Ethical issues in instructional technology: an exploratory framework

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Abstract

Purpose – The purpose of this paper is to explore a framework for considering moral K-12 instructional technology. It seeks to examine the extent that development of technology policies consider and respect affected parties' interests.

Design/methodology/approach – Interpreting morality as an economic concept that involves a reconciliation of societal members' diverse needs and wants, the authors describe moral instruction technology use as a negotiation of administrative, teaching and learning needs along five continua defined by Mason, in 1986 and Peace and Hartzel in 2002: property, freedom of speech, privacy, accessibility, and accountability. The paper commences with observations concerning research into technology-based empowerment and associated ethical issues. It then describes the five continua of ethical instructional technology challenges within the contexts of K-12 settings.

Findings – The authors encourage research through observational and survey studies to clarify understandings of these continua. Although presented separately, they acknowledge that these dimensions overlap and interact to comprise a mesh of moral dilemmas. If morality represents a concept designed to balance societal powers, then implementation of moral instructional technology processes respects the views of all educators. The authors argue that how educators interpret technology's placements along these moral continua have important consequences for practice. They encourage research that interprets these relationships and how they may best support classroom processes.

Originality/value – The paper presents an exploratory framework, offering insights into ethical issues in instructional technology.

Keywords Education, Equal opportunities, Ethics, United States of America

Paper type Conceptual paper

Introduction

The digital divide represents a formidable social challenge to computer-based learning. (Lucey and Grant, 2008). For example, while Friedman (2007) describes how software and technology development enables global patterns of intercultural and interclass communication, he observes that those who have the most access to technology may experience different social networks from those who have the least. Postman's (1985) description of society's decreasing attention span, its changing value system and its intensifying technological interfacing conveys a daunting challenge for educators. In a world of changing values that experiences intensifying technology interaction as conventional matters, what are the moral responsibilities with regard to instructional technology use?

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Ideally, the manners by which educators implement technology model how students may employ technology outside of education settings. Yet, choices that involve instructional technology may also reaffirm the instructional strategies that teachers conventionally practice. According to Cuban (2002), when left to their own means, teachers in the USA tend to employ technology in manners that relate to their pedagogical preferences. In other words, teachers who employ student-centered processes tend to use student-centered strategies to integrate technology. Those who favor traditional teacher-centered methods use traditional methods of technology instruction.

Within the USA, school districts limit teacher training in instructional methods that engage learners in discovery processes that prevent their empowering use of computers as tools and tutees (Lucey and Grant, 2008; Taylor, 1980). Conceptualizing Taylor's (1980) three methods of computer use (tutor, tool, and tutee) as a technology pyramid for shaping instructional technology use presents an insufficient model because it lacks the social consequences that result from the various types of technology experiences. This paper explores a framework for considering moral patterns of K-12 instructional technology use to explore these dimensions and the social values they promote. It interprets morality as an economically rooted concept that serves to balance the needs of various social members. It presents a framework for interpreting moral use of educational technology by drawing from Mason's (1986) and Peace and Hartzel's (2002) categories of ethical technology issues.

Morality and technology

Numerous philosophers have contemplated the nature of morality and its application. Our interpretation is guided by Macintyre's (1984, 1988) view of morality as several traditions that require reconciliation. We posit that economic contexts provide the bases for moral interpretations (Lucey, 2008; Lucey *et al.*, 2008), interpreting morality as we did in an earlier work (Lucey *et al.*, 2007) as "a pattern of thought (or policy) and action whereby one adds to or subtracts from another's material or psychological well-being" (unpaginated). If morality represents an economic concept that interprets patterns material or psychological wellness, then how might value judgments account for various patterns of resource distributions?

Because society represents a composite of individuals who derive from various socioeconomic contexts, it needs a process (often a religious figure or institution) for balancing different views. Minnameier's (2004) observation that morality and ethics contain both group and individual elements and his description of a bottom-to-top approach to institutional regulation indicate that morality represents a process of creating social balance. Morality may represent a mechanism for reconciling the patterns of interpretative differences among members of different economic classes.

If morality represents an economically derived concept, then a framework for ethical instructional technology use may employ similarly justified underpinnings. Mason's (1986) four categories (property, privacy, accessibility, and accuracy) provide such a foundation. Privacy represents an economic concept involving control of access to personal information. It is the extent that one has the ability to control others' right to information. Accessibility relates to ownership of contact. For example, a library that is open from 9 am to 5 pm grants its patrons conditional access to public materials. Accuracy represents ownership of interpretation. In other words, several observers of an event or concept may come to different conclusions based on their vantage points.

It represents a concept where one controls the accepted viewpoint. Peace and Hartzel (2002) proposed a fifth dimension by adding freedom of speech to this framework. Freedom of speech represents an economic concept that involves ownership of authentic expression. In other words, one owns or lacks the ability to convey his or her own ideas, as determined by his or her context.

We construe these dimensions as a series of continua along which educators negotiate the conditions and aspects of technology use. For example, freedom of speech may be considered appropriate when employed for beneficial purposes, such as gathering publicly available data. But it may also be interpreted as a vice when used for injurious or malicious purposes, like threatening the security of a legitimate governmental unit. One may also conceptualize the other issues of property, privacy, accessibility, and accountability as acceptable in some circumstances and undesirable in others.

In the following sections, we explore what these five continua may look like. As Bergman (2002) describes individual moral development as a pattern of identity building, moral instructional technology use represents a discovery process that requires conversation and mutual awareness among various interested parties. The following sections examine the five dimensions of moral technology use, comparing how the educators and students may interpret them.

Mason and Peace's, and Harzel's five ethical themes

Property

One may interpret technological property as simply hardware and software. However, Peace and Hartzel (2002, p. 19) define intellectual property rights as a matter of "who owns ideas and their expression," Since K-12 settings tend not to consider scholarly endeavors as faculty's primary responsibility, property matters concern judgments about curriculum, instruction, assessment and management. If moral instructional technology use negotiates a continuum between ownership and stewardship, individual property rights result from personal efforts to develop various technological documents, presentations, spreadsheets, and movies.

Administrative property. Administrators create policies and procedures for the preservation and use of district technology. Conceptually, these responsibilities as educational stewards for the community. For example, administrators make policies concerning the acquisition and use of textbooks so that teachers have curricular and instructional references for teaching and so that students have content references for learning.

As part of their responsibilities for caring and preserving the educational welfare, administrators perform similar tasks with technology. Yet, this responsibility includes an awareness of respect for the needs and conditions of other education stakeholders. Minnameier's (2004) "bottom to top" control systems against self-determination apply to school systems. Teachers, parents, and students have the responsibility to inform administrators about inappropriate patterns of technology policy and use. Property imbalances occur when administrators use ownership of technology claims to impose hardware and software restrictions upon teachers and students. An example occurs when administrators require teachers to use particular software for instruction or administration purposes. These situations take away teachers' professional autonomy or intellectual freedom and property rights.

Parents, teachers, and students have the right and responsibility to inform administrators when policies concerning technology use are inadequate. However, these education stakeholders need the knowledge and motivation to respond to such conditions. To explore these issues, we consider the intellectual property of teachers and students.

Teacher property. Teachers are both owners and stewards of intellectual property. For example, they may make their own instructional devices, yet care for other items, such as student performance records. Teachers negotiate various types of property relationships in their practices, depending on their professional perspectives. The recent increasing burden of administrative responsibilities (Valli and Buese, 2007) may prompt teachers' use of prefabricated learning materials and detracts from their abilities to develop, implement authentic teaching experiences. This preoccupation with may alter their ideas about property views. For example, a classroom teacher that spends more time instructing his or her students may have stronger ownership tendencies towards lessons that employ instructional technology. A classroom teacher that spends more time on administrative record keeping and assigns instructional responsibilities to his or her classroom assistant or aide may have less of an ownership attachment.

Student property. What is a student's intellectual property? One may consider intellectual property as the ideas that a student develops associated with his or her learning. Students own the ideas about content that they bring to the classroom. However, K-12 settings tend to shape student ideas in ways that conform to socio-cultural norms. Thus, students become temporary stewards of ideas that classrooms imprint in them, and develop sense of ownership as they conform to these patterns of thinking.

One may also interpret students' intellectual property as their perception of the content that they bring from their socio-cultural context. In other words, students may value learning content differently because of their background. In an extreme example, a classroom dominated by males may value reading Dickens' *Oliver Twist* more than reading Alcott's *Little Women*. Bacigalupa's (2008) description of kindergarteners' responses to moral stories as relating to their background or context, suggests that students own their interpretation of academic stimuli. Though they are stewards of "official" interpretations that the teacher provides, interpretations of their achievement depends on a sense of "ownership" of this knowledge, regardless their prior interpretations. Intellectual property relates to how academic content affirms the student's identity.

How might schools use instructional technology to develop students' sense of intellectual ownership? If intellectual thievery relates to environmental conditions, and these influences relate to upon patterns of student disposition, then teachers may empower students to create their own intellectual products, either by using instructional technology to empower students' discovery and analysis of old ideas or to facilitate their manipulation of data into new ones. Zimmerman *et al.*'s (1997) observations that youth who possess low or declining self-esteem are more vulnerable to peer-pressure, suggest that pride of ownership may represent a basis for building resistance towards such behaviors.

Improving learners' technological efficacies includes educators' creation and utilization of learning environments that relate to their needs. The collaborative development of portfolios represents one method for doing so. Tangdhanakanond *et al.* (2006) report that portfolio development benefits moral growth and supports the relevancy of community input. Cooperative processes may encourage student

collaborations to overcome individual weaknesses and develop the community necessary for meaningful learning.

Application. An ethically sensitive technology setting respects property, including ownership of ideas. A cooperative atmosphere that encourages collaboration and peer support to foster pride in ownership of new ideas could prompt such an environment. As the basis for lessons about citizenship, classes might employ the iNtegrating TEchnology for inQuiry model (Morrison and Lowther, 2005) to research the patterns of living among the technologically advantaged and disadvantaged, and create ideas to remedying these differences. Lessons could also examine the processes for writing, publishing, and copyrighting. Through student-centered processes that facilitate mutually supportive collaborations and ensure individual accountability, students learn to respect idea ownership and develop the esteem for self-appreciation.

Perceptions of individual ownership may prompt conflicts over ownership or control rights. For example, a student assigned to the same computer may develop a sense of "ownership" over time. Teachers may also thwart control issues by randomly assigning computers and identifying technology tools as classroom, school, or "community" property. This process reminds students of their responsibility as stewards in use and care of community materials.

Such accountability presumes that the individual has the ability to control his or her behaviors towards and with technology tools. Interpreting moral technology stewardship construes actions within the context of the individual's control. Yet, behaviors are both impulsively and rationally originated. Yoo *et al.*'s (2004) relating hyperactivity to internet addiction indicates that some students possess biological conditions that may limit their abilities to control impulsive technologically-related behaviors. Moral technology preparations should include strategies for classroom adaptations that prevent such possibilities and constructively address related behavioral challenges (Figure 1).

Conceptualizing the school community as owning instructional technology with administrators, teachers, and students being technology stewards may alleviate such challenges. Kvasny's (2005) description of a situation involving presumptuous imposition of policies without user input illustrates negative consequence of bias decision making. Burke's (2005) advocation of bottom-to-top efforts to network with school communities, recommendations of networking with administrative communities, and encouragement of involvement in classroom decision-making represents a sound strategy. Nevertheless, equitable conversations value all partners. de Cremer and Tyler's (2005) relating mutual respect and reciprocal responsibility

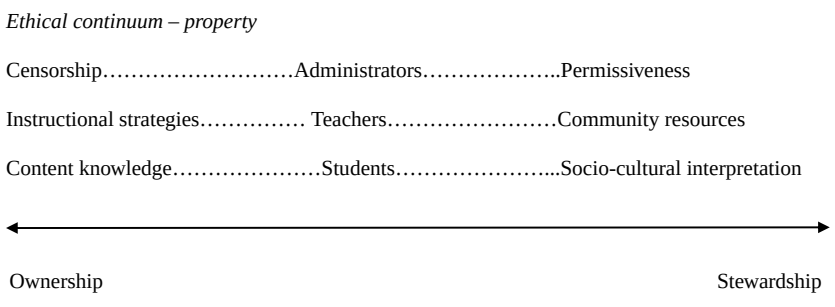

Figure 1.
Ethical continuum – property

supports the insufficiency of simple dialogues. All parties perceive and experience genuine appreciation when these conversations succeed.

Freedom of speech

In K-12 settings, instructional freedom represents a form of freedom of speech. Teachers have the opportunity to teach skills and concepts in manners appropriate to their preparations. However, because administrators and teachers occupy different professional contexts, they possess different motives that challenge healthy interactions and jeopardize sound child development (Lucey, 2003). While preoccupation with high stakes assessment results prompt administrators' generalization of curriculum and instruction patterns, teachers' daily interactions provide detailed understandings of their students' individual learning strengths and weakness. Pollock's (2001) case study, where administrators avoided conversations about racially patterned achievement gaps, illustrates this difference. We see administrator and teacher conflicts over technology use as falling along two dimensions: technology priorities, and technology instruction. The following sections describe these areas.

Priorities

Administrative. Kvasny (2005) describes the consequences of a situation where policy-makers misunderstood or misinterpreted the technological and learning needs of this community. Owing an absence of user input, the endeavor lacked appropriateness in the views of the intended users, and thus triggered their resource misuse and abandonment. Although policymakers claimed that such circumstances resulted from beneficiaries' irresponsible technology use, one could construe as negligent their failure to structure technology consistently with community needs.

This unsuccessful endeavor resulted from the policy-makers' failure to ascertain and consider the users' needs. In this scenario, we see imposition of perceived technological priorities upon unwilling and unappreciated stakeholders. While administrators do have freedom of speech concerning use of technology for administrative purposes, instructional technology use represents a decision that results from dialogues with those most knowledgeable about creating authentic learning experiences: the teachers.

Teacher autonomy. Monke (1998) observes that disagreement about technology implementation among teachers and decision makers relates to teachers' control tendencies. He claims that teachers limit classroom technology use, while hardware and software venders push implementation and use of their commercial products in classrooms. Teachers resist new instructional technologies because of their unfamiliarity and unwillingness to change from familiar tools. In other words, teachers experience technology habits related to both their technology tools and teaching strategies.

Yet, teachers employ instructional technology differently (Cuban, 2002). As technology becomes integral to instruction, teacher candidates enter the profession with more knowledge and confidence towards its classroom implementation, even if they prefer different instructional techniques. Unfortunately, schools and districts can limit this freedom by controlling teachers' technology resources and usage patterns. Research indicates that school districts short teachers of the instructional technology needed for authentic learning (McCannon and Crews, 2000), and only a few districts adequately train teachers to meaningfully employ technology (Farenga and Joyce, 2001). Providing teachers with longer planning periods and collaboration opportunities

may enable their experience and discovery of the environments that their students need (Nudell, 2004-2005). Collaborative endeavors offer more opportunities for input from all affected technology stakeholders (Murphy *et al.*, 2005). Preserving the entire community's interests involves implementation of instructional technology with meaningful input from all stakeholders.

Instruction

Contextual limitations that prevent effective computer instruction provide a second basis for conflict. Literature advocates constructivist bases for instructional technology use (Clark and Gorski, 2002; Morrison and Lowther, 2005; Reeves, 1998), however, even when trained in effective computer instruction, teachers tend not to employ these techniques. Because of classroom and administrative demands, particularly in low-income settings, small percentages of teachers employ student-centered technology learning (Grant, 2003; Hackbarth, 2002; Marvin, 2003). Educators recognize the characteristics of authentic computer instruction; unfortunately, administrative constraints often discourage these methods. A moral setting involves empowered teachers who dialogue with administrators about facilitating effective computer instruction.

Student freedom. Given relationships among children's behavior and the content of media that they interact with (Hogan and Strasburger, 2008), active learning methods that guide students' use of instructional technology as information processing tools may relate technological content to everyday knowledge. By using constructivist processes such as Morrison and Lowther's (2005) NTeQ model, teachers may employ technology as a discovery vehicle, rather than a behavioral control or a drill-and-practice device.

School teachers and administrators who engage students in constructive dialogue about these issues may develop healthy resolutions that benefit the community. Collignon *et al.*'s (2001) description of successes building communications between school administrators and ESL population provides one model. Nevertheless, such efforts cannot occur in isolation.

Within classrooms, one such process might employ an activity, such as "Self as Other" (Pedelty, 2001) to enable students' dramatization and visualization of their own attitudes about social groups. Instructors would follow this activity with a lesson based the NTeQ model (Morrison and Lowther, 2005) that encourages students' investigation of social groups and fosters their reflections about attitudinal patterns.

When considering moral instructional technology issues associated with freedom of speech, one conceptualizes the balance among the various education stakeholders' perceptions of such speech (Figure 2). At one end of the continuum, teachers experience limited instructional freedom (high risk) because of constraints associated with administrative policies. At the other end, teachers experience greater instructional freedom and experience greater risk, Moral instructional technology use prompts meaningful discussions between administrators, teachers, and students. Freedom of speech provides an opportunity to customize instruction to fit students' needs, yet administrators need to control freedom of technology speech for communication, research, and resource management.

Privacy

While Mason (1986) relates privacy to access of personal information, privacy represents a moral concept that emphasizes protection of user content. Since context of

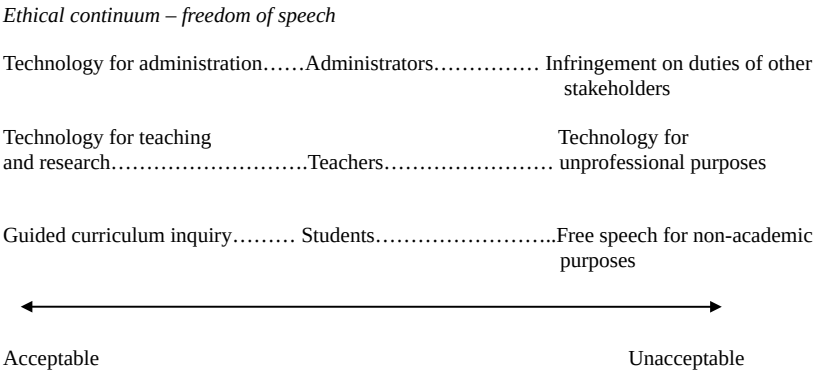

Figure 2.
Ethical continuum – freedom of speech

technology use relates to its moral nature, we consider how privacy relates to patterns of administrator, teacher, and student use.

Privacy involves an element of security. Information that people and institutions choose to protect remains private. Such is the rationale behind the concept of executive privilege. National security interests protect the executive branch of the federal government from disclosing sensitive information. Classroom practices regularly harp on privacy issues when teachers warn students to avoid looking at others' papers as part of traditional assessments. In this situation, work is a private, individual and competitive process. How does privacy relate to instructional technology used in a K-12 setting?

Administrators. Because public schools and districts represent governmental institutions, conversations about administrative privacy relate to those associated with those of executive and legislative governmental processes. Doty's (2004) descriptions of the inconsistencies between governmental documentation of citizenship patterns and using security claims to protect its own information conjure similar concerns about disparities between privacy rights at play in public schools and districts. Within an open information system, school districts would disclose its bases for purchasing curricula related software and for distributing hardware to schools. Scholarship concerning administrative decision making related to technology (Kvasny, 2005; Monke, 1998) indicates that when these processes are made privately and without input from all stakeholders, the outcomes tend to be problematic.

Teachers and students. Teachers and students have the right to privacy to the extent that they can perform their teaching and learning. Teachers need privacy to protect student records and information about competitive assessments. However, confidentially of student records could be detrimental to learning process. If instruction is to occur in technologically literate classrooms, openness about student records may provide a vehicle for building achievement through cooperative learning and peer tutoring.

Privacy represents a diminishing commodity on the internet – presuming that it was ever present. Friedman (2007) points out that technology have developed to where nearly all of one's history may be traced. While this may represent a boon for shoppers at websites that ask users to rate sellers, it may also prove detrimental to imprudent technology users. A classroom activity to illustrate this would be to instruct students

to put their names into popular search engines or publicly modifiable information websites, such as www.wikipedia.org. Depending on the age of the students, the findings of this exercise might be innocent (records of birth) or intriguing (facts about a namesake). When closing reflections to this activity enable students to think about how their conduct relates to their online identities, teachers are in a position to provide feedback that broadens students' understandings of their technological decisions.

Context of the usage has as much relevance as protection of content. For example, privacy represents a positive learning characteristic when one needs to reflect upon an experience for a school related e-journal; however, it loses its luster when employed for negative activities, such as cutting and pasting web-content into term papers (Figure 3).

While the development of Acceptable use policies provides formal guidelines for technology-related behavior, Bennett (2005) suggests that discussions of suitable practices represent appropriate parts of technology-related instruction. However, these discussions are insufficient. Instructional technology-based learning includes ongoing communications that inform and remind students, parents, and administrators of classroom technology policies, describe instructional technology use in the classroom, and explain expectations for home technology learning.

Accessibility

Inequitable distribution of technological resources represents a key element of the digital divide. Equitable technology access facilitates sharing and community; however, Nieto and Bode's (2008) differentiation between equity and equality spotlights the contextual relevancy of each school or individual's learning needs. In this section, we consider how technology decision-making relates to patterns of computer access.

Administrators. Administrators make allocation choices with regard to school or classroom resources. These decisions determine whether teachers integrate technology as a regular part of their classroom instruction or if students transition to computer labs. Findings that, despite technology access, teachers use the computers and Internet for insignificant learning periods suggest that teachers are either unwilling or unable to employ technology for curricular purposes (Norris *et al.*, 2003). With a preponderance of classrooms having one computer, and teachers ill-prepared for authentic technology-based instruction, classrooms relegate computers for administrative obligations, rather than for classroom learning.

Censorship can be used under the guise of protectionism to prevent access to internet resources that challenge mainstream academic understandings or to discourage discussions about alternative views. Yet, such efforts might encourage inappropriate

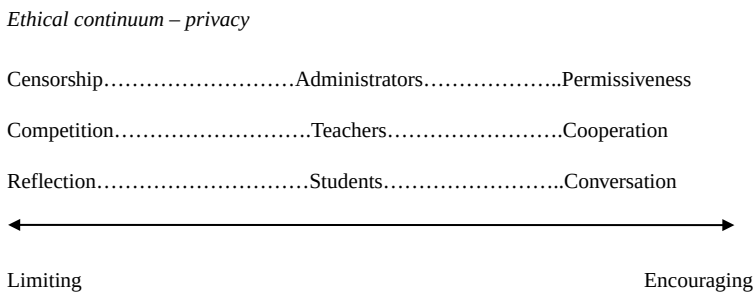

Figure 3.
Ethical continuum – privacy

behaviors. Hope (2005) describes how students employ various techniques, such as altering monitor positions, opening numerous windows, stealing user IDs and passwords to conceal inappropriate activity, and how monitoring efforts may have prompted a gaming atmosphere where students competed against the challenge being caught contravening the rules.

Teachers. Lawson and Comber (2000, p. 274) write:

> Teachers are caught in the middle of the debate between censorship and freedom of access, as they are ultimately responsible for their pupils and students when they access the internet, while being charged with a duty to educate.

Teachers make choices concerning distribution of their computer resources to accomplish computer learning. Instructional adaptations may adjust students' computer time consistently with patterns of home computer use. For example, teachers could allow students two hours of computer work each week, while planning for one-hour of computer at home. Teachers would adapt their instruction to enable students to use school computers for this hour, if they lack computers at home.

While patterns of teachers' instructional technology use may relate to patterns of familiarity and comfort, perceptions of student risk and harm that result from exposure to content also factor into instructional choice. Hope's (2006, p. 315) study reported a preponderance of teacher concerns with online pornography and chat-lines; however, noted, "None of the staff interviewed labeled poor online educational resources or the plethora of distracting online recreational activities on the Web as risks."

Teachers demonstrate their technology values through their instructional choices. Through their classroom practices, teachers model for students patterns of technology use. Dependency on preprogrammed software for passive learning/entertainment, rather than constructivist processes, conveys a priority of convenience, over diligence. This situation poses difficulties for social studies learning, as illustrated by Bigelow's (1996) criticism of the well-known *The Oregon Trail* CD-ROM simulation. In this software, students are not able to select their gender or race, as they experience a glamorized Euro-American experience, while neglecting to address the abominable treatment of the African Americans and Native Americans. Children who depend on such software for understandings of history conceptualize inaccurate portrayals and possess narrowed patterns of thought. By fostering access to and creation of resources that create conceptual understandings such as Zola and Ioannidou's (2000) online simulations and Allen *et al.*'s (2002) virtual museums, it may be possible to unleash the student creativity inhibited through overexposure to commercially produced programs.

Students. Computer access represents an ethical issue that balances two extremes. Excessive and inappropriate technology exposure limits students' creativity. Monke (1998, p. 153) observes how an increasingly media-exposed society limits children's real world experiences. He remarked that:

> More and more my students, having been raised on TV, and later video games and computers, don't bring [. . .] kinds of experiences and ideas to my classroom, and find little to do with computers except that the computer itself offers.

The above statement Illustrates the potentially injurious reliance that children place on technology to acquire information and modeling behaviors.

This computer and television combination represents technological double jeopardy. According to Hogan and Strasburger (2008,), "young children acquire scripts for behavior [. . .] by viewing media portrayals." (p. 540) and "children are less likely to generalize a modeled prosocial behavior (to a new situation) than imitate the behavior in a context and situation like that in the model." (p. 544). Absent active classroom processes to stimulate higher-thinking, students face being programmed into behaviors modeled on television and reinforced through other electronic entertainment venues.

Yet, patterns of access also limit students' contact with information. Children need guidance to structure their technology access and use. Hogan and Strasburger's (2008) discussion of adults' supervisory responsibilities towards children's media patterns extends to the classroom. By teaching media literacy, structuring computer usage, creating open environments, prompting shared and critically thinking usage, and providing activity choices, educators build community by facilitating shared access that all benefit from (Figure 4).

Home environments. At the other extreme, many students lack the ability to reinforce their school technology experiences at home because their families lack the needed technology or do not use it for learning purposes. The National Telecommunications and Information Administration (NTIA; US Department of Commerce, 2002) reports that 61.80 percent of US homes do not own a computer, with the rate of increase in computer ownership decreasing. In other words, increases in home technology ownership have nearly plateaued. At the same time, only 54.60 percent of US homes have internet access. Predictably, low-income households suffer the most from this situation. According the report, positive correlation occurs between family income and internet computer use occurs. A total of 68 percent of youth in households with incomes of $15,000 or less do not use the internet.

The disparities in technology ownership among schools (Darling-Hammond, 2000; Judge *et al.*, 2004; Rowand, 1999) illustrate how underrepresented groups have less convenient computer and internet access than societal dominants. Statistics show that just more than one-half of Hispanics and less than one-half of African-Americans do not use a computer, compared to only one-third of Whites (US Department of Commerce National Telecommunications and Information Administration, 2002). Novak and Hoffman (1998) point out that race represents a significant variable in comparisons of African American and White home computer use. Whites of all education levels are more likely to own home computers than African Americans. White and Asian American/Pacific Islander households are more likely to use the internet than underrepresented populations (US Department of Commerce National

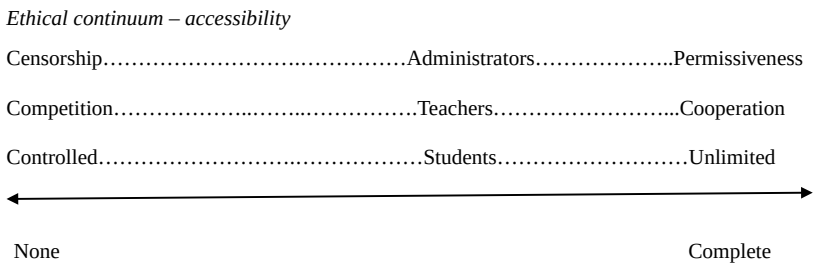

Figure 4.
Ethical continuum – accessibility

Telecommunications and Information Administration, 2002). While these disparities relate to environmental conditions (e.g. poverty and education access; Mossberger *et al.*, 2006) contextualizing this information in a historical perceptive could broaden understandings of these patterns.

A moral instructional technology environment recognizes the challenges of both technological excesses and deficiencies and intersperse frequent and regular experiences to foster students' differentiation between real and cyber experiences. However, they also respond to patterns of access needs by enabling student collaboration on projects in computer labs. Educators could work with librarians to feature class projects on websites and publicize student achievement.

Accuracy

Peace and Hartzel (2002) discuss this area the least, yet point out that although the internet contains a plethora of inaccuracies, yet represents a legitimate tool for finding information. Herein we see a provocative social challenge: understanding that patterns of internet and technology use shape interpretations and judgments of knowledge. Extending Postman and Weingartner's (1969) call for instruction that encourages critical thinking through inquiry to technology use through strategies such as Morrison and Lowther's (2005) NTEQ approach includes a scrutinization of content accurate from websites and program software. As with the other categories of moral instructional technology use, accuracy provides a continuum of informational interpretations permitted to an individual or group.

Administrators. Administrators have a delicate responsibility towards accuracy of instructional technology content. Just as struggles associated with the content of social studies texts occurred among various social groups that desired to protect their interests (Zimmerman, 2002), so too does the dominant culture desire preservation of its interpretation of social ideas. Thus, while software content accuracy represents a concern (Bigelow, 1996), administrators face a challenge of reconciling this with the needs of their communities.

Teachers. Teachers have the responsibility to ensure the suitability and accuracy of learning materials, including internet and software content, for their students. At the same time, they are expected to meet the guidelines set forth in standards prescribed by their schools, districts, and states.

Unfortunately, teacher preparations do not always foster reliable content understandings (Lucey *et al.*, 2009). These conditions leave teachers susceptible to commercially produced materials that have bias and inaccuracy (Bigelow, 1996). While traditional instruction methods provide venues for controlling content interpretation, four (equitable learning environments, critical literacy skills, learner control and choice, and inter-dependent learning) of Ahola-Sidaway and Mckinnon's (1999) ten technology practice principles represent tenets for empowering students' pursuit of accurate content understandings. Facilitating cooperative processes enable learners to discuss various content perspectives and analyze related meanings.

Educators have a moral responsibility to teach their students to scrutinize the accuracy of sensationalized internet information by seeking additional information from objective sources. Weeks's (2005) description of secondary education social studies web quests illustrates how the method of presenting material and prompting related to student thinking can challenge or reinforce patterns of social thinking.

Teachers' responsibilities include examining content accuracy and scrutinizing instruction structures.

Students. Frameworks, such as the Big 6 model (Eisenberg, 2003; www.big6.org) and media literacy (Hobbs and Frost, 2003), offer strategies to help children search, analyze and interpret information and messages available. On the other hand, accuracy may represent an elusive characteristic for those basing work on websites that depend on public opinion. If the internet mirrors the network of minds that comprise society, with some being honest and others are less so, then efforts to conceal one's identity (e.g. provide limited information about oneself) represent desirable traits when disclosure of accurate information presents a potential liability. Therefore, a tension exists between accuracy and safety/honesty on the internet. The escalation of social networking Web sites, such as MySpace.com, Facebook.com and Xanga, com, have become magnets for children to express themselves, providing information through blog entries, photos and conversations (Rawe *et al.*, 2006) (Figure 5).

Conclusions

This paper commenced with observations concerning research into technology-based empowerment and associated ethical issues. It then described the five continua of ethical instructional technology challenges within the contexts of K-12 settings.

We encourage research through observational and survey studies to clarify understandings of these continua. Although presented separately, we acknowledge that these dimensions overlap and interact to comprise a mesh of dilemmas. If morality represents a concept designed to balance societal powers, then implementation of moral instructional technology processes respects the views of all educators.

Ribble and Bailey (2005) advocate the use of an ethical compass to foster ethical behavior within in the classroom. Employment of this device may appear consistent with Bergman's (2002) description of child development as a period for individual shaping of moral identity. However, if the compass points students into conversations about attitudinal related conversations related to ethical standards and ignore the contextual nature of technology ethics presented herein, these conversations lack respect to all involved parties. Through the employment of cooperative classrooms that invite regular respectful discussions about the difficult ethical technology issues, educators built supportive communities that affirm contextually related individual differences.

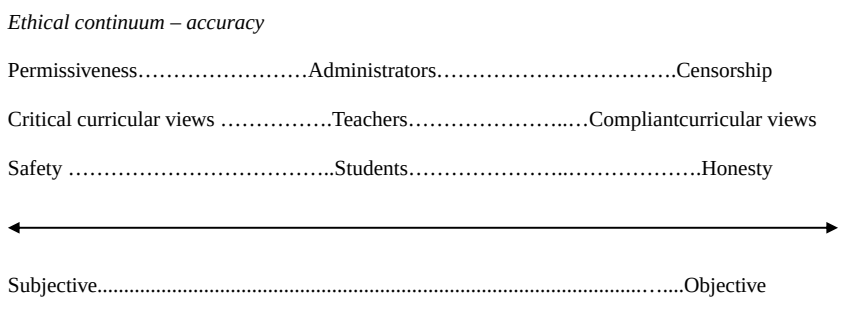

Figure 5.
Ethical continuum – accuracy

These communities involve thoughtful and deliberate processes. Turner and Chambers (2006) demonstrate how impulsive judgments limit discussions to conventional bases of thinking; however, with additional time, new and innovative ideas emerge. Kelchtermans (2007) found that realization of social context occurred through reflection after forming understandings of self and gaining confidence in that conceptualization. Social dialogues about moral issues in instructional technology might interpret the conditions under which these processes occur.

We encourage the education community's examination and research of information access, ownership, privacy, expression, and accuracy understandings. Lucey and Grant, 2008 (2008) point out that the digital divide also relates to policy makers' inattention to "education, social, and cultural" dimensions. The moral challenges that these dimensions present require further research and examination within these contexts.

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