agree that knowing our philosophical orientations is important, do educational technologists actually know, or can they accurately identify, their teaching *and* technology philosophical orientations? We sought to answer these questions by assessing the consistency between what educational technologists say in collegial deliberations and how they self-identify their philosophical orientations. The results of this exploratory study provide us with insights on how educational technologists construe their philosophical orientations of teaching and technology. Philosophies of teaching and technology are defined in this study as a conceptual framing that embodies certain values, attitudes and ideologies from which we view the multi-contextual facets of educational practice.

Résumé

Il a été suggéré que, lorsque nous avons conscience de notre philosophie de l'enseignement et de la technologie, nous sommes mieux en mesure d'exprimer non seulement ce que nous faisons en tant que technologues de l'éducation, mais aussi ce que nous cherchons à réaliser avec les technologies et pourquoi. Si les technologues de l'éducation admettent pour la plupart l'importance de connaître nos orientations philosophiques, connaissent-ils pour autant ou peuvent-ils identifier avec précision, leurs orientations philosophiques de l'enseignement et de la technologie? Nous avons cherché à répondre à ces questions en évaluant la cohérence entre ce qu'affirment les technologues de l'éducation en contexte de débat professionnel et la manière

dont ils identifient eux-mêmes leurs propres orientations philosophiques. Les résultats de cette étude exploratoire nous donnent un aperçu de la façon dont les technologues de l'éducation interprètent leurs orientations philosophiques de l'enseignement et de la technologie. Les philosophies de l'enseignement et de la technologie sont définies dans cette étude comme un cadre conceptuel incarnant certaines valeurs, attitudes et idéologies à partir desquelles nous considérons les aspects multi-contextuels de la pratique éducative.

Introduction

There are a number of reasons why those who are in the field of educational technology today should understand how to situate themselves with respect to philosophies of teaching and philosophies of technology. While articulating one's philosophy of teaching is, generally, an accepted practice in the field of education, articulating one's philosophy of technology is not so widely practiced and/or understood (Chen, 2008). As educational technologists work with technology in educational contexts, understanding and knowing philosophical orientations regarding technology is also important. The power of knowing our philosophical orientations lies in the ability to enable us to be reflective, or to better understand and appreciate our activities. Reflective practice is more than understanding the impact we are making; it is also knowing the impact we *want* to make (Elias & Merriam, 2005). To know what impact we desire, we must ask ourselves what we believe the purpose of education is, in addition to knowing why we make the choices we do about the use of technologies in our everyday practices, and what we expect to achieve with these technologies in relation to our educational aims and goals. Conclusions based on teacher-belief research have asserted that the interrelationships between beliefs and actions are what underpin and inspire practice (e.g., Albion, 1999; Albion & Ertmer, 2002; Ertmer, Gopalakrishnan & Rosse, 2001; Scrimshaw, 2004). This literature suggests that teaching beliefs strongly influence classroom practices; further literature concludes that teacher-beliefs act as filters that guide educational practitioners in both their instruction and curricular decision-making processes (Pajares, 1992; Prawat, 1992). Acknowledging that while much of the past research may only be telling us half the story (Kane, Sandretto & Heath, 2002), more than two decades of research continue to indicate that teacher beliefs have an impact on instructional practice. At a minimum, the past research provides us with insights into the reasons educators act the way they do (Levin & Wadmany, 2006).

It stands to reason, then, that knowing our philosophy of teaching and technology can provide us with the ability to articulate not only what we are doing as educational technologists, but what we want to do and why. Unless we can identify our philosophical orientations (or what we value in our educational technology practice and research) we will never be able to justify our choices of activities and strategies.

Philosophies of Teaching and Technology: The Necessity to Understand Further

While few would argue against the value of reflecting on our philosophies, educators infrequently articulate and share their philosophical orientations with their students and/or colleagues. The importance of recognizing philosophical standpoints comes to light when examining debates and disagreements revolving around related practices and policies. For

example, some educational technologists argue that technology should be perceived as a neutral tool or artefact that serves to extend our human capacities, disputing the notion that a technology strongly influences our actions. Jonassen (1996) and Clark (1994) are two examples of North American educational technology scholars advocating the "neutrality" of educational technology tools. Jonassen asserts that "carpenters use their tools to build things; the tools do not control the carpenter. Similarly, computers should be used as tools for helping learners build knowledge; they should not control the learner" (p. 4). Such assertions are also reflected in the seminal work of Clark (1983; 1985), who argues that it is the instructional strategies, rather than technologies, that are the key component in effective learning. He argues, in part, that technologies are "mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (Clark, 1983, p. 445). Such views advance the notion that the technological artefacts we use for educational purposes are neutral tools, employed simply to meet the aims and objectives of the educational practitioners teaching with them.

Clark's view prompted a widely followed and widely cited debate with Kozma (1994) who claimed that it is the media themselves that influence learning. Taken to its logical extreme, this view positions media and technology as literal "causes" of learning (or of any other outcome or observable change in its audience). Understood in these terms, this view can be labelled as technological determinism. We have found that fewer educational technologists tend to align themselves with the technological determinacy view, perhaps because it has tended to have a negative connotation. In particular, the origins of technological determinism can be associated with a Marxist class analysis, wherein technology acts as an instrument of dominance used by the advantaged class over others. Within the field of education, this historical view has led to a belief that technology could be employed as a means of oppressing students. For example, Mumford's (1934) *Technics and Civilization* was one of the first works to draw this kind of analysis. As of the 1970s, Mumford was joined by other critics – including Winner (1977), Ihde (1979), and Borgmann (1984) – responding to the changing political climate of the day. Both before and during this period, Marcuse (1964) and Foucault (1977) also became influential critics of technological determinism (Feenberg, 1999).

Ultimately, the focus of the debate between Clark and Kozma becomes pointless – clearly, both start out from different philosophical premises. Their debate revolves around the means rather than the ends of education; a much more meaningful debate would be on their conceptual framing of the values from which they view the many aspects of education, including the field of educational technology.

Underpinning our philosophical orientation on education and technology, teaching and its corollary, learning, is the desire to effect a transformation of some kind. The transformation(s) we desire to bring about with our instructional activities are based on what we believe should happen through our practices. This, in turn, is reflected in whether we choose to use technologies and, if so, how we will use them. When we do not acknowledge our philosophical orientation, other motivations and patterns may come to the fore (Zinn, 1990). For example, if a practitioner's decisions about teaching and technology are not guided by their educational aims and goals, decisions to use technologies may be based on the immediacy and urgency brought forward by technological hype (Kanuka, 2008). Problems arise when these strategies result in incongruence and tensions in values and action among instructors, administrators and students

that revolves around the means rather than the ends of education (Elias & Merriam, 2005; Zinn, 1990). When such conflicts exist between values and practice, realizing the possibilities of what technologies can provide becomes difficult to achieve. As such, it is important to identify what we value.

The purpose of this study was exploratory in nature, designed to gain further understandings about how educational technologists' construe their philosophical orientations. The objectives were threefold: (1) to gain insights on educational technologists' philosophical orientations on teaching and technology as articulated in collegial deliberations, (2) to search for patterns between philosophical orientations related to teaching and technology, and (3) to explore the consistency of educational technologists' philosophical orientations in collegial deliberations (their interactions) with the philosophical orientations they personally identify with (beliefs about educational aims and goals).

This study was limited to an analysis of educational technologists' beliefs, ideologies and values (or philosophies) of teaching and technology. We did not investigate teaching perspectives, as defined by Mead (1938; see also Tabachnick & Zeichner, 2003), which include "a coordinated set of ideas and actions which a person uses" (p. 166). An essential difference between teaching perspectives and teaching beliefs (attitudes, ideologies and values) is that teaching perspectives include actions (i.e., teacher behaviour and thought are inseparable) – not merely dispositions to act as is the case with attitudes, ideologies and values (or teaching beliefs). Analysis of theories of use and theories in action (see Argyris & Schön, 1974) is beyond the scope of this study. Elsewhere, this distinction has been dealt with through the use of the label "pedagogical beliefs" (e.g., Chen, 2008).

Background to the Study

In previous studies (Kelland & Kanuka, 2008; Kanuka & Kelland, 2008), we brought together Canadian e-learning administrators and researchers to discuss effective uses of technologies in the higher education sector. Three conclusions emerged from this research: (1) beliefs about educational technology are many, and are varied if not polarized; (2) policymakers and administrators concerned with implementing technologies should carefully consider each position for effective administration and policy-making; and (3) it is unlikely that educational technology experts will ever reach consensus on the influence and purpose of information and communication technologies within institutions of higher education because of the differing pedagogical beliefs held by the participants about teaching and technology. But do the participants know, and can they accurately identify, their teaching and technology beliefs? – Or more accurately their philosophical orientations? Building on this prior work, in this study we sought to explore this question further by assessing the consistency between what educational technologists say in collegial deliberations and how they self-identify their teaching and technology philosophical orientations.

Philosophies of teaching and technology are defined in this study as a conceptual framing that embodies certain values, attitudes and ideologies from which we view the many aspects of education (Zinn, 1990), including the field of educational technology. The underpinning assumption of this study is that philosophies are necessary to avoid focusing on *what to do with* technologies without examining sufficiently *why* we should do it.

Research Design and Methods

The philosophical frameworks used to guide the study included orientations towards teaching (Elias & Merriam, 1980; 1995; 2005) and technology (Dahlberg, 2004). There are various philosophical frameworks that could have been used to frame this study (e.g., Apps, 1973 or Beder, 1989 for teaching philosophies; or Dusek, 2006; Feenberg, 2001, 2002; Ferre, 1995; Idhe, 1979 for technology philosophies). The Elias and Merriam (1995) framework was selected because it has tended to be widely used within the fields of adult and higher education since its first edition (Elias & Merriam, 1980). The Dahlberg framework was selected after a pilot for this study was conducted. A brief overview of each framework used in this study is provided in this next section.

It is important to note first, however, that personal philosophies or philosophical orientations toward education and technology are not necessarily the same as the broader ideas and frameworks articulated by philosophers (for instance, those discussed by Marcuse (1964) or Heidegger (1977) in their philosophical works). Indeed, it would be insufficient to regard such philosophers as falling within a particular set orientation or determinism categorically, and this is not our intention. Rather, the intent is to acknowledge the influence of such philosophical notions and thinkers as they may be reflected in individual orientations to education and technology. As such, it is important to acknowledge the difference between philosophers of technology and education, and the broader connections that may exist between these ideas and the beliefs articulated by practitioners more specifically.

Philosophical Orientations Regarding Technology

Our research suggests that as educational technologists, there is an inclination to align ourselves with one of three orientations: uses determination, social determination, and technological determination (Dahlberg, 2004; see also Dusek, 2006; Feenberg, 2001, 2002; Ferre, 1995; Kanuka, 2008).

Uses determination

Within this position, emphasis is placed on the importance of human uses of technologies. Technologies are viewed as neutral tools, through which our capacities can be extended. As the users of these tools, we determine the effects of technological artifacts. This perspective originally emerged as a response to the pessimism of the Frankfurt School, for example by responding to *Kulturkritik* through a "turn towards the uses (or readings) of the media" (Dahlberg, 2004, para. 6), and has become an ascendant view of technology in North America because it emphasises that, as individuals, we have control and autonomy over technology (Morley, 1989).

Social determination

This position emphasizes the ways in which technologies are socially embedded and constituted, and is mainly concerned with the creation and integration of technological artifacts within social systems and cultural contexts. As such, social choices are seen to shape the form and content of technological artefacts (Dahlberg, 2004). Technologies, then, are both affected by the social construction of technological artifacts and are embedded within social structures. Educators with

this orientation place importance on the way social and technological uses shape the form and content of the learning experiences. Peter Drucker, for example, over a decade ago said in an interview with *Forbes Magazine* that social changes would result in the physical presence of universities ceasing to exist within ten years (Forbes Magazine, March 1997.). Today, futurists continue to make such forecasts, with for example the introduction of Massive Open Online Courses (MOOCs) as the unbundling and rebundling of universities (see, for example, http://hackeducation.com/2012/12/03/top-ed-tech-trends-of-2012-moocs/).

Technological determination

Within this position, technology is viewed as a causal agent that determines our actions and plays a pivotal role in social change. The overriding assumption underpinning this orientation is that technology influences our practices and experiences and negatively impacts society. Although not often given the label of technological determinists, scholars who view technology as positively influencing our education systems also reflect the technological determinist view. For instance, in the area of e-learning, Garrison and Anderson (2003) assert that educational technologies can positively transform learning experiences, subsequently improving the quality of these learning experiences. The rationale underlying this belief rests on the notion that the technology itself has the potential to facilitate learning. As mentioned above, technological determination has tended to have a negative connotation, since some critics argue that it reduces all other factors to technology – often regarding technology in itself as a force for good or evil.

Non-reductionist

Analogous to other, perhaps better known, philosophers of technology (e.g., Dusek, 2004, Feenberg, 2001; Ihde, 1979), Dahlberg (2004) posits that in order to find alternative viewpoints of technology beyond those within the determinations outlined above, we must move toward a non-reductionist, multi-determination perspective. Here Dahlberg argues that to avoid viewing technology "as either autonomous 'things' or amorphous 'no-things,' it is important to view them as both constituted within and impacting upon social relations and cultural meanings" (2004, para. 39). He notes further that, in reality, there is no singular cause for the effects of technology, concluding that we need theories that account for the complexity and multiplicity of determinations. Such a non-reductionist or multi-determinacy view would be sensitive to the "complex interplay between multiple events" (para. 41), recognizing that each determination is embedded and inter-linked.

Schools influencing philosophy of technology

In addition to understanding Dahlberg's particular description of determination(s), it is important to recognize how philosophers from different traditions have contributed to developing philosophy of technology more broadly. As Dusek (2009) notes, influences have come from various schools:

> There are contributions to philosophy of technology not only in the analytical and linguistic vein, as well as from the phenomenological, existential and hermeneutic traditions; there have also been further contributions from British social constructionists, French postmodernists and American pragmatists. (para. 12)

As Dusek (2009) illustrates, it is important to recognize and acknowledge contributions to philosophies of technology from post-positivist/analytic (e.g., Kuhn, 1996), phenomenological (e.g., Husserl, 1970), hermeneutic (e.g., Heidegger, 1977), critical theory (e.g., Feenberg, 2001, 2002; Habermas, 1970), pragmatic (e.g., Dewey, 1938), and social construction of technology (SCOT) (e.g., Bijker, Hughes, & Pinch, 1987) stances. While it is not within the scope of this study to consider each of these traditions, it is important to note that, just as Dahlberg calls for moving towards non-reductionist or multi-determinations perspectives of technology, Dusek (2009) looks toward an integrated philosophy of technology that acknowledges the intersection of various philosophical approaches to technology, to further develop the overall field of philosophy of technology (which is relatively recent). To this end, just as the theme of this special issue portrays, studies such as this one that endeavour to investigate patterns and overlapping of different philosophical orientations may work to delve further into this issue of understanding philosophies from multiple and often intersecting vantage points.

Philosophical Orientations Towards Teaching in Higher Education

The philosophical orientations for teaching used in this study are based primarily on the writings of Elias and Merriam (1980; 1995; 2005), but also incorporate Zinn (1990), Draper (1993), and Brameld (1969). Elias and Merriam present six orientations to teaching philosophies for adult learners. Each orientation includes the historical grounding as well as basic principles for each orientation.

Liberal/perennial

This orientation is the oldest philosophy of education, stemming historically from the classical Greek philosophers, such as Socrates, Plato, and Aristotle. As such, early education in the Western world was guided by this philosophy. There are two primary aims of educators holding these orientations: 1) to search for truth, and 2) to develop good and moral people. According to this orientation, educated people should possess an aesthetic sense, moral values, and a religious dimension, rational and intellectual capabilities as a well as wisdom. Twentieth century philosophers influencing this viewpoint include Adler (1937), Maritain (1943), Van Doren (1943), and Hutchins (1953; 1968).

Progressive

This orientation aims to develop personal growth and the promotion of a better society. Preferred teaching methods focus on problem-solving, as well as experiential or situational approaches. To this end, curriculum is typically organized around situations and problems that relate to the experiences of the learners. Personal enlightenment and democratic cooperation are the focus of learning activities. Influential exponents of pragmatism and progressive thought (related to education) include Dewey (1910; 1916; 1938) and James (1909). Elements of progressive thought are found in the writings of several theorists in the field of adult and higher education, such as Bergevin (1967), Knowles (1970), Houle (1972), and Lindemen (1956).

Behaviourist

Although it has lost much prestige since its heyday in the 1950s, within this orientation, the ultimate goal is to bring about measureable and observable changes in behavior. Methods of instruction begin with specific objectives, and incorporate rewards and/or punishments related to

the demonstration of these set behavioral objectives. Learning is subject-centred, focused largely on the content. Examples of well-known behaviourial methods include mastery learning, personalized systems of instruction, individually guided instruction, and individually prescribed instruction. Early behaviourists include Watson (1914) and Thorndike (1932), but perhaps the most influential and well-known behaviorist is Skinner (1938). Notably, contemporary behaviourist Tyler (1949) is known for needs assessments in curriculum and instruction.

Humanist

The aim of this orientation is to foster individual growth and self-actualization. Important constructs emphasized are freedom and autonomy, trust, active cooperation and participation, and self-directed learning, both in class and in society generally. Foundational thinkers influencing this orientation include philosophers from the Renaissance and Enlightenment, such as Erasmus and Voltaire, and more recently existential humanists, such as Heidegger (1977), Sartre (1949), and Camus (1940; 1942; 1951). Additionally, Third Force psychologists who have been equally responsible for the development of this approach include Rogers (1967), Fromm (1968), Knowles (1970), and Maslow (1976).

Radical

Within this orientation, the overarching aim is the convergence of educational and political action to bring about change in the political, economic, and social order. Influential figures within this orientation include Counts (1932), Holt (1967), Brameld (1969), Kozol (1972), and Goodman (1994). Other influential contemporary radical/critical educators also include Friere (1973) and Mezirow (1991).

Analytical

The primary aim of the analytical orientation is develop rationality via the transmission of truth that is morally, socially, and politically neutral. Thinkers influencing this view include Scheffler (1960), Peters (1967), and Green (1971).

Methods and Data Collection

To achieve the objectives of this study, data were collected through semi-structured group deliberations with colleagues (referred to as "collegial deliberations") and individual identification of philosophical constructs regarding orientations on teaching (Elias & Merriam, 1995) and technology (Dahlberg, 2004). Both data sets were then analyzed, comparing the philosophical orientations identified in the collegial deliberations with how participants identified their dominant philosophical orientations.

The philosophical identification instrument (see Appendix A) was developed to assist participants with identification of their orientations for teaching and technology. A difficulty noted in prior research revolves around collecting data on pedagogical beliefs (or our values, attitudes and ideologies). In particular, philosophies are often tacitly held and difficult to articulate (Chen, 2008). Researchers have noted this limitation and argued that it is inadequate to investigate pedagogical beliefs solely based on "practitioner talk" (e.g., Kane, et al., 2002; Pajares, 1992). In an attempt to minimize this problem, we developed an instrument to assist the participants in moving their pedagogical beliefs from tacitly held to explicitly stated.

Fourteen participants whose area of expertise is educational technology participated in the study; however, four participants were removed from the data analysis for this study due to insufficient contributions to determine philosophical orientations. Four scenarios of the benefits and drawbacks of teaching with technology within the higher education sector guided the data collection process for the collegial deliberations. The collegial deliberations were videotaped. The following week the participants were sent a form to complete via email, asking participants to self-identify and rank their philosophical orientations.

Data from the videotapes were transcribed. Coding sheets using Elias and Merriam's (1980; 1995) and Dalhberg's (2004) frameworks were developed and used to identify participants' philosophical orientations (see Appendix A). The researchers then coded the transcripts for each participant individually and debriefing between researchers followed. Once agreement (or agreement to disagree) was confirmed between researcher coding for the collegial deliberations, coding was then assessed against the participants' self-ranking.

Results

The researchers' analysis and coding of the transcripts concluded with consensus. In regard to identifying teaching philosophies of the participants, researcher consensus was initially arrived at for eight out of ten of the participants. On the technological philosophies, initial researcher consensus was arrived at for nine out of ten of the participants (Table 1). For the philosophical orientations where coding non-consensus occurred, a decision was made to override the outlier codes (see Table 1 for original coding results).

Table 1: ***Results of Researcher Coding with Participant Self-Ranking***

	Participant Self-ranking	**Coder 1**	**Coder 2**	**Coder 3**
1.	Behaviorist Social determination	Humanist Uses determination	Humanist Uses determination	Humanist Uses determination
2.	Behaviorist Non-reductionist	Humanist Uses determination*	Humanist Non-reductionist	Humanist Non-reductionist
3	Radical Technological determination	Radical Technological determination	Radical Technological determination	Radical Technological determination
4	Behaviorist Social determination	Behaviorist Social determination	Behaviorist Social determination	Progressive* Social determination
5	Humanist Technological determination	Humanist Uses determination	Humanist Uses determination	Humanist Uses determination
6	Humanist Uses determination	Humanist Uses determination	Humanist Uses determination	Humanist Uses determination

7	Radical Social determination	Radical Social determination	Radical Social determination	Radical Social determination
8	Liberal Technological determination	Liberal Technological determination	Humanist* Technological determination	Liberal Technological determination
9	Humanist Technological determination	Humanist Technological determination	Humanist Technological determination	Humanist Technological determination
10	Progressive Social determination	Radical Social determination	Radical Social determination	Radical Social determination

* Coding overridden

It should be noted at this point that studies (similar in design to this study) sometimes use multiple raters or coders, working independently to rate the same transcriptions. A comparison of consistency between these raters is then used quantify inter-rater reliability. However, this practice has been shown, at best, to be imprecise, and at perhaps at worst potentially misleading (Stemler, 2004). With this in mind, in combination with the small sample size, implies that such measures would not be necessarily be a part of this study.

Philosophical Orientations

Identification of participant philosophical orientations began by analyzing the collegial deliberations through assertions and rebuttals to responses on the scenarios presented. Using the constant comparison techniques of grounded theory (Strauss & Corbin, 1990), we matched participant contribution against the teaching (Elias & Merriam, 1980; 1995) and technology (Dahlberg, 2004) frameworks (see Appendix A). As might be expected, identifying teaching philosophical orientations was, with some participants, not straightforward. For example, statements and arguments by some participants were not consistent with philosophical orientations identified. In these cases we counted the number of times the contributions were made in each philosophical category, assigning the orientation with the greatest number of contributions. For the majority, however, contributions were consistent when coding philosophical orientations.

Our coding of teaching philosophies revealed that the majority of educational technologists in our study fall within the humanist orientation and an (almost) even split between three of the four technological orientations described above (Table 2).

Table 2: ***Philosophical Orientations***

Teaching Philosophical Orientation	#	Technology Philosophical Orientation	#
Humanist	5	Uses determination	3
Radical	3	Social determination	3
Behavioral	1	Technological determination	3
Liberal	1	Non-reductionist	1
Progressive	0		
Analytical	0		

Table 3 provides examples of participant statements used by the researchers to identify teaching philosophical orientations from each participant.

Table 3: ***Examples of Teaching Philosophy****

Participant	Teaching Philosophy	Example
1	Humanist	*I don't give marks for participation. It's up to the students to participate … they know their own needs and can self-evaluate* Rationale for coding as Humanist: self-evaluation is a key aspect of this orientation
2	Humanist	*What I find I'm doing is to work very hard to construct interactive communities … and collaborations* Rationale for coding as Humanist: in this orientation group activates are viewed as an effective instructional method.
3	Radical	*[The belief that] this micro world that they are manipulating and others might be manipulating with them is somehow reflective of reality. [How anyone can] think this is worth investigating.* Rationale for coding as Radical: bringing students into an awareness through critical reflection is an essential aspect of learning in this view
4	Behaviourist	*Students don't need a teacher… interactivity is not necessary; they only need the content … a machine can deliver the content effectively … simulations skills can transfer to reality* Rationale for coding as Behaviourist: in this view, the focus of learning is on the content

5	Humanist	*There is a humanness between and among [students and teachers]; a partnership* Rationale for coding as Humanist: this view sees the role of the instructor as a helper and partner in the learning process
6	Humanist	*…the content is secondary to the interaction* Rationale for coding as Humanist: in this view, interactive group activities facilitate personal growth with the content being used to support this primary aim
7	Radical	*I want to go back to content because I think we need to be critical of assumptions about what, for instance, a good learning environment includes or what good pedagogy is … an example of that is our love affair with collaboration* Rationale for coding as a Radical: questioning the basic values, structure and practices of society is a key focus of learning in this orientation
8	Liberal	*We should be careful not to abandon the whole idea of teachers leading classroom discussions or giving lectures or teaching people to learn that way* Rationale for coding as Liberal: in this orientation, the teacher is superior to the student, with lecturing being a preferred instructional method, followed by guided discussions
9	Humanist	*I would agree … you want to encourage reflection and some individuals will choose to work more instead of participant ... there has to be a facilitator to encourage* Rationale for coding as Humanist: in this orientation the instructor is viewed as a facilitator of the students' personal growth
10	Radical	*It's a kind of fiction that the schools have somehow got us to think there is a clear concept … [schools are] a terrible institutions which has colonized or consciences in very dysfunctional ways* Rationale for coding as Radical: this orientation asserts that instructors should raise the consciousness of contradictions in the learners' environments

* Transcripts have been edited for length and clarity

Table 4 provides examples of participant statements used by the researchers to identify technology philosophical orientations from each participant.

Table 4: ***Examples of Technology Philosophy***

Participant	Technology Philosophy	Example
1	Uses determination	*So much of [teaching with technology] depends on the kind of teaching approaches being used* Rationale for coding as Uses Determination: this orientation views the users as having control
2	Non-Reductionist	*The course, the content, the students, the technology – when I look at the components of what I'm doing when teaching I'm not thinking specifics* Rationale for coding as Non-Reductionist: this orientation holds that there is a mutual shaping between the context, the technology and its users
3	Technological determination	*…talking about virtual classrooms and textual tools for our online discussions and what we are doing when we are using these text-technology tools as a metaphor and how powerful the [technologies] are to the sorts of things that we are talking about* Rationale for coding as Technological Determination: this orientation views technologies as shaping the learning process
4	Social determination	*Our online student population is increasing; online library resources are being used ten times more by [student] demand … we are in a new world and we must adapt to it* Rationale for coding as Social Determination: this orientation views social demands as directing our uses
5	Uses determination	*There is this [irrational] fear that suddenly the role of the teacher is no longer going to exist; the computer will take care of all the learning and teaching needs. Well I don't think they know what teaching is because how can [a technology] possibly do that?* Rationale for coding as Uses Determination: this view asserts that technologies are neutral artefacts, with only the capacity to satisfy the needs of those using it
6	Uses determination	*The technology does not do anything; it's what we do with the tool and the context in which we use the tools* Rationale for coding as Uses Determination: this orientation views technologies as neutral tools that extend our capacities

7	Social determination	*You know, all the work that I've done for the past seven years with faculty and with undergraduate students, I don't see that attitude necessarily changing for undergraduate students that we're working with because they don't necessarily equate the communities that they're involved in, in a learning experience yet because they sort of have this particular structure in their mind about what a learning experience is supposed to be, you know, it's supposed to look like this, and they're being cheated if it doesn't look like that … so the undergraduate students direct how we continue to do things* Rationale for coding as Social Determination: this orientation asserts that social choices shape the form and uses of technological artefacts
8	Technological determination	*There is a basic fact about teaching with [communication] technology, which makes it easier for more people to participate, there is no turn taking. You can't monopolize the floor or interrupt people with asynchronous communication tools.* Rationale for coding as Technological Determination: technologies in this orientation are viewed as causal agents determining our uses and having a pivotal role in social change
9	Technological determination	*[Online] discussions provide [students] with the ability to critically reflect … which is necessary for higher-ordered learning* Rationale for coding as Technological Determination: this orientation views technologies as having the ability to determine the uses and the agents
10	Social determination	*Looking at the new intentional economies that are emerging in new educational and cultural environment and practices. The most obvious example is generationally specific capabilities to multi-task while students are learning.* Rationale for coding as Social Determination: this orientation is concerned about the ways that social and technological uses shape the form and content of the learning experiences

Consistency of Philosophical Orientations

As part of our research design, we asked these questions: Can educational technologists accurately identify philosophical orientations in teaching and technology that are in keeping with their beliefs? Specifically, is there consistency between what they say in discussions and how they self-identify their dominant orientations? According to our analysis, the answer to this

question is "yes": most educational technologists who participated in this study can identify their philosophical orientations, and demonstrate consistency with what they say.

As Table 1 shows, nine out of ten participants identified their technological philosophical orientation in alignment with the researchers' coding; seven out of ten participants identified their teaching philosophical orientation in alignment with the researchers' coding. Table 5 illustrates the four examples of inconsistencies identified in the analysis.

Table 5: ***Philosophical identification inconsistencies***

Participant identification	**Researcher coding**	**Example**
Behaviourist	Humanistic	*I don't give marks for participation. It's up to the students to participate … they know their own needs and can self-evaluate* Rationale for coding as Humanist: this philosophical orientation aims support individual growth. Self-evaluation is a key construct, emphasizing that students have the freedom and autonomy to self-direct learning their own learning.
Behaviourist	Humanist	*What I find I'm doing is to work very hard to construct interactive communities … and collaborations* Rationale for coding as Humanist: group activity is the preferred instructional method for this philosophical orientation
Technological Determination	Uses determination	*There is this [illogical] fear that suddenly the role of the teacher is no longer going to exist; the computer will take care of all the learning and teaching needs. Well I don't think they know what teaching is because how can [a technology] possibly do that?* Rationale for coding as Uses determination: this philosophical orientation asserts that as instructors, we determine the effects of technological artifacts on the learning process
Progressive	Radical	*It's a kind of fiction that the schools have somehow got us to think there is a clear concept … [schools are] a terrible institutions which has colonized or consciences in very dysfunctional ways* Rationale for coding as Radical: This philosophical orientation asserts we need to question the basic values, structure and/or practices of society

A key finding of the study is that there exists evidence to support the notion that many of the participants can accurately articulate and self-identify their philosophical orientation regarding

technology (9/10; 90%). Linked to this finding is that when participants are provided with a working framework to identify their philosophical orientations (e.g., see Appendix A), they can explicitly articulate their tacitly held beliefs.

Patterns between Teaching and Technology

The last objective of this study was to search for evidence of patterns between teaching and technology orientations and philosophical orientations. Table 6 reveals that no clear patterns are evident between teaching philosophical orientations and technology philosophical orientations, with a possible exception being the Humanistic orientation and Uses determination.

Table 6: ***Patterns between philosophical orientations***

Participant	Philosophy of Teaching	Philosophy of Technology
1	Humanist	Uses determination
2	Humanist	Non-reductionist
3	Radical	Technological determination
4	Behaviourist	Social determination
5	Humanist	Uses determination
6	Humanist	Uses determination
7	Radical	Social determination
8	Liberal	Technological determination
9	Humanist	Technological determination
10	Radical	Social determination

Discussion

The purpose of this study was to explore educational technologists' philosophical orientations. The results provide us with insights on how educational technologists construe their philosophical orientations toward teaching with technology. The results indicate that the participants in this study have diverse teaching orientations, but at the same time can be seen to conform, largely, to Elias and Merriam's (1980; 1995) framework. Notably, two teaching philosophies in Elias and Merriam's framework were not represented in the patterns within the data for philosophies of teaching and technology (the Analytical and the Progressive perspectives). As the Analytical orientation is a teaching centred orientation and given most educational technology-related literature (at present) advocates a learning centred approach, it seems reasonable to conclude that few, if any, participants would identify themselves with this orientation. However, it is unclear why none of the participants fell within the Progressive

orientation, as inquiry and discovery-based learning is often associated with contemporary educational technological issues. Further exploration would be required to provide an explanation for this finding.

The results also indicate that the participants hold diverse philosophical orientations related to technology, with all of Dahlberg's (2004) categories being represented. These outcomes provide additional confirmation on our prior research (Kelland & Kanuka, 2008; Kanuka & Kelland, 2008) that educational technologists are unlikely to agree on "best" practices for teaching with technology – or even on "what works" based on the research. The outcomes of this study clearly indicate that we have divergent beliefs about the means and ends of education. Even in this study, with a small group of ten experts knowledgeable of research in educational technology and who are also experts specifically in the area of educational technology, consensus could not be reached on the means and ends of teaching with technology.

The second objective of this study was to search for patterns between philosophical orientations related to teaching, and those relevant to technology. While no distinct patterns emerged in the analysis (see Table 6), there was some indication that there *may* be consistency between the Humanist orientation and Uses determinacy. While a larger sample is needed to make substantive conclusions, it would seem reasonable that these two orientations are compatible. In particular, the humanist traditions focus on the individual – with fostering of individual growth and self-actualization as a priority. Likewise, uses determinacy also focus on the individual's use of technological tools whereby, for example, the individual designing the instruction will determine the use of the tool.

The third objective of this study was to explore the consistency of educational technologists' collegial interactions with the orientations they personally identify. One explanation for the consistent findings might be related to the instrument developed for this study (see Appendix A). Specifically, based on the data it seems possible that the instrument is able to, with a good degree of accuracy, (1) identify educational technologists' philosophical orientations toward teaching and technology (at least as far as their other articulations indicate), and (2) for researchers to determine the consistency between pedagogical beliefs and collegial deliberations. As importantly, the instrument proved effective in making tacitly held pedagogical beliefs about teaching and technology explicit. This finding provides initial confirmation of the functionality of the instrument that was developed for this study. We consider this an important outcome of this study.

Limitations of the study and further research

Perhaps the most obvious and significant limitation of this study is the small sample size. As with most qualitative research, the aim was not one of generalization; rather, the aim was to gain insights. In regard to further research, it would be useful to know if this sample is representative of the wider educational technologists' community. Given the importance of understanding philosophical orientations about teaching and technology, development of a theoretical framework on philosophies of educational technology that can be generalized would be a significant contribution to the field. Such a framework would require a significantly larger sample size.

Conclusion

We have argued elsewhere (Kelland & Kanuka, 2008; Kanuka & Kelland, 2008) that knowing our philosophical orientations on teaching and technology is important. Elias and Merriam (1980) have argued further that, as importantly, decisions that education practitioners make about teaching could be conducted more effectively if basic philosophical differences were understood. This study indicates that differences between the benefits and limitations of teaching with technology are also linked to philosophical differences over the means and ends of the educational and technological purposes that we wish to achieve. The outcomes of this study provide evidence of the differences between the aims and goals between and among educational technologists and the diverse views on the effects of technology within the educational context.

When considering the interrelationship of philosophy and the choices we make about using technologies, it is important to be aware that philosophy can inspire our activities and also give direction to our everyday practices. The value of this study is that the outcomes reveal that many educational technologists are able to accurately identify their philosophical orientations toward teaching and technology when judged against their interactions in collegial deliberations. The outcomes of this study also reveal that in order to have productive discussions about policy and practices, it is important to be explicit in communicating our philosophical orientations on teaching *and* technology.

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Appendix A: Philosophical Identification Instrument

The **aim** of a university education is …
__ to produce good, virtuous people.
__ the promotion of a better society.
__ to accomplish the identified learning outcomes.
__ on individual growth.
__ to bring about change in the political, economic and social order.

The most effective **instructional method**(s) is (are) …
__ lecturing followed by dialogue.
__ experiential, problem-solving or situational approaches to learning.
__ stated objectives, which includes observable evaluation.
__ group activity for the purpose transactional analysis.
__ a dialogue encounter (e.g., action-reflection) which leads to praxis.

Focus of the learning should be …
__ on the content (any content related to the course description).
__ on movement toward personal enlightenment.
__ on the content with subject/content–centred approaches.
__ on the individual learner's growth development.
__ to question the basic values, structure and/or practices of society.

The role of the **instructor** is …
__ superior to the student (student is a receptacle of information).
__ to organize, instigate and evaluate the complex processes of education.
__ to ensure students achieve the learning outcomes.
__ a facilitator, a helper, and a partner in the learning process.
__ to raise the consciousness of contradictions in the learners' environment.

The role of education in **society** …
__ is to create leaders.
__ is on the learner's interests, needs, problems, and ambitions.
__ is to create good citizens which, in turn, results in a better society.
__ does not exist (society does not enter into the education process).
__ should bring people to an awareness of responsible social action.

Learning …
__ is a process that moves from information to knowledge to wisdom.
__ involves experience which is reflected then acted upon by the learner.
__ has occurred if there is a change in behaviour.
__ is a self-evaluation process.
__ is the act of critical reflection.

Important areas where Internet research should be explored further …
__ is in the areas of motives, interests, and/or attitudes of those who use it for educational purposes.
__ is how the Internet is producing new contexts in the learning process and/or within educational systems.
__ on exposing how the Internet is socially, culturally, politically, and/or economically embedded within educational systems.
__ is on gaining a better understanding of the role and recursive effects that occur between the users, the technology and our environment (e.g., social, political, economic, cultural).

Internet-based research should view Internet technology as a …
__ neutral artifact, with the capacity to satisfy the purposes/needs of educators using it.
__ technological artifact that inscribes meaning, which shapes the way teachers and learners think and this impacts the choices they make.
__ social (political, economic, cultural) artifact, which shapes the form and content of its use within educational systems.
__ mutual shaping process between the context, the technology, and its users

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