Technology in the Cities

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INTRODUCTION

"We are trying to conceive a new way of thinking about computers in the world, one that takes into account the natural human environment and allows computers themselves to vanish into the background" (Weiser, 1991).

We are making progressive advances towards Weiser's vision. Technologies are already being embedded into our environment. Smart floors can sense when a person has fallen and immediately send vital information to paramedic support (Abowd, Atkeson, Bobick, Essa, MacIntyre, Mynatt, & Starner, 2000). People are using mobile devices, such as cell phones for e-mail, instant messaging, Web browsing, games, and MP3 playback (Lendino, 2006). Presence technologies are already informing us as to our IM buddy's physical presence, such as online, off-line, busy, or away from the desk. Current uses of the Web for searching, photos, music, video, various levels of electronic communities, and online, collaborative software applications are preparing users to advance to the next Web 2.0 level of Internet use. Combine Web 2.0 with expanded WiFi capabilities, and we won't need large computing devices for sharing large amounts of data within virtual, collaborative environments.

Users have become cyber-designers and cyber-community builders of the technology that surrounds them in their physically populated environments in such ways that we are in great need of creating new metaphors and models regarding technological culture and intimacy (Bell, Brooke, Churchill, & Paulos, 2003; Galloway, 2004; Zhang, Jin, & Lin, 2005). In the past, user interfaces have been predominantly designed by corporations and used by consumers. However, with the development of new devices and environments that open themselves for user adaptation, hardware and software designers are finding that "the design process now extends beyond the formulation of a computational artifact and onto how the user experiences an artifact" (March, Jacobs, & Salvador, 2005, p. 2,126).

Hardware and software designers are recognizing the shift from the formulation of artifacts to how users experience artifacts within community technology projects. Shouldn't teachers and instructional designers also pay closer attention to how users experience artifacts within community technology projects in order to maximize our ever-present and ever-growing need for a socio-cultural focus in educational technology environments?

The current and future growth of wireless fidelity (WiFi) technologies leads us toward more electronic community building within virtual and urban environments. This focus that involves socio-cultural theories and social networking community technology projects comprises the base for this article. The primary goal of this article is to contribute to discussions of the design of current and future technologies within that focus.

BACKGROUND

Given the focus of current and future technology design based upon socio-cultural theories and social networking community technology projects, two background areas need to be reviewed: (1) social interaction support for calm technology in the cities, and (2) socio-cultural theoretical framework support for research and design.

Social Interaction Support for Calm Technology in the Cities

When computers are all around, so that we want to compute while doing something else and have more time to be more fully human, we must radically rethink the goals, context, and technology of the computer and all the other technology crowding into our lives. Calmness is a fundamental challenge for all technological design of the next fifty years (Weiser & Seely Brown, 1996, p. 3).

Weiser and Brown emphasized the use of calm technology for future computing eras. Calm technology refers not only to the fact that computers remain basically in the background of operations, but that people operating the technology are also serene and in control.

According to Weiser, not only would ubiquitous technologies release us from the restrictions of desktop computing, but they would also liberate us from equally absorbed and simulated virtual reality environments. Howard Rheingold visited researchers at Xerox Palo Alto Research Center (PARC) in the late 1980s for an article he was writing for *Wired Magazine*, and interviewed Weiser:

The lab's new direction, Weiser says, "recognizes even more that people are social creatures." He referred to his ideas as a form of "postmodern computing," in that he wants to "return to letting things in the world be what they are, instead of reducing them" to data or virtualizing them into illusions. "Ubicomp honors the complexity of human relationships, the fact that we have bodies, are mobile," he said (Rheingold, 1994, p. 3).

Socio-Cultural Theory Support for Technology in the Cities

This focus on the social and cultural realms more than the technological realm provided a fresh look into human-computer technological designs (Weiser, 1993).

According to Galloway (2004), the concept of transduction allows us to shift focus from technologically networked objects to diverse procedures or performances in which socio-technical groupings take shape.

The primary benefit of this sort of approach is the ability to identify precise moments and locations in which we may possibly intervene and alter the course of events, thereby reasserting the role of social and cultural agency—and the potential for critiques of everyday life—in the development and use of ubiquitous computing" (Galloway, 2004, p.22).

Mackenzie (2002) also suggests that ubiquitous computing is transductive in understanding technology through flow and movements between virtuality and actuality. Shields (2003) has explored these and other categories, such as virtual, concrete, abstract, and future, in terms of intensities and flows. The idea here is that through focused attention on these relations and flows, we may better understand the role of technologies in everyday life. Hence, transduction produces the need for researching such interactions from socio-cultural theoretical frameworks.

TOWARDS COMMUNITY PROJECTS UTILIZING FUTURE TECHNOLOGIES

Given the rapid rise of digital social networks, portable technologies, and nanotechnologies in recent years, educators are faced with pedagogical design issues. Design issues based upon technological opportunities are not new to the field of education through the years of technological advancements. What is new, however, is the exponential rapidity of such advancements. This exponential explosion will continue to occur, necessitating a shift of a teacher to student-centered, socio-cultural pedagogical design focus for all educators, given the ubiquity of technologies throughout the world.

As professional educators, it is our responsibility to research, evaluate, and inform our hardware, software, and application development colleagues with socio-culturally sensitive educational design issues and needs. One approach to forging such efforts is to: (1) research design considerations promoted by our application development colleagues, and then (2) apply instructional design considerations integrating constructivist theories conducive to socio-cultural theoretical frameworks. What follows is an attempt to open instructional design research and development dialogue based upon such design considerations.

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