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9/11 Conspiracy Theories on the World Wide Web: Digital Rhetoric and Alternative Epistemology

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Abstract

The tragic and complex events of September 11, 2001 have fostered varied sense-making processes. In this analysis, I examine one discursive reaction to the events of 9/11: 9/11 conspiracy theories developed on the World Wide Web. 9/11 conspiracy theories have emerged from a unique “culture of conspiracy” but have significantly altered the form and, ultimately, the implications of conspiracy theorizing. The World Wide Web offers an ideal venue for multi-perspectival conspiracy discourse. In fact, these 9/11 conspiracy theories, which are disseminated largely via multi-media texts on the World Wide Web, represent a thoroughly digital rhetoric. 9/11 conspiracy theories have exploded on the World Wide Web. More specifically, two Websites represent the most popular and influential of these Internet (hyper)texts: The Web-based video *Loose Change* and the Website 911Truth.org. In this essay, I argue that digital characteristics primarily account for the unprecedented influence, popularity, and even perceived legitimacy of 9/11 conspiracy theories.

In August of 2006, “A Scripps-Howard poll. . . found that 36% of Americans consider it ‘very likely’ or ‘somewhat likely’ that government officials either allowed the [9/11] attacks to be carried out or carried out the [9/11] attacks themselves” (Grossman, 2006). The tremendous support of the US government immediately following the tragic events of September 11, 2001 have, for millions of Americans, turned toward intense cynicism and distrust. Images as harrowing and complex as those witnessed on September 11, 2001 inevitably foster diverse sense-making processes. In this analysis, I examine one response to the events of 9/11 (as well as the currently unfolding events in Iraq)—9/11 conspiracy theories developed on the World Wide Web. Like all conspiracy theories, the various accounts of 9/11 circulating on the Web are quite diverse, ranging from conspiracy theories that are relatively widely accepted (e.g., the Bush administration deceptively linked the events of 9/11 to Saddam Hussein to justify the war in Iraq) to conspiracy theories that are generally considered preposterous by many Americans (e.g., the U.S. government deliberately and pre-meditatively detonated explosives at the WTC on 9/11). Considering the history of conspiracy theorizing, it is unsurprising that the theories offered on the most popular 9/11 conspiracy theory Websites are often divergent and even contradictory. As this analysis explores, the World Wide Web offers an ideal venue for this multi-perspectival conspiracy discourse. In fact, these 9/11 conspiracy theories, which are disseminated largely via multi-media texts on the World Wide Web, represent a thoroughly digital (i.e., hypertextuality and numerical representation) rhetoric.

In this analysis, I argue that digital characteristics primarily account for the unprecedented influence, popularity, and even perceived legitimacy of 9/11 conspiracy theories.

As Fenster (1999) clearly articulated:

. . . the analysis of conspiracy theory's signification within a sense of political insignificance requires a symptomatic critique of conspiracy theory as political ideology, and a cultural analysis of the signifying practices of its endless circulation through countless cultural texts such as films, television, popular songs, fanzines, and computer networks. (xiv)

In order to offer a critique and analysis of the signifying practices associated with these complex texts, first, I describe the characteristics of conspiracy theories, theoretical orientations to digital media, and the emergence of 9/11 conspiracy theories on the World Wide Web. Next, I argue that 9/11 conspiracy theories represent a digital rhetoric via hypertextuality, bricolage, and entelechy. Finally, I offer conclusions concerning the alternative epistemologies of digital conspiracy theories.

The Characteristics of Conspiracy Theories

Historically, conspiracy theories have taken forms ranging from the populist narratives of disenfranchised groups to conservative scare tactics designed to maintain hegemony. The functions of these conspiracy theories are extensive including discrediting one's enemies (McCarthyism), mobilizing an underprivileged group (Civil Rights), forming a "community of believers" (UFO enthusiasts), and encouraging generalized cynicism and distrust of the government (JFK Assassination). Although widely diverse, conspiracy theories, as originally argued by Hofstadter (1965), generally utilize a "paranoid style" predicated on the suggestion of

a vast, overwhelmingly powerful group working to perpetuate a vague “evil.” Importantly, this paranoid “genre” of conspiracy theories has historically stood on the periphery of American public discourse, marginalized as “illegitimate, pathological, and a threat to political stability” (Fenster, 1999, p. xii).

More recently, conspiracy theories (partly predicated on the perceived kitsch of the marginalized groups described above) appear to provide a unique sense of pleasure for media consumers. Knight (2002) described the emergence of “a self-conscious and self-reflexive entertainment culture of conspiracy” with popular films, television shows, and publications recounting, extending, and satirizing the conspiracy theories associated with the JFK assassination, alien abductions, and secret government plots (p. 6). 9/11 conspiracy theories have emerged from this unique “culture of conspiracy” but, as *digital texts*, have significantly altered the form and, ultimately, the implications of conspiracy theorizing.

Theoretical Orientations to Digital Media

Scholars have offered a wide range of theoretical approaches to digital technology. In particular, rhetorical and media theorists have explored digital media in terms of the variability and multi-perspectival hypertextuality of digitization. Digitization allows for variability or an object that “can exist in different, potentially infinite versions” (Manovich, 2001, p. 36). As Evens (2003) argued, “The digital is a logic, an abstract code” (p. 51). Therefore, digital media are essentially a mathematical language with “emergent conventions, recurrent design patterns, and key forms of new media” (Manovich, 2001, p. 12). Digital media’s underlying binary code (the “1s” and “0s”) or language of numerical representation, like any language, encourages specific types of discursive practices. As a conventional language, digital media, such as

hypertext on the World Wide Web, is largely open-ended allowing the individual to uniquely cobble together meaning. As Lanham (1993) articulated:

Hypertexts are, in more than a manner of speaking, three-dimensional. Fuguelike, they can carry on an argument at several levels simultaneously. And if we cannot read them simultaneously, we can switch back and forth with great rapidity. (p. 21)

As I explore further below, 9/11 conspiracy theories have married the variability and open-endedness of digital media to the culture of conspiracy.

9/11 Conspiracy Theories on the World Wide Web

9/11 conspiracy theories have flourished on the World Wide Web. Conspiracy theories concerning the events of September 11, 2001 have produced millions of web links (Sales, 2006). More specifically, two Websites represent the most popular and influential of these Internet (hyper)texts: The Web-based video *Loose Change* and the Website 911Truth.org. *Loose Change* is a documentary film created by 22-year-old Dylan Avery and his friends (available free for download on the Website www.loosechange911.com) compiling news footage, documents, and images with a pop music soundtrack and constant narration in order to question the government's version of 9/11 (and not so subtly suggest an elaborate conspiracy orchestrated by the Bush administration). While many videos asserting 9/11 conspiracy theories are floating around the Web, *Loose Change*, which became a sort of Web phenomenon, is by far the most popular. *The San Francisco Chronicle* reported that *Loose Change* is "one of the most-watched movies on the Internet, with 10 million viewers in the past year" (Curiel, 2006, p. E1). In addition to the downloads on the *Loose Change* Website, the video has also been downloaded on

video.google.com (Google Video) over 7 million times and has been posted and reposted to countless Websites, video hosting services, and blogs.

911Truth.org is the most popular Website emphasizing 9/11 conspiracy theories and serves as a “portal” for people seeking information about these conspiracies. The Website appears first (after a Wikipedia entry) when typing “9/11 Conspiracy Theory” in Google (it is also the first conspiracy-oriented Website to appear when typing “911 Conspiracy” or “9/11 Conspiracy” into Google). As its mission, the Website states:

As the leading portal of the September 11th research community and truth movement, 911Truth.org and its staff members have accumulated vast practical experience in investigation and in campaigns for education, visibility, media, lobbying, street action and litigation. (9/11Truth.org, 2007)

While thousands of Websites address 9/11 conspiracy theories, 911Truth.org serves as a gateway or portal into these other Websites.

In general terms, the 9/11 conspiracy theories offered in the Web environment are relatively simple. As stated by 911Truth.org, “elements within the US government and covert policy apparatus must have orchestrated or participated in the execution of the attacks for these to have happened in the way that they did” (9/11Truth.org, 2007). Nonetheless, the details of the government’s “orchestration” and/or “participation” in the 9/11 attacks are much more complicated and hotly contested. Among the conspiracy theorists, little consensus exists but several “unanswered questions” drive most of the speculative claims. In a lengthy litany of assertions, 911Truth.org begins with questions of “the unprecedented failure of the US air defense system” and “the AWOL military chain of command during the actual attacks”

(9/11Truth.org, 2007). The claims then shift to factual questions such as “the evidence that Flight 93 was shot down” and “contradictions and dubious evidence in the official claims about the alleged hijackers and masterminds” (9/11Truth.org, 2007). The assertions grow into bold questions concerning the role of the US government in the 9/11 attacks:

evidence that the alleged hijackers were financed by states allied with US intelligence. . . ; widespread signs of official foreknowledge and, in fact, advance preparation for the 9/11 attack scenario; the long-running links between Islamist fundamentalist terror cells and US covert operations . . . ; the demolition-like collapse of the Twin Towers and of a third skyscraper. . . (9/11Truth.org, 2007)

As these fragmented, vague speculations demonstrate, 9/11Truth.org’s discourse represents the paranoid style immersed in the culture of conspiracy. In this regard, in a general sense, the 9/11 conspiracy theories on the Web are unquestionably part of both the history of conspiracy theorizing and the recent emergence of an entertainment culture of conspiracy theories. For instance, Lindemann and Renegar (2006) examined conspiracy theories surrounding Flight 93 from a post-structuralist perspective. As a form of play, these conspiracy theories offered a form of “pleasurable resistance” by empowering the consumer’s complex interpretations of media texts (Lindemann & Renegar, 2006, pp. 4-5).

Nonetheless, while these Websites share characteristics with the previous discourses surrounding conspiracy theories, I believe 9/11 conspiracy theories are also different from the previous manifestation of conspiracy theories in a few important respects. First, the scale of this theorizing extends well-beyond the tight-knit and devoted but relatively small communities such as The John Birch Society, UFO enthusiasts, and militia groups that have previously represented

conspiracy theorists. Today, 9/11 conspiracy theorists (as represented by recent polls and web traffic) appear to include millions of people actively engaging these texts.

Second, 9/11 conspiracy theories represent a “next generation” (sometimes called Web 2.0) of digital media. Even casual surfing through 911Truth.org and loosechange911.com reveals that this is a thoroughly multi-media discourse involving a wide array of images, video, sound, and hypertext. This is perhaps best represented by an unlikely source: A recent episode of the television show, *South Park*. In the 2006 episode (largely devoted to 9/11 conspiracy theories), in a memorably scene, the character Cartman sits in his bedroom scrolling through Websites with photographs, videos, diagrams, etc. making sense of the events of 9/11 (the scene prominently features the Website 911Truth.org). Cartman then, cobbling together fragments from these Websites, prepares a multimedia slideshow for his elementary school class. These bits and pieces of images, videos, and diagrams persuade his classmates (in a shocking turn, the episode leads Cartman and his friends to Washington where President Bush freely admits his conspiracy to destroy the WTC). As *Loose Change*, 911Truth.org, and *South Park* demonstrate, in order to understand the signification of 9/11 conspiracy theories, they must be understood as a digital, hypertextual, and multimedia experience.

9/11 Conspiracy Theories as a Digital Rhetoric

Conspiracy theorists have emerged throughout American history (Knight, 2002). In order to understand this ubiquitous conspiracy discourse, scholars have primarily explored the rhetoric of conspiracy theories as myth/narrative (see Soukup, 2002) and as argumentation (see Miller, 2002). As Fenster (1999) argued, “the gripping dramatic story is, ultimately, at the heart of the conspiracy theory” (p. 106). Fenster even identifies a “classical conspiracy narrative” (p.

108) that is represented in popular films, television shows, novels, and folklore. For instance, like so many conspiracy narratives, the film *JFK* and the television show *The X-Files* both tell the story of a hero (Jim Garrison and Fox Mulder) seeking the truth and overcoming obstacles. Further, communication scholars have often examined (and harshly critiqued) conspiracy theories as arguments and/or fallacies (Miller, 2002). Conspiracy theories often seek to provide “evidence” by offering scientific studies to question the “conventional wisdom” of an event or phenomenon and suggest alternative (conspiratorial) explanations. Conspiracy theorists have utilized research from a wide range of fields such as ballistics, sound/video analysis, and medical/forensics examinations in order to make claims concerning the JFK assassination, UFO abductions, etc. These fragments of evidence are strung together to rationalize the presence of a vast conspiracy.

Invariably, throughout the 20th Century, conspiracy theories usually failed to convince a wide audience in either form (narrative or argument). The narrative lacks probability and fidelity due to its generic excessiveness (Fisher, 1984). For example, conspiracy narratives are often debunked with simple questions of narrative fidelity and probability concerning “plot” inconsistencies or “character” motivation: Could *so many* people conspire without someone revealing the cover-up? Why would he or she take such an *enormous risk* by conspiring with others? In terms of more classical rhetorical theory, the attempts at “logical arguments” by conspiracy theorists fail in any number of respects due to the inherently fallacious and open-ended or enthymematic nature of the conspiracy theory (Lindemann & Renegar, 2006). No matter how one slices it, the vague speculative claims of conspiracy theories are not logical,

relying heavily on classic argument fallacies like slippery slope, straw man, circular reasoning, and glittering generalities.

Thus, unsurprisingly, conspiracy theories have historically been severely marginalized and stigmatized in public discourse. Upon reflection, this is quite predictable. Literally, these are conspiracy *theories* not “conspiracy stories” or “conspiracy arguments.” A conspiracy theory is, by its generic characteristics, bits and fragments of events, characters, and “facts” loosely joined together to draw vast conclusions. Judged by the epistemological standards of narrative and argumentation, the conspiracy theory will always come up short. In this regard, conspiracy theories are most fully realized in a digital form. More particularly, three characteristics of digital rhetoric are represented by 911Truth.org and *Loose Change*: (a) digital conspiracy theories as hypertextual and open, (b) digital conspiracy theories as bricolage, and (c) digital conspiracy theories as entelechial. These digital characteristics of 9/11 conspiracy theories primarily account for their popularity and influence in an Internet era.

Digital Conspiracy Theories as Hypertextual and Open

What is striking about 911Truth.org is the Website offers no single, definitive answer to the questions raised about 9/11. The Website is remarkably open-ended and multi-perspectival. In fact, the Website is more of a catalogue of questions and many *possible* answers.

Representing Lanham’s (1993) multilevel hypertextual argumentation, throughout the Website, 911Truth.org refers to “paths” and “orientations” (essentially, starting points) but no “end points.” As a hypertext document, 911Truth.org essentially poses a myriad of concerns then offers many “levels” of meaning or signification via hyperlinks, videos, images, and documents. The creators of 911Truth are careful not to impose conclusions or “endpoints” on the web

browser. In the orientation page (titled “Quick Course”), the Website states that “you cannot wake up a man who is pretending to sleep” but instead the web browser is responsible to “courageously” face the truth on their own journey (911Truth.org, 2008). This open-endedness is perhaps best summarized by a flyer available on the Website under the heading “resources” which states: “View the web sites below and come to your own conclusion” (‘Resources,’ 2008).

The Website is an immersive multi-media experience allowing the web browser to easily move between diverse facts, conclusions, and ideas. No page is without video, audio, hypertext, and images. The “research” page is an excellent example. The web browser is initially directed to this page from the hypertext menu at the top of the homepage. On January 19, 2007, the research page included a diverse hodgepodge of multi-media offerings such as:

- (1) a video of *9/11 Vendetta* which juxtaposes images of 9/11 with the film *V for Vendetta*
- (2) a video of *9/11 Mysteries* exploring the scientific data related to 9/11
- (3) 24 hyperlinks to “9/11 Research Sites” and “Assorted Alt Media”
- (4) a link to a “multimedia” page that includes dozens of audio and video clips concerning 9/11

The “reading room” also nicely represents this multimedia experience. No single, definitive account is offered. Rather than limit the browser to the “definitive” narrative or argument concerning 9/11, 9/11Truth.org bombards the web browser with an almost limitless number of images, diagrams, videos, etc. The web browser is encouraged to “discover” the meanings for him or herself. The web browser, not the “author” of the Website, becomes the primary agent or

actor in the process. As Knight (2002) contends, conspiracy theories tap into “the traditional American obsession with ruggedly individual agency” (p. 7). Embracing this individualism, via the open-endedness of hypertext, 9/11Truth.org encourages the web browser to serve as the subject/agent piecing together meaning from the encyclopedic reservoir of information.

Digital Conspiracy Theories as Bricolage

De Certeau (1984) applied Levi-Strauss’ notion of bricolage by exploring media consumers’ subversive manipulation or “countless ways of making do” with available materials (e.g., media industry products) (p. 29). The creators of *Loose Change* and 911Truth.org have little reverence for the “stability” of media texts like newspaper and magazine articles or television broadcasts. These “bricoleurs” are manipulating the bits and pieces of popular media and juxtaposing them together in ways that directly (and intentionally) defy the intended meanings of the corporate media producers.

For instance, Lindemann and Renegar (2006) argued that a Website emphasizing Flight 93 “is less a unified argument than a series of fragmented questions, musing and possible answers provided through various links to mainstream and alternative news sources” (p. 9). According to their analysis, the Website functions as an enthymeme “which undercuts this site’s attempt at articulating a counter-knowledge” (pp. 11-12). Rather than undermining its effectiveness, I believe it is the fragmented and open-ended nature of these Websites that (at least partly) account for their tremendous popularity and influence.

In several places on 9/11Truth.org, the “deception dollar” is highlighted as a hyperlink. As demonstrated in Figure 1, using the template of a dollar bill, the deception dollar juxtaposed an image of George W. Bush with 9/11 conspiracy Websites and phrases like “fraudulent event

note” and “unmask state sponsored terrorism.” Similarly, the front page of the Loose Change Website is filled with a collage of photographs, brief fragments of textual commentary, YouTube videos, political cartoons, etc. (Loose Change, 2008). In October of 2008, with little discernable organization or focus, the front page cobbled together many different videos including an interview with Naomi Wolf, a clip concerning the history of Nazi Germany and the Bush family, an interview with Ron Paul about the financial crisis bill, C-Span clips from Congressional debates, and video commentary from Alex Jones arguing that the American two party system is an illusion to maintain the wealthy and powerful elite. The flexible malleability of these media texts (digital video, photographs, sound, and text) emerges from the process of digitization (i.e., media in the form of numerical representation) (Evens, 2003; Manovich, 2001). This process is vividly represented in 911Truth’s “video jukebox” which features a series of digitized video clips the viewer can mix and match however he/she would like (Video Jukebox, 2008).

Figure 1: The Deception Dollar



As Fenster (1999) noted, conspiracy theorizing is often an elaborate and playful signification process. Conspiracy theorists, particularly on Internet discussion forums, derive

pleasure from putting the pieces (or clues) together (Soukup, 2002). For instance, the aptly titled “Louder than Words Production” of *Loose Change* also represents this bricolage. Essentially, the entire documentary film is a 90 minute barrage of broadcast news clips, archival footage, photographs, and images of documents and Webpages (with only a few minutes of interview footage collected by the filmmakers). The filmmakers cobbled together bits and pieces of media texts to produce a dramatic effect. As many critics have pointed out, these images, video clips, and documents do not really form a coherent narrative or take the form of a logical argument. Rather, like 9/11Truth.org, *Loose Change* is an open-ended text (which has seen at least three separate, revised versions) that offers the viewer the opportunity to draw conclusions via his/her signifying process.

Digital Conspiracy Theories as Entelechial

Building upon the openness and play (bricolage) predicated on digitization, the digital rhetoric of 9/11 conspiracy theories continuously grows more and more excessive with increasingly elaborate playful (and unbound) signification. The signifying practices of digital conspiracy theories seem to take this playful excess to its logical conclusion. Historically, conspiracy theories have emphasized the signifying practices of the “knowing subject” or “subject-outside-history” (Mason, 2002, p. 49) which allows the otherwise relatively powerless individual to feel privileged and empowered. Further, the knowing subjects’ perceived empowerment corresponds to the degree of secrecy and the scale of the sinister threat—the scarcer the knowledge and the bigger the sinister plot, the greater the perceived empowerment of the knowing subject.

Both *Loose Change* and 9/11Truth.org begin with questions shared by a relatively “mainstream” audience of Americans. For instance, on the “orientation” page of 9/11Truth.org, the web designers ask questions such as “there is now more than enough compelling evidence of just such official misconduct, foul play, perjury and obstruction of justice to constitute probable cause for a full criminal investigation of all 9/11 events” (911Truth.org, 2006). Similarly, *Loose Change* begins with a series of questions about the warnings proceeding 9/11 (many of which were addressed by the 9/11 Commission) and the unanswered questions about 9/11 (merely questioning the uncooperative and secretive responses of the federal government). As the web surfer/viewer gets “deeper” into the playful signification, the “questions” posed are increasingly excessive. For example, one of the “endorsed website” links on 9/11Truth.org, “information liberation” (Information Liberation, 2007) claims that (among other things) the “military industrial complex” seeks a “genocidal purge” of Arabs and Saddam Hussein was not really executed. Another endorsed link called 9-11review.com suggests that 9/11 was related (as “means and motive”) to heroin trafficking and insurance fraud. Similarly, by its conclusion, *Loose Change* links 9/11 to everything from Wall Street insider trading to a gold heist. It is as though the spinning of playful signification gathers greater and greater momentum and intensity until it spirals out of (discursive) control.

This underlying motivation of the conspiracy theorizer is in many respects entelechial. As articulated in the work of Kenneth Burke, entelechy is the desire of someone or something to move toward its perceived (symbolic) state of perfection or completion—“the striving of each thing to be perfectly the kind of thing it was” (Burke, 1969a, p. 249) or “the perfection (that is finishedness) of which that kind is capable” (Burke, 1969b, p. 14). Because

digital (hyper)text has no endpoint and no end to the playful signification, in a sense, digital media allow for the emergence of a “perfect” conspiracy theory. Consider, for instance, the “beginner’s guide” which is linked on the front page of 911.Truth.org. The guide (featuring a series of hyperlinks) published by the *Journal of 9/11 Studies*, intended as a *starting point*, actually directs the web browser toward an unending process of surfing Websites, blogging, and social networking:

Watch this short video WTC7 The Smoking Gun of 9/11 and decide for yourself if controlled demolition was used.

Watch the collapse videos of the third World Trade Center skyscraper

Read Prof. David Ray Griffin

Watch Richard Gage, Architect and Dr. Steven Jones, Physicist

Watch Commercial thermite-cutter, for demolitions, etc.

Read Why Indeed Did the WTC Buildings Collapse?

Read Intersecting Facts and Theories on 9/11

Investigate the evidence at 9/11Truth and Justice

Keep up on the latest news at 911 Blogger.com

Educate your friends, family, peers and neighbors

Blogg, comment on social bookmark sites such as Digg and Netscape

Write letters to newspapers and to your representatives; call into radio talk shows.
(Beginner’s Guide, 2008)

Both the 911Truth and Loose Change Websites are constantly adding materials such as video, audio, and textual fragments from news broadcasts. As a perpetually open (hyper)text and with an infinite number of possible versions of digital images, sounds, videos, etc (bricolage), the

digital rhetoric of the 9/11 conspiracy theories offers an endless loop of signification for the web browser. The spiraling of signification is well-represented in the discussion forums on the Websites, particularly Loose Change's forum titled "Skeptics" (Skeptics Forum, 2008). With a dizzying series of video and photographic images, the discussion flows between a diverse series of topics: the simulated moon landing, Big Foot, the Oklahoma City bombing, and the Gulf of Tonkin incident. The discussion is not so much a series of arguments or discussion points but rather interwoven threads, in a stream of consciousness of interconnections. The Websites allow the individual, working within a digital hypertextual system not bound by the relatively narrow conventions of narrative or argument, to realize the full potential of the conspiracy theory: limitless, pleasurable signification.

Conclusions

For those concerned about the proliferation of conspiracy theories (e.g., Goldswig, 2002), the emergence of digital conspiracy theorizing suggests that the historical methods of delegitimizing conspiracy theories will likely prove ineffective. Suggesting that the "narrative" lacks fidelity or that the "arguments" lack logical warrants will simply not do. As hypertextual open-ended bricolage, these "theories" are neither fundamentally narratives or arguments.

Digital conspiracy theories represent alternative epistemologies. Deliberately avoiding the epistemic modernist (rationalist) logic of argument and narrative, as postmodern texts, 9/11 conspiracy theories on the Web work within a new, digital logic. Harms and Dickens (1996) argue that, "postmodern culture is characterized first and foremost by mass mediated experiences and new cultural forms of expression" (p. 211). Postmodern rhetoric is non-linear, irreverent, and stylistic (Lanham, 1993). Unlike the linearity and logic of modernist, printed

ideas, postmodern (digital) expression is often in the form of playful stream of consciousness.

Needless to say, this invokes both opportunity and concern.

Alternative epistemologies, by definition, open up new ways of knowing that had previously been limited by the conservative hegemony of the past. Further, conspiracy theorizing has always been a largely populist enterprise (Fenster, 1999). This is an exciting notion, particularly for rhetorical scholars studying counterpublics (Asen and Brouwer, 2001). Lacking legitimate political power and using alternative media to promote radically subversive agendas, 9/11 conspiracy theorists suggest new spaces in the digital environment for counterpublics.

Nonetheless, the playful signification associated with 9/11 conspiracy theories seems strangely egocentric, primarily serving the pleasurable desires of the individual. The self-serving open-ended play is, in some respects, a dramatic realization of Baudrillard's (1988) image and desire-based reality or "hyperreality." The individual sitting alone, surfing through images, videos, and diagrams "discovering" the "truths(s)" of 9/11 is far from a reciprocal public dialogue about gravely important events. Somewhat ironically, the experiences associated with these open hypertexts seem less about the search for some hidden truth and more about a reverberation of desire/pleasure. As academics committed to ethical, democratic public deliberation, these digital, postmodern epistemologies raise many concerns about the role of the citizen in a postmodern, digital public discourse.

In conclusion, the events of September 11, 2001 will invariably linger in the world's consciousness indefinitely. Interestingly, as an historical event, 9/11 is often compared to Pearl Harbor and the JFK assassination as dramatic moments of shared cultural meaning-making. It is

unlikely a coincidence that all three events are the fuel for innumerable conspiracy theories. As moments of immense collective sense-making, the form of these conspiracy theories offers a rare window into the zeitgeist of the culture. The intensely serious narratives of Pearl Harbor and methodically sober enthymemes of the JFK assassination have been replaced with the pleasures and play of hypertextual bricolage. In the wake of these discursive forms and sense-making experiences, the daunting task is promoting a coherent public discourse connecting the threads of this postmodern meaning-making.

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How Illiterate People Learn: Case Study of Ethiopian Adults in Israel

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Introduction

The primary goal of this paper is to describe, map and assess the various channels and human agents employed for learning purposes by illiterate Ethiopian immigrants in Israel. Understanding these immigrants' informal learning methods will aid policymakers working with this specific population as well as at the international level with regard to the billion people around the world who are unable to read or write.

Today, most knowledge (alpha-numeric information) is collected and stored symbolically in writing and in print. Thus, most learning and knowledge construction takes place today via the symbolic-formal learning channel, which presupposes the ability to read and write (Chen, 1998). However, about a third of the global population is illiterate. Ethiopia is among those countries in which 70% of the overall population, including the Jewish community, does not know how to read. Technological and traditional knowledge is learned in informal frameworks, through observation and emulation, trial and error, and experience accumulated over time. Jewish community elders, spiritual leaders and skilled workers of various kinds once served as the main learning agents in the village (Badovsky, 2001; Ben Ezer, 1992). This population immigrated to Israel, to a culture in which reading and writing are basic skills essential to social integration.

Background

Acquiring new knowledge without knowing how to read and write is no simple task in modern society, where people are flooded with new information on a daily, even hourly, basis. At present, of the world's 3,000 or so existing languages, only 106 are written languages (Ong, 1982). In countries with high levels of illiteracy, it is not restricted to young people who have not yet learned how to read and write (Harman, 1987). In many countries the illiteracy rate ranges

from 65% to 95%. In Ethiopia, a high percentage – some 70% of the citizenry – does not know how to read and write.

Ethiopian society is pre-industrial, agrarian, traditional, tribal, authoritarian and patriarchal; it lives by specific value-systems and norms and is based primarily on oral culture (Badovsky, 2001; Ben Ezer, 2002; Rachamim, 1999; Anteby, 1994; Levin-Rozalis, 2000). Most of the Ethiopian Jews who have immigrated to Israel come from village areas, without any access to modern society, and are illiterate (Gador, 1996; Fanta, 2005).

Illiteracy has many implications, with the first and foremost being the job market. Literacy inability retards individual employability and impedes job performance (Wilson-Robertson & Zeiss, 1991). In the 1980s the U.S. Department of Education defined fluency for a literate adult as “the ability to read, write and compute...the ability to hold a decent job to support self and family, to lead a life of dignity and pride.” At the lowest literacy standard, an employable adult can read street signs, simple text, or possibly parts of the daily newspaper with difficulty (Gordon, 2003).

The American Management Association (AMA), in a national survey of major U.S. companies, found that 40 percent of job applicants failed a basic math test and 32 percent were deficient in the reading skills abilities required for jobs. In 2000 the international Organization for Economic Cooperation and Development (OECD) found that about half of the U.S. population reads below the eighth-grade level, with many Americans below even sixth-grade level (Gordon, 2003). Moreover, every fifth person in American industry is functionally illiterate and innumerate (Wilson-Robertson & Zeiss, 1991).

Costa (1988); Fernandez (2001); Gordon (2003) ; and many other researchers have noted the difficulty in defining literacy. At its simplest level, literacy refers to reading and writing abilities (Harman, 1987). Fernandez (2001) describes literacy as something more than the ability to make identifying marks on a document. But when we refer to a completely illiterate person, we mean the inability to read and write in any language. The research subjects occupied different points along the continuum from total illiteracy (the inability to read at all) to beginning literacy, at the Grade 1-Grade 2 level. The transition from illiteracy to literacy takes place along a continuum.

Grabesky (1970) discusses three approaches to determining the various points on this continuum.

According to the first approach, a person is not considered illiterate when he is able to read with comprehension and to write a short list related to everyday activities. The second approach talks about “functional literacy.” According to this approach, functional literacy occurs when a person has learned the reading and writing skills necessary to participate effectively in reading and writing-based activities dictated by his society and culture. The third approach relates to literacy in terms of number of years of study.

How, then, do illiterates learn – what are the learning channels and agents used by this population to achieve literacy? In order to answer this question, we shall focus on informal learning frameworks. The term “agent” is used to describe the source from whom illiterate people learn.

Learning channels in informal settings

Informal learning is learning that takes place via an internal, personal process, through experience and practice, anywhere and at any time of life, outside of any school, college or vocational training framework. Knowledge is acquired via activity that imparts values, skills and experience-based information that is influenced by different sources within the environment – the family, the neighborhood, work, games, commercial activity, etc. People who lack reading and writing skills acquire knowledge via informal frameworks. Technological knowledge, including traditional and vocational knowledge, are learned informally – by watching and imitating experts and older, experienced people, through trial and error, and through personal experience acquired over the years. These methods constitute a kind of local school, in which all those interested in learning a particular skill work at it until they reach the level of knowledge necessary to engage in it independently. Cole and Scribner (*ibid*) note that in informal education things are always learned in context. The child does not, for instance, learn about the number 3 in isolation, but rather carries out concrete operations involving objects and numbers of objects. By contrast, the arithmetic learned in school addresses the number as a thing in itself. The essential difference is that informal learning is primarily inductive (generalizing from the particular); while in the school setting the child first learns rules and then connects them with their real-life manifestations.

In the Ethiopian village, as well, occupations, tradition and customs are learned locally, passed on from father to son, by means of trial and error, observation and imitation. The primary learning agents are the community elders, religious leaders and heads of families. Via these learning frameworks and agents, the individual villager acquires the entire body of vocational, cultural, social and traditional knowledge that has developed within the village. In this way, all

of the skills needed by individual practitioners of the various branches of agriculture, shepherding and animal husbandry, as well as other necessary skills, are transmitted from generation to generation. In the same way, mothers teach their daughters the skills needed for childcare, preparation of traditional foods, spinning, pottery, basket weaving, etc. The cultural, social and communal knowledge of the villagers is acquired through traditional means (Badovsky, 2001; Ben Ezer, 1992; Banai, 1996).

Oral culture has developed ways of bypassing literacy-based learning, employing non-symbolic learning channels that do not require the ability to read and write. Non-symbolic learning channels are based on hands-on experience acquired through direct interaction with the real world (Chen, 1998; Popper, 1977). Piaget (1972); Straus (1966) and others characterize the main learning methods of oral culture as concrete, sensory-motor based, and dependent on activity and interaction with the environment.

One of the most widely-used learning channels is that of observation and imitation. At the heart of this approach lies imitative ability. That is, the learner sees someone, a “model,” perform an action, and he imitates this action, reconstructing it on his own. According to Bandura (1963), learning through observation and imitation has three main components: *attention* – the learner has to be aware of, and focused on, the specific behavior of the model; *memory* – since the learner does not carry out the modeled activity right away, he has to store it in his memory and retrieve it later on for emulation; *ability* – the learner has to be capable of performing the activity carried out by the model.

Researchers such as Bruner (1977), Carraheter (1993), Ong (1982), Yonai (1992) and Schuster (1997) address several different learning channels that are employed by illiterate

populations: *Visual* learning – observation based on the sense of sight and visual memory; *imitative* learning; *practice-based* learning; *enacting* (learning through doing/hands-on learning; *apprenticeship* – learning through verbal explanation and demonstration; reflexive observation of the leader – the learner receives instructions from the expert and follows them until he becomes expert himself.

According to experiential learning theory, learning takes place in a spiral process that begins with concrete activity and continues with reflexive observation leading to abstract conceptual generalizations (Kolb, 1984). This definition has four main features: first, learning is defined in terms of process and adjustment, rather than in terms of products. Second, the learning process is perceived as a dynamic change in the state of knowledge, not as a static, objective entity that is acquired or transferred. Third, learning is a systemic process that involves both emotion and cognition. Fourth, learning is a knowledge-creating process that emerges from interaction between the learner and his environment. Meaning is created when ideas are put into practice and tried out in the real world, and when the learner reflects on these efforts.

The constructivist approach also views the learner as an active participant in the construction of autogenic knowledge, based on a process of interaction with the environment. According to constructivism, learning takes place as an active process in which the learner constructs and incorporates into his consciousness new ideas or concepts, on the basis of an existing cognitive structure. Dvir (2000) and Bruner & Kenney (1995) note that new concepts are learned through interaction between the learner's prior knowledge and the new data that he has been exposed to during the learning process. When a contradiction arises between existing knowledge and the knowledge produced by interaction with the environment, the existing

structure changes in order to restore balance (Siegler, 1992). Thus, learning depends on previous knowledge and is connected to the context in which it takes place (Resnik, 1987; Ackerman, 1993). The learner chooses and changes knowledge, creates hypotheses and makes decisions, based on cognitive structures (such as schema, mental models) that confer meaning and order on experience and enable us to analyze approaches (Dvir, 2000).

The constructivism-based investigative learning approach posits two parallel spaces in which learning takes place: the hypothetical space and the experimental space. The hypothetical space is composed of the laws that describe a given phenomenon, laws that are observable. The experimental space is composed of the relevant experiments that may be carried out, and their outcomes (Klahr & Dunbar, 1988).

In oral cultures relying on language and memory, the discovery process was the primary means by which learning developed. These cultures developed mechanisms for learning and remembering material through signs, rhymes, sayings, and repetition of what was heard. They also employed symbols in the form of movement and body language (Ong, 1982; Goody, 1995; Cole, 1997). Aids used to pass on messages to future generations include narrative and expressions of various kinds, which play an important role in preserving cultural and communicative knowledge. Narrative is the counterpart of text in written cultures (Ben Ezer, 2002). Bruner (1985) sees narrative as the basis for learning and knowing about the world. Narrative refers to the structure, knowledge and skills needed in order to construct a story (Shkedi, 2003). Narrative is a source of broad, long-term, logical and stable knowledge that makes repetition possible. It is, in effect, a story or part of a story that was told, written or imagined through the eyes of one of the participants or observers (and probably fictional). It

plays an essential role in creating historical continuity for patterns in the oral culture (Ong, 1982). The limitation of this kind of culture lies in the fact that information transfer and learning are dependent on people and take place via concrete communication that is time and space-specific. Oral culture is also perceived as having a more fragile, less methodical structure than written culture (ibid, Goody).

Learning channels in formal frameworks

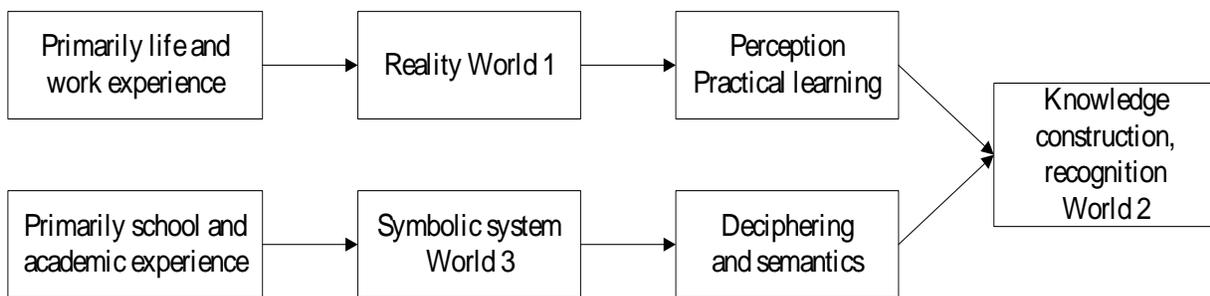
In written culture knowledge is systematically transferred via formal frameworks such as schools, the media, professionals, information technologies and the like, in a way that is not restricted in time or space.

Learning in formal frameworks takes place in a hierarchical, structured manner, beginning with elementary school and continuing through university and training programs of various kinds. That is, the primary learning channel through which knowledge passes in a formal teaching framework is that of symbolic learning, based on reading and writing and the associated phenomena of codifying and decoding written information (Chen, 1998). This channel entails a cognitive decoding mechanism that provides the symbolic system (text, numbers) with its semantic interpretation (meaning). Writing is a cognitive technology that supports memory and contributes to knowledge development. It is a powerful technology that frees the brain of the need to store a never-ending succession of items and facts, making it possible to channel precious cognitive energies toward complex thought processes (Mioduser, 1995). Symbolization makes it possible for man to represent events and to analyze, categorize and organize his experiences, to recall experiences later on, and to imagine and predict future activities and

events. This ability also enables man to imagine alternative solutions to a problem, without having to actually try out each different option (Bandura & Walters, 1963).

Popper (1977) and Chen (1998) use the following flowchart to describe two different and complementary learning channels:

Figure 1: Two Major Learning Channels



The channel leading from World 1 to World 2 is employed mainly in the course of life and vocational experience. The channel leading from World 3 to World 2 is employed mainly by educational institutions. The two channels exist simultaneously, but, as Dewey noted, the second is the dominant one in modern society.

The following table compares the learning channels used by each kind of learning framework.

Table 1: Learning channels used in two different learning frameworks: informal and formal

Informal learning (illiteracy)	Formal learning (literacy)
Visual	Reading, writing
Drill and practice	Numeracy
Apprenticeship	
Learning by experience	

Enacting	
Schema	

Distinctions between learning channels in the informal system are not sharply-delineated, and there is a certain overlap between them. There are other learning channels with regard to observation and imitation based on paying attention, remembering behaviors and duplicating them according to the model. In order to duplicate the modeled behavior, drill and practice of the action are necessary, as is learning by experience.

There is also a lack of clear demarcation between informal and formal learning channels. Informal learning channels are open not just to the illiterate but also to those who know how to read and write. By contrast, illiterates seeking to broaden their knowledge are limited to the learning channels available in the informal framework only.

Methodology

Research questions

1. What are the **learning channels** used by illiterate Ethiopian immigrants to Israel, and what are the usage rates in these channels?
2. **From whom** do illiterate Ethiopian immigrants to Israel learn and what are the usage rates of these “agents”?

Research population

The study comprised illiterate adult Ethiopian immigrants to Israel. “Illiteracy” refers to the inability to read and write (Hertz-Lazarovitch; Shadal, 2003). The research subjects occupied different points along the continuum from total illiteracy (the complete inability to read) to beginning literacy, at the Grade 1-Grade 2 level.

The study population consisted of 50 adult Ethiopian immigrants who had been living in Israel for 10-20 years: 20 men and 30 women between the ages of 40-60. The subjects were selected via the non-probability *snowball sampling* method. In geographic areas characterized by large concentrations of Ethiopian immigrants, meetings were held to publicize the study and its goals. Some of the subjects were recruited via these meetings. Others were recruited through personal referral, with “friends bringing friends,” until the desired number of participants was reached.

Research instruments

Semi-structured interviews were used to determine learning channels and “agents.” The subjects were asked to respond in Amharic – the interviewers’ language – to the following:

1. How had they learned to use new technologies encountered in Israel, such as refrigerators, microwave ovens, televisions, telephones, gas stoves, washing machines, electric mixers (learning methods).
2. From whom had they learned these things (learning agents).

The statements of learning-channel data were constructed based on categories provided by the literature. The learning-agent categories were constructed based on the data itself. Usage rates for the various learning channels and agents were calculated and presented in percentages.

Research method

A mixed qualitative-quantitative method was employed (Creswell, 2003).

The qualitative approach makes it possible to understand the nature and meaning of internal processes in the situation under study, from the perspective of the participants themselves and in terms of their language, worldview and attitudes toward values and events

(Tzabar-Ben Yehoshua, 1997; Alpert, 2001). The statements collected from the interviews formed the basis of concept diagrams and maps that describe the structure of the reality under investigation, as described by Alpert (2001); Gabaton (2001) and Shkedi (2003) for analyzing data using the qualitative method.

Items from the interviews were quantified and their relative prevalence calculated; the results are presented in diagram form (Alpert, 2001) as the quantitative method.

According to the qualitative approach, the researcher is part of the research tool. In the present study, one of us belongs to the same ethnic community as the population being studied. This is an issue that is connected with professional ethics. The ethics of a qualitative study deals with the search for principles, commitments and values that guide and characterize the researcher's proper behavior and it relates to identification, sensitivity to the respondents, and the ability to appreciate their feelings and cognitive tendencies with an awareness of the possible impact on the researcher and his work (Tzabar-Ben Yehoshua, & Dushik, 2001). The interaction between the researcher and the respondents took place in an atmosphere of mutual respect, trust, reciprocity and sharing, with sensitivity to the respondents' cultural, social and cognitive point of view. This approach enabled the researcher to gain the respondents' cooperation, and their willingness and consent to carry out the tasks.

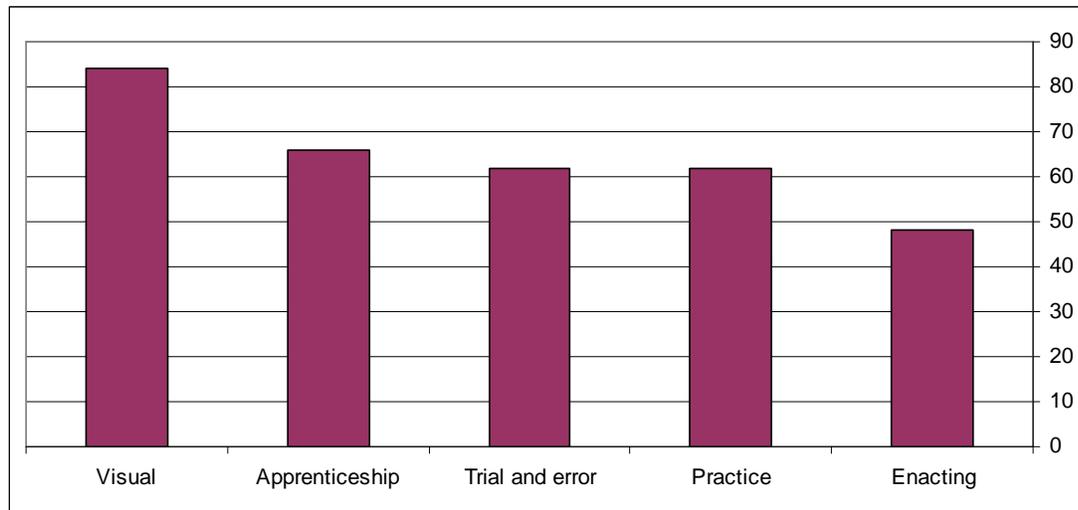
Undoubtedly, being a researcher from the same ethnic background has both advantages and disadvantages. The advantages: Having a common language with the respondents that includes – beyond the spoken language – understanding body language and social context, and understanding cultural and cognitive codes. For example, the need to conduct an introductory discussion before getting to the main topic. There are other examples as well: Paying attention

to the respondents' level of fatigue, which is liable to create cognitive overload when performing tasks; or the presence of guests, who are attributed great importance in Ethiopian culture, and this takes precedence over doing the tests, even if these had been set up in advance. The disadvantages are likely to include being overly involved with and overly sensitive to the respondents – disadvantages that could influence the perception of the reality being studied. In our opinion, the advantages outweigh the disadvantages, and the common background played a positive role to the data collection process in the present study.

Findings

Data analysis shows that all of the subjects make use of more than one learning channel at a given time: visual, apprenticeship, practice, trial and error, shape and modeling. Chart 1 presents the distribution of users of the various learning channels (amount of statements), by percentages, across the study population. The figures refer to the percentage of users of the channel in question among the entire participant group. Statements in this section do not cover the learning of all of the appliances present in the subjects' homes and immediate environment, but rather reflect the main learning-channel and learning-agent trends for this population.

Figure 2: Percent of respondents reporting use of each learning channel (N=50)



The data show that despite the participants' illiteracy, they found ways of bypassing the need for reading and writing skills in order to learn new things. According to the data, all of the subjects use more than one learning channel at a given time. The most commonly-used channel is the visual, based on observation and emulation of absorption personnel and others.

Examples of statements linked to the learning channel:

Visual: *"They showed us when we were in the caravan, everything that we saw with our eyes."*

"We watched how other people used it."

"We watched relatives who had been in Israel longer."

"I saw how it was done and kept the picture of it in my mind."

Apprenticeship: *"They explained it to us and afterwards they showed us how to use it."*

"Someone came to explain how to wash clothes, if you want to wash white clothes, if you want to wash colored clothes you press this button, and that's how he told me about all the different kinds of laundry. That's how I learned to operate the machine. For the oven, the refrigerator and everything else someone came to teach us."

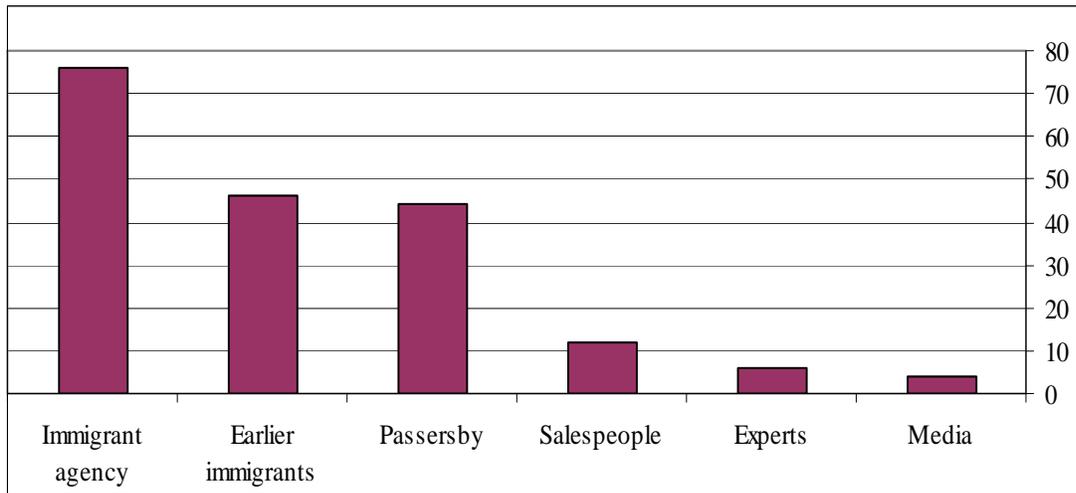
Training and practice: *I saw how other people make phone calls; afterwards I tried it myself and also learned how to do it."*

Trial and error: *"I tried to operate the mixer, the washing machine, myself; at first it didn't work but I kept trying until it did."*

The subjects' responses are notable for their use of plural forms: "we saw," "we did," indicating the importance of collective experience, of belonging to the group, even if the learning takes place at the individual level.

These learning channels are employed by the subjects via various learning agents with whom they come into contact in their environment, as shown in Chart 2. The figures refer to the percentages of users of these agents within the entire sample.

Figure 3: Percent of respondents reporting use of each learning agent (N=50)



Analysis of the data indicates that the subjects make efficient use of the opportunities presented to them by their environment, while also employing several different types of learning "agent." Examples of statements in which absorption personnel are mentioned as learning agents:

"At the absorption center they taught us how to use all the appliances and tools..., such as the stove, the oven, the refrigerator, the microwave ..."

"Coaches at the absorption center showed us, this is how you turn it on and this is how you turn it off, afterwards we learned. That's how we learned about the washing machine, the stove, the coffee grinder."

What is particularly striking is the impact of absorption personnel as primary learning agents. This high degree of prominence may be attributed to the fact that the absorption personnel were the first to engage in the subjects' initial absorption in the country, to expose them to new technologies, and to explain these technologies and their use to them.

Veteran immigrants and passersby are used as learning agents to a moderate degree, while experts and the media are learning agents of low prevalence. Sample statements:

Veteran immigrants: *"Immigrants who came before us taught us."*

Experts: *"Teachers taught us from books". "We asked nurses how to use different kinds of drug.s."*

Passersby: *"We learned how to dial a public telephone, there were people there, we asked them and they showed us how to dial the phone."*

The media: *"We saw on television how to use a mixer." "On Radio Amharit they explained a lot of new things."*

Salespeople: *"Salespeople in the stores explained to us how to use the things that we bought."*

As is evident from these responses, the subjects make use of more than one learning agent at a given time. In this way, they have been able to find appropriate learning agents for the various kinds of information that they require.

Discussion

Despite the anticipated difficulty of acquiring knowledge without knowing how to read or write, analysis of the data shows that illiteracy does not prevent the research subjects from acquiring new knowledge via alternative learning channels. As with the findings of Cole and Scribner (1978), the subjects of the present study employed learning strategies that bypass the reading/writing-based learning method, acquiring knowledge via informal frameworks and through the use of a variety of learning channels. Feuerstein (1994) found that while Ethiopian immigrants actually have well-developed learning skills, cultural differences cause them to be ranked at the bottom of the ladder in terms of learning achievements. According to him, a

different assessment method and the construction of a suitable learning environment could alter this ranking. Friedman (1986) supports these findings and notes that some Ethiopian immigrants possess outstanding capabilities and that their motivation to learn is high compared with that of Israeli pupils with learning difficulties; teaching methods that suit the needs of these immigrants should therefore be employed.

Visual learning, apprenticeship learning, observation and imitation channels

The visual channel, based on observation and recall, is the main channel for human learning (Bruner, 1977; Farah, 2000; Ong, 1982). This channel is, indeed, one of the most prevalent of the various existing learning channels. Learning processes that take place via the visual channel may be described as a kind of reciprocal interaction that occurs between a person's internal representations and the external information that is absorbed from the environment (Churchland, 1995; Arnheim, 1969).

Visual learning also includes imitative learning which, ultimately, may be classified with the practice method (Bruner, 1977; Carragher, 1993; Ong, 1982; Yonai, 1992). These channels enable the study population to learn in informal frameworks. Informal frameworks, as described by Cole and Scribner (1978), are part of everyday life and feature extensive activity and learning through observation and interaction with the real world (Chen, 1998; Popper, 1977). These are situations in which a type of reciprocal interaction takes place between the learner's internal representations and the external information absorbed from the environment (Churchland, 1995; Arnheim, 1969).

Partial symbolic learning was also found among the subjects, occurring along the visual channel. This type of learning mainly involves alpha-numeric information. A large number of the

subjects had learned to identify numerals in order to use the telephone, select television channels, write checks, etc. This learning actually consists of the morphological identification of a particular symbol needed for everyday uses, with no deciphering of the information represented by that symbol. This limited use of symbols takes place only in real-world contexts, through hands-on experience that leads to interactive learning (Chen, 1998; Popper, 1977).

Another channel used extensively by the subjects is the apprenticeship channel. Here, too, there is a significant element of visual learning based on watching others, described by Cole and Scribner (1978) as learning that takes place within an informal framework. The subjects also displayed learning through observation and emulation of models. Bandura (1963) notes that in order to learn from models, certain conditions of attentiveness, capability and memory must be met.

Trial and error, training and practice channels

The rate of use of these channels reached nearly 50 percent. Learning through trial and error is based on the theory of experiential learning. According to this theory, learning takes place through a spiral process that starts with concrete experimentation and continues with reflective observation leading to abstract conceptualization (Kolb, 1984). The constructivist approach also supports the idea that new concepts are learned through interaction between the learner's prior knowledge and new data discovered through the learning or experimental process (Dvir, 2000; Bruner and Kenney, 1965) which ultimately takes place through training and practice. Dewey also contends that learning takes place through active experimentation in social contexts. This kind of learning makes it possible for the learner to assess the outcomes of his

learning, to investigate various thinking processes, and to exercise his judgment in choosing among them (Yancey, 1992).

Changes in learning channels

The transition to life in a modern society expanded the Ethiopian immigrants' learning-channel options. It made available to them alternative learning channels and agents via which new and ongoing stimuli could be represented, resulting in learning through experimentation. External stimuli appear to enable learning through the use of meta-cognition (Amiram and Courts, 1991; Bandur and Walters, 1963; Yancey, 1992).

A population that does not know how to read and write acquires knowledge and skills through learning agents and other channels that bypass literacy-based learning. However, it should be emphasized that their learning is still based on human memory, which has spatial and temporal limitations. Information is acquired through interaction with the real world in a concrete way. By contrast, symbolization, embodied in writing, makes it possible for people to represent events symbolically, to analyze, classify and organize their experiences and to recall them after time has passed, and to imagine and predict future actions and events. This ability is also what enables people to imagine problem-solving options without having to try out each option in a concrete way (Bandura, 1963). Writing is a cognitive technology that supports memory and contributes to knowledge development. It is a powerful technology that frees the brain from the necessity of storing infinite quantities of information and facts, and makes precious cognitive energy available for complex thought processes (Mioduser, 1995). This development led to a change in the structure of language and to accelerated human cognitive development (Cole and Scribner, 1978; Olson, 1994).

Learning agents and changes that took place due to the transition

The main learning agents employed by the research subjects are human and technological. The primary human learning agents are absorption personnel. The importance of absorption personnel as learning agents stems from their role as the immigrants' first intermediaries in their encounter with modern society; they welcome the immigrants upon their arrival in the country and guide them in their first steps as Israeli citizens. Collectively they serve as a kind of school for learning essential new technological skills. The technological learning agents used by the subjects are television and radio. Despite the fact that the usage rate for these technologies as learning agents is low, they nevertheless constitute an indication of the usage capabilities of subjects who are illiterate. In addition to knowledge acquisition, there is also an awareness that relevant knowledge can no longer be learned from community elders, as noted by Rachamim (1999) [and] Ben Ezer (2002). In the past, community elders had served as the subjects' primary information agents. Information was concentrated in the hands of a few who were able to use it to control others around them.

Immigrants' learning agents differ in type and variety. The transition to life in a modern society has led to a democratization of knowledge, to different and expanded opportunities for knowledge acquisition, and to the availability of myriad learning agents that did not exist in their traditional culture, including electronic media and a wide variety of frameworks and people of all ages. In Ethiopia, most learning was familial-social and communal in nature, and took place via learning agents who were generally community elders and spiritual leaders (Ben Ezer, 1992; Bodobsky, 1994; Rachamim, 1999). With the transition to life in a developed society, the age factor that had been of such critical importance in Ethiopia disappeared, and a situation

developed in which one could learn from anyone in possession of relevant knowledge, regardless of his age. Moreover, learner ages also changed. In a modern society such as Israel, everyone learns from everyone, with no distinction as to age (Ben Ezer, 1992; Rachamim, 1999). Socialization and learning do not take place only within the family, the village and the community, with parents, adults and village elders as teachers. In modern society it is the younger people who serve, in numerous spheres, as the agents of primary knowledge for older adults (particularly with regard to technology). The research subjects approach potential learning agents on their own; these agents include the electronic media, which were found to provide an additional option for knowledge acquisition.

To conclude, the present study indicates the potential that exists among illiterates for knowledge acquisition via learning channels and agents that bypass literacy-based learning methods. That is, the inability to read and write does not prevent people from acquiring new knowledge. Nevertheless, it should be stressed that this kind of learning has its own limitations. Despite the fact that the learning channels and agents used by the research subjects for knowledge construction expanded significantly after the move to Israel, the subjects are still limited in their acquisition of more complex knowledge. Although illiterate immigrants now have the opportunity to store knowledge outside their minds (on videotape or audio tape, for example), and to learn via alternative technological agents and channels, not everything may be stored using non-literacy-based electronic media. The subjects' various learning channels and agents are still connected to the concrete learning that takes place in the real world, on a face-to-face basis.

Conclusions

This study has yielded some important insights:

- Illiteracy does not preclude learning via informal frameworks. There are a variety of learning channels and agents available that bypass literacy and enable immigrants who do not read or write to learn via alternative methods in their new environment. Illiteracy does not present an obstacle to the research subjects when they need to learn things that are important for their everyday functioning, in the context of interaction with the stimuli presented by the modern society into which they are being absorbed.
- Living in a modern society makes it possible for people who do not know how to read and write to acquire knowledge and to store it outside their minds, via technological means.

Policy recommendations

- Culturally appropriate agents and channels should be developed to encourage learning by adult Ethiopian immigrants and to safeguard their status and image, in their own eyes and in the eyes of the younger generation. This will enable older immigrants to help themselves, and to become active contributors to the absorbing culture.
- The Israeli absorption authorities should recognize the ability of illiterates to acquire knowledge via informal frameworks, and absorption programs should be developed that take these abilities into account. This will significantly improve the process of acclimitization, adjustment, job placement, and social integration of the new population.

- There should be recognition of learning methods that bypass literacy. Absorption programs compatible with the learning and thinking processes of those being absorbed enable immigrants to achieve greater independence, leading to better adjustment and to easing the burden borne by the absorbing society.

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Distance Learning: The Challenge and Opportunity of Online Technology

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Abstract

In the age of information, the use of new technologies in education has virtually exploded. The last twenty years have moved college instructors from chalkboards to digital presentations to using the Internet in the classroom. In the haste to use technology in college classrooms many students may have been left behind in order to provide ease of access to digital learning. New technologies have become the rage with little respect to content of lessons and the importance of the spatial relationships (Freitas, Meyers, & Avtgis, 1998; Visser, 2000; Freson, 2002; Muse, 2003, Kelsey & D'Souza, 2004) developed in traditional classrooms. This study analyzes the current trends taking place in the uses of new technologies in college classrooms and how these trends are affecting online instruction.

Introduction

The use of technology in the learning process is not a new phenomenon and has happened before with the introduction of radio, film, television and computers into the classroom. The difference with online technologies is the speed of integration into society and the attraction of their interactive nature. Interactive technology has become a key factor in college courses across the country. The use of new technologies in the college classroom is obvious and varied; the danger is expecting universal technology literacy and the undying fascination of learners to new technology. Technologies need to enhance content not replace it (Foss & Kanengeiter, 1992; Hua 1996; Witmer, 1998; Kelsey, 2000; Stewart, Hong, & Strudler, 2004; Garrison, 2005). The integration of technology in the learning process has been analyzed by studies that report improved retention of content by the learners (Merrill, 1986; Papert, 1987; Schunk, 1991; Hiltz, 1994; Merisotis, & Phipps, 1999; Muse, 2003; Gaytan & Beryl, 2007).

However, this was also the finding when computers first entered classrooms. The initial enchantment with computers intrigued learners, but eventually the excitement diminished. In fact, thousands of computers sat idle in schools across the nation not long after their introduction into classrooms (Hancock, 1998). According to Jamie McKenzie (1998), it was and is the lack of training that caused the loss of interest, and expecting the use of the technology by itself to keep the interest of the learner. Many studies discuss the advantages as well as the chronic problems with integrating new technologies into higher education.

Review of Studies

This literature review is a detailed sampling of the studies that discuss the various uses of online technology in college classrooms and does not discuss all available research in the area. A review of that nature would require producing a manuscript. This analysis should be sufficient to discover several trends that have developed since the beginning of study on this subject area. There have been studies on the use of technology in the college classroom ranging from Starr Hiltz 1986 study of the virtual classroom to Scott Althaus (1997) experiment with online discussions to Jorge Gaytan and Beryl C. McEwen's (2007) survey of effective online instructional and assessment strategies.

In the last fifteen to twenty years studies have analyzed particular topic areas such as group communication (Lea & Spears, 1991, Poole, Holmes, Watson, & DeSanctis, 1993;) or interpersonal Communication (Walther & Burgoon, 1992; Walther, 1992; Walther, Boos, Jones, Prell, D'Addario, & Bunz, 2001; Walther & Bunz, 2005), and the list continues but few have systematically analyzed the effective use of technology in college courses. Hiltz (1986, 1988, 1992, 1994) is one of the few researchers to study the impact of technology on instruction, and

only recently have other scholars begun to follow in this area (Webster, Trevino & Ryan, 1993; Smith, 1994; Olaniran, Savage, & Sorenson, 1996; Althaus, 1997; Visser, 2000; DiBase, 2000; Carrell & Menzel, 2001; Bunz, 2003; Stewart, Hong, & Strudler, 2004; Kent, 2007; Gaytan & Beryl, 2007).

Hiltz's original study built and evaluated a prototype virtual classroom at the New Jersey Institute of Technology, which set the focus for further study of technology in college classrooms. She found many positive outcomes such as the facilitation of discussion and debate, as well as breaking the binds of time with asynchronous learning. The study also found that just as face-to-face (FTF) instruction has strengths and shortcomings so do online education (Hiltz, 1986). In fact, the effectiveness of online instruction depends on several factors besides hardware/software capabilities, such as the teacher, the medium, course materials, and the characteristics of students (Hiltz, 1994, 7). These same factors play a huge role in the success of traditional classroom instruction and also matter in technological instruction. A weakness in any one of these areas can have a major effect on the success of instruction. However, online instruction must deal with even more factors that affect the learning outcome. For example, Hiltz's studies also reveal other vulnerabilities of technology such as information overload and time consuming participation (Hiltz & Wellman, 1997). In addition, a Benbunan-Fich & Hiltz study (1999) looked at asynchronous learning networks (ALN) versus traditional methods and found that "ALN produced better and longer solutions to the case study but students were less satisfied with the interaction process" (Online). This particular study's participants were computer science majors, which could account for "better and longer solutions" since the participants were highly trained in the use of technology. As study in this area has expanded

other scholars have found similar advantages and disadvantages to technology in communication classrooms.

Smith (1994) found no significant difference in mastery of course material between online and face-to-face instruction. Although more students preferred using online platforms, many were dissatisfied that it took more time than in a traditional classroom setting. Smith named several concerns affecting the integration of technology. There were hardware/software problems, the students/teachers needed training on the system, course design needed to consider computer access, class size must be limited to twenty-five students to control information overload, and participation incentives are required because students desired voluntary use not mandatory use of technology in the experiment.

McComb (1994) discussed the benefits of technology in education at college level and observed three courses and what interactions occurred. She found that technology extends learning beyond the classroom, demonstrated caring, included outside experts, increased students' responsibility and was efficient. This article provided only anecdotal evidence of the effectiveness of technology and has been quoted a great deal in other studies. The author makes a great deal of generalizations without the benefit of quantitative data. For example, she states, "So a final benefit of technology is simply that it reduces the endless paperwork...." (p. 169). It is interesting to note that with all of technologies benefits the author does not see it as a replacement for face-to-face communication.

Alavi (1994, 1995, and 1997) and colleagues conducted multiple studies on the effectiveness of distance versus FTF and found that there were no significant differences in subject mastery. However, the students preferred FTF to videoconferencing (Alavi, Yoo, &

Vogel, 1997). In his 1994 study distance-supported groups expressed higher levels of perceived skill development than FTF groups. Thus, the integration of technology with FTF appeared to be a winning combination for the learners. Alvai and colleagues (1997) have also found no difference in students' knowledge acquisition and satisfaction with process as well as learning outcomes between distance synchronous, distance asynchronous, and FTF. The researchers did observe that the distance asynchronous participants had higher critical thinking skills and were more engaged in the process than the other two groups.

Olaniran, Savage, & Sorenson (1996) studied the contrast of face-to-face (FTF) with online in-group discussion. They discovered greater participation in the online group discussions and the versatility of asynchronous communication. Students could enter the discussion at different times and from different locations. The researchers also found that participants in the online discussion could get overly critical of others ideas it was much more time consuming than FTF, and required training to work properly. The result of the study was FTF was preferred over online for group discussions.

Althaus (1997) looked at supplementing FTF with online discussion to enhance academic performance. He found that computer-mediated discussions (CMD) could provide a unique enhancement to tradition FTF classroom discussions. The advantages being CMD is place independent, time independent, and more open for participants to join in the discussions. In other words, students do not have to meet physically at the same time and therefore feel less inhibited to share in the discussions. The disadvantages that surfaced in this study was that CMD took more time than FTF, more training was required because at times the students were confused by the system, network problems occurred, access to computers was limited, and some felt forced to

participate in discussions. The final results of the study showed that the use of online in conjunction with FTF discussions created the successful integration of technology. It is important to note that the researcher was unclear if it was the FTF or online discussions that improved performance.

LaRose, Gregg & Eastin (1998) analyzed a Web telecourse versus the traditional classroom method and found no difference between student test scores or perceptions. The Web course used pre-recorded audio classroom interactions with a detailed course outline. The study showed that teacher immediacy ratings were also the same for both methods, which could be a possible result of using audio with the usual text-only Web course. This study was a tightly controlled experimental analysis that concretely showed the effects of technology in a college classroom. There were a few weaknesses to the teacher immediacy claim in the follow-up student interviews, which stated that the Web lectures were difficult to concentrate on because students did not have eye contact with their instructor. Further, different instructors taught the control and treatment groups and did not adopt the same teaching style, which could have affected the results of the study.

Another researcher that has had an impact on the use of technology in college classrooms is Joseph Walther and his studies on creating interpersonal relationships online. According to Walther (1996) technology is not impersonal when the sender desires to shape a message to create an effect. He finds online is “no less personal than FTF” (p. 33). In fact, he believes technology has helped people to find focus in interpersonal communication by eliminating the “interference of environmental reality” (1996, p. 33). On the other hand, Walther’s work also points out that “Computer-Mediated Communication takes too long and/or users become less

able to reach agreement” (p. 33), and can be impersonal by design. According to Walther & Bunz, technology requires time to exchange information, to build impressions, and compare values just as FTF does in order to be interpersonal in nature (2005). If one of these areas is compromised then the communication process has been altered. For example, an instructor of an online course with fifty students must build impressions of each individual student through email and chat rooms. This is virtually impossible with the amount of time required to build an interpersonal relationship online. Thus, colleges moving towards pre-packaged material created by a few master teachers to meet the need for online courses could easily lack interpersonal relationships. It appears from Walther’s, and his colleagues, studies (1992, 1996, 2001, & 2005) that the use of technology in communication must be interpersonal in nature to be successful. Therefore, it’s logical that communicating using online technology in education requires the same need for interpersonal relationships if the integration of technology into college classrooms is going to be successful.

Haythornthwaite, Kazmer, Robins, & Shoemaker (2000) study supports Walther observations by showing that strong bonds can be formed in an online community as long as enough time has been provided. Their study looked at a group of students enrolled in a computer-supported distance-learning program and found that belonging to a community brought benefits to the individuals and to the program. However, the community started in the physical realm when the group met in an on-campus “boot camp” which set them up for the program. There was increased use of email, chat rooms and socializing by the group. This study supports that a sense of community aids students in learning when using technology, but also displays the importance of starting that bond by meeting in person.

Guzley, Avanzino, & Bor (2001) analyzed two-way synchronous audio/visual communication in the classroom and found the students were motivated and very satisfied with this mode of instruction. The course that was used was a media aesthetic class and the students were undergraduates with varied knowledge of technology. This study appears to support the concept that the more senses engaged in the online instruction process the more satisfying the experience for the students. In addition, the students met at various sites and had face-to-face interaction with a facilitator and fellow students. The strength of this study is it displays many successful techniques for using technology in the classroom, but most online instruction takes place with little or no FTF encounters.

There have also been several distance learning studies (Merisotis, & Phipps, 1999; Visser, 2000; DiBase, 2000; Muilenburg, & Berge, 2001; Bunz, 2003; Stewart, Hong, & Strudler, 2004; Kent, 2007; Gaytan & McEwen, 2007), which discuss the roll of the instructor in the integration of technology into a college classroom. Visser (2000) found that instructors spend much more time on a distance course, while DiBase (2000) found the exact opposite. He discovered that instructors of distance education courses spend less time preparing and teaching an online class than on a traditional course. DiBase also observed that the online class required “more frequent attention.” However, both studies are ethnographic analysis of their own classes and could display researcher bias.

A large scale study conducted by Lin Muilenburg and Zane L. Berge (2001), found ten factors which were barriers to distance education such as: administrative structure, organizational change, technical expertise, social interaction and quality, faculty compensation and time, threat of technology, legal issues, evaluation/effectiveness, access, and student-support services. These

various factors play a large role in why and how technology is being integrated into the college classroom and may explain why technology succeeds or fails. How the administration integrates technology into classes does matter. Will courses be add-ons or core classes? How do you pay the instructors? How do you bring the instructors and students up to speed on the technology? Who owns the intellectual property of the course content? Many universities are struggling with these issues, but the model that appears to be emerging is students want online classes, colleges make money off the classes with low overhead therefore, colleges offer as many online classes as possible with little attention to quality of content (Garrison & Cleveland-Innes, 2005; Zhang, 2005). They hire a few instructional designers for the entire faculty and offer overload pay to professors to teach the online classes and obtain a contract with Blackboard or eCollege platforms to offer the content. Sometimes the universities make contracts with companies to create the entire content and bypass the instructor all together. The result is many text-based online college courses with high attrition rates (Machtmes & Asher, 2000; Muse, 2003; Dupin-Bryant, 2004) that still make money for the colleges because it cuts down on need for facilities (Croy, 1998).

According to many studies, it appears for every advantage that technology supplies to the college classroom there is an equal, if not daunting, disadvantage that accompanies it (Merisotis, & Phipps, 1999; Visser, 2000; DiBase, 2000; Muilenburg, & Berge, 2001; Bunz, 2003; Stewart, Hong, & Strudler, 2004; Kent, 2007; Gaytan & McEwen, 2007). Study after study since the 1980's shows a pattern of problems that continue to arise when technology is integrated into college classrooms. As Smeltzer (1986) found, technology reduces communication anxiety, while Baumgarte (1984) uncovered students struggling to overcome their own computer-related

anxieties with technology. Coombs (1993) and Guzley, Avanzino, & Bor (2001) studies showed perceptions of learning improved with technology, then Lawler (1995), Witmer (1998), and Easton (2003) found that the language of computers are impenetrable to many new users. McComb (1994), Shedletsky (1993), & Wellman (1999), studies displayed how technology took students beyond the walls of the classroom, meanwhile; Muilenburg, & Berge (2001), Bunz, (2003); Kelsey & D'Souza (2004), Bunz, (2006) reported that some students are reluctant to participate because they see technology as extra work not related to the learning situation. Pamela Dupin-Bryant's (2004) study found that student success is linked to preparation before taking online courses such as tech training and grade point average. In addition to students who are better prepared other studies on technology are reporting that more audio and video need to be used to achieve better student performance (Zhang, 2005; Choi, & Johnson, 2005).

Finally a recent study by Jorge Gaytan and Beryl McEwen (2007) analyzed effective online strategies and found that using a variety of instructional methods appeal to different learning styles. This study surveyed over nineteen hundred students and eighty-five faculty from two southern universities and also reported that "an interactive and cohesive learning environment" with immediate feedback was the key to successful online classes (p. 117). This is a recent study that can be found in the American Journal of Distance Education a highly respected academic periodical. These findings can also be attributed to success in the traditional classroom. Most of the research in this area shows that using technology can improve the learning process, but many of the studies are in need of rigorous methodology and better sample selection.

All these studies address the integration of technology into the learning process and many have helped set the agenda for technology in college level classrooms. However, many of the studies on this area have been in the “form of opinion pieces, how-to-articles, and secondhand reports” (Merisotis, 1999, p. 48). The rest have been case studies with few and far between experimental studies with tight controls on variables or random selection of samples (Wells, 1990, Berge, & Mrozowski, 2001; Muse, 2003; Lee, Driscoll & Nelson, 2004). It is increasingly difficult to find studies with concrete answers to such research questions, as “How does online education affect student learning, who decides which courses to offer, the faculty, or the administration? etc.” According to Wendi A. Maloney (1999), “Because much of the information we have on Web based instruction is anecdotal, it is impossible to answer these questions definitively” (p. 20). Nonetheless, the studies on technology have been cited and used to prove the multiple benefits of using technology in “and the replacing of” traditional college classrooms.

This function of rationalization has intensified the debate over the use of technology in higher education by spurring administrators to increase online course offerings and causing faculties to worry over the long term effects on education as well as the college experience (Maloney, 1999; Muilenburg, & Berge, 2001; Muse, 2003; Lee, Driscoll & Nelson, 2004; Bunz, 2006). Administrators may see dollar signs and larger enrollments in online classrooms, but faculties see the quality of education eroding (Young, 1997, p. A26). As Andrew Feenberg, an early online innovator, observed, “The dream of automating the educational process has failed so often in the past that we have little reason to take it seriously in this, nth round” (1999, p. 31). Therefore, it is evident that rigorous experimental studies need to be conducted on technology in college classrooms to concretely prove the benefits of using technology in higher education as

well as support or disprove past studies. As the field of online instruction continues to evolve there is much to be learned from the trends being set by these past studies. By analyzing the current trends in technology research, improvements can be made for future studies and successful integration of technology into college classrooms could also increase.

Methodology

This study examined approximately twenty years of research articles that analyzed the use or uses of technology in college classrooms. Some of the journals selected for this study include, but were not limited to: American Journal of Distance Education, Journal of Computer-Mediated Communication, Communication Education, Educational Researcher, The Journal of Literacy and Technology, and the Internet and Higher Education Journal. These journals were chosen because of their recognition by the major researchers in the fields of communication, distance learning, and communication technology. Once the studies dealing with the use or uses of technology in college courses were identified, the articles were analyzed for positive and negative trends. Positive trends were identified as aiding in the learning outcome process and negative trends were identified as impeding the learning outcome process. The classification was based on the methodology used in Merisotis and Phipps (1999), and Khan (1997).

Positive Trends

A pattern of successful elements in the integration of online technology in college level classrooms emerges from studies on technology. The most obvious element is using technology as a supplement to FTF instruction, which increases class participation, student motivation, and can free students normally limited by the traditional classroom setting (Althaus,

1997; Hiltz, 1986, 1994, 1997; Witmer 1998; Merisotis, & Phipps, 1999; Guzley, Avanzino, & Bor, 2001; Stewart, Hong, & Strudler, 2004; Bunz, 2006). The use of online technology can bring people together that was not humanly possible in the traditional FTF classroom (Benbunan-Fich & Hiltz, 1999; Kent, 2007). Students can share ideas with the click of a button from across the world. Technology releases the student and instructor from having to meet face-to-face. Many of the studies discussed found that students had more access to an instructor through the use of technology and instructors reported increased participation in discussions (Wells, 1990; Shedletsky, 1993, DiBase, 2000; Kelsey & D'Souza, 2004; Zhang, 2005). As society continues to move at a faster pace and people need to access education more easily, technology is becoming more available. Technology allows students to access course information from any location and whenever they have the time (Benbunan-Fich & Hiltz, 1999, Lara, Howell, Dominquez, & Navarro, 2001; Walther & Bunz, 2005). It is cutting down on travel time to college campuses and increasing participation opportunity (Wells, 1990; Matthews, 1999, Kelsey, 2000; Stewart, Hong & Strudler, 2004; Bunz, 2006). As an educational tool, technology has helped improve collaborative learning opportunities and create active learning environments (Hiltz, 1994, p. 14). In addition, the availability of resources has become unlimited (Rowland, 1994; Gaytan & McEwen, 2007). However, these positive trends that have set the standard for offering courses with or entirely through technology are consistently accompanied by problems that need to be eliminated if technology is to become a truly successful educational tool.

Negative Trends

A pattern of problematic elements in the integration of new technologies in college level classrooms also emerges from studies on technology. The most common problem encountered by students and teachers using technology is it takes more time for both students and teachers than traditional FTF instruction (Hsu, Marques, Hamza, & Alhalabi, 1999; Visser, 2000; Muse, 2003; Bunz, 2006). According to Althaus (1997), it took students an average of sixty-six minutes to participate in an online session as opposed to a traditional classroom session of fifty minutes. Instructors put in anywhere from one to three hundred hours to develop an online course (Hiltz & Wellman, 1997; Moore, 2000; Bunz, 2006) and then countless hours replying individually to each student's questions through email, not to mention online class discussions. Instructors of online technology put in many hours that are not necessarily required for FTF and yet, in all the studies surveyed for this analysis no exact time was ever discussed or measured. However, many of the case studies mention various activities the instructor must engage in to properly utilize technology. Obviously there is a need to measure and account for the time an instructor as well as a student uses technology for learning situations. Surveys with anecdotal information usually reported that instructors and students spent more time in courses involving technology than in the usual FTF courses (Smith, 1994; Althaus 1997; Witmer, 1998; Visser, 2000; Easton, 2003; Muse, 2003; Gaytan & McEwen, 2007). FTF may be time dependent, however it does not appear to be as time consuming as using technology online.

Another problem plaguing online technology is it requires certain knowledge of computers and training to properly utilize it. Several of the studies discussed encountered difficulties presenting the subject matter when technology training was limited or nonexistent (Hiltz, 1986; Smith, 1994; Muilenburg, & Berge, 2001; Muse, 2003; Stewart, Hong & Strudler,

2004; Dupin-Bryant, 2004). Students became frustrated and confused but eventually got to know and utilize the technology (Smith, 1994; Benbunan-Fich & Hiltz, 1999; Muse, 2003; Garrison & Cleveland-Innes, 2005). If this trend continues it could turn some students off from engaging in online technology courses. In addition, hardware/software glitches are a continual difficulty when using technology in college courses. Networks break down, phone lines get overloaded, and servers can be over extended even if a college campus is correctly equipped to offer online technology. Indeed, these breakdowns occur regularly (Hall, 1995; Matthews, 1999; Kelsey, 2000; Muse 2003; Gaytan & McEwen, 2007). This problem is not just online, but extends too many classrooms, which are not multimedia ready and hinder the use of new technologies in college courses (Saunders, 1997; Bunz, 2006). Labs and classrooms equipped and supported are needed if technology is to be successfully integrated into college courses (Althaus 1997, Hiltz, 1986, 1990; Deden, 1998; Moore, 2001; Bunz, 2006). These hardware and software problems could lead to increased Computer anxiety. Some studies state that the use of technology helps reduce computer anxiety (Hiltz, 1994; Hiltz & Wellman, 1997; Wellman, 1999; Gaytan & McEwen, 2007). While other studies observed that anxiety could be increased to the point of becoming a barrier to learning (Hua, 1996; Muilenburg, & Berge, 2001; Easton, 2003; Dupin-Bryant, 2004). This issue must be addressed in the integration of technology into the classroom or in many cases student learning could be lost instead of gained.

As Hiltz has stated throughout her many studies on the virtual classroom, a chronic problem with online technology is information overload (Althaus, 1997; Hiltz, 1986, 1994; Hiltz & Wellman, 1997; Witmer 1998; Easton, 2003; Bunz, 2006). Hiltz found that it could be dealt with by keeping class size limited and assignments focused. The potential for

information overload will most likely stay around even in the best of technology settings. It is imperative that practitioners of online technology keep this in mind and work at creating a positive atmosphere with the exchange of specific information. As bandwidth continues to increase and digital information can include more audio-visual media, online courses should limit the text-oriented format and replace it with more podcasting, video and audio content (Choi & Johnson, 2005; Zhang, 2005). In addition to overload problems, some amount of training on the technology system is required leaving less time for subject matter. There are students at various levels of computer literacy and need to train these students on the technology systems being used in different college courses. This can take time out of the normal class lesson plan (Hiltz, 1994; Hiltz & Wellman, 1997; Althaus, 1997; Muilenburg, & Berge, 2001; Dupin-Bryant, 2004). The idea is that once students are trained on the systems technical training will become less of a time constraint, but it continues to be an issue in 2008.

Another negative trend of online education is the high dropout rates (Wells, 1990; Machtmes & Asher, 2000; Muse, 2003; Bunz, 2006) of traditional students. Further, the majority of online students tend to be older. It is a positive trend that this particular demographic is being served. Many of the studies have been conducted on non-traditional students who have higher motivation levels and require less hands-on learning (Feenberg, 1999; Avanzino & Bor, 2001; Muse, 2003; Gaytan & McEwen, 2007). If a study has been conducted with traditional students and been successful the students are usually highly technical in nature (Benbunan-Fich & Hiltz, 1999; Lim, 2001; Stewart, Hong & Strudler, 2004; Dupin-Bryant, 2004). While, the other studies (Smith, 1994; Alavi, 1994; Althaus, 1997; LaRose, Gregg & Eastin, 1998; Kelsey, 2000; Easton, 2003; Muse, 2003; Bunz, 2006) used average college level students, their findings display some

dissatisfaction with technology. For example, (Hiltz & Wellman 1997) found the virtual classroom to be supportive, only 33% of the virtual classroom students developed new friendships, while the majority of traditional students made new friends. Traditional students tend to need more motivation, while non-traditional students are more self-motivated and more suited to pure distance courses (Wells, 1990; Hiltz, 1994, Muse, 2003; Bunz, 2006). Nonetheless, distance learning courses are being uniformly offered to both demographics with little or no changes made to content (Merisotis, 1999; Stewart, Hong & Strudler, 2004). This could explain the high dropout rate among traditional students (Machtmes, & Asher, 2000; Muse, 2003; Dupin-Bryant, 2004).

In addition to attrition rates, there is a concern over the credibility of using technology in college classrooms. According to several studies, online students are not always who they say they are (Maloney, 1999; Bunz, 2006; Gaytan & McEwen, 2007)? In a pure online classroom where the instructor never physically meets with students there is a strong possibility of students taking courses for each other or paying someone else to do the work. This is a major disadvantage of online education. Technology may release the student and instructor from time constraints but at what costs? Some in the field of distance learning do not see this as a problem, but it has plagued distance learning from its inception and cannot be summarily dismissed by practitioners of online technology. This has also been a problem in large FTF lectures and will continue to be a larger problem in online courses (Hall, 1995; Maloney, 1999; Muilenburg, & Berge, 2001, Bunz, 2006). The use of technology as a supplement to traditional classrooms helps limit this disadvantage by letting the instructor identify a face with the work.

The practice of integrating technology in college classrooms is increasing as fast as the technology that makes it possible. Multiple studies (Kelsey, 2000; Berge, & Mrozowski, 2001; Muilenburg, & Berge, 2001; Stewart, Hong, & Strudler, 2004; Bunz, 2006; Gaytan & McEwen, 2007) have been conducted looking at the advantages and disadvantages of using this technology in place of traditional classrooms. There have been many benefits to using technology in higher education but along with the benefits have come chronic problems that plague the use of technology. Technology frees students and teachers from time and space as well as gives them access to unlimited resources. On the other hand, the technology infrastructure is not up to speed and highly susceptible to breaking down hindering the learning process as well as possibly increasing computer anxiety, the amount of time spent on a course, and information overload. These problems need to be addressed and empirically studied to effectively integrate technology into college classrooms. It is not enough to just utilize the technology, instructors must learn to successfully adapt the technology to the content. As Diane Witmer observed, the ultimate purpose of using technology in education is to enhance learning (1998, p. 164).

Conclusion

Presently, a spatially shared learning experience in a traditional classroom is difficult to reproduce even using several "new technologies." Teacher immediacy (verbal and nonverbal cues) has proven to motivate and successfully engage students and losing an element of the immediacy such as nonverbal cues can greatly alter the success of learning (Frymier, & Shulman, 1995; Muilenburg, & Berge, 2001; Muse, 2003; Bunz, 2006). For example, chat rooms, discussion groups, instant messaging and even Web conferencing create quite a different shared learning experience (Walther, 1996; Merisotis, & Phipps, 1999; Haythornthwaite,

Kazmer, Robins, & Shoemaker, 2000; Walther & Bunz, 2005; Zhang, 2005) and can make it more difficult for the students to understand all the instructor is communicating to them. A combination of both environments produces an ideal setting for many learners and maintains the ever-important human touch in the learning process (Althaus, 1997 & 1998; Guzley, Avanzino, & Bor, 2001; Stewart, Hong, & Strudler, 2004; Kent, 2007).

A survey on students and information technology by Robert Kvavik and Judith Caruso found that students are demanding greater use of technology in teaching and learning (2005). However, these same students prefer the technology integrated into their courses to a moderate degree and that they view technology in the classroom as supplemental not transformational. This study took a sample of over one hundred and forty thousand undergraduates at sixty-three higher education institutions in twenty-four states with over eighteen thousand student responses. According to the findings, today's students use their cell phones more than any other technology and look at technology for convenience and to make it easy to connect to others. They spend a lot of time online and "technology permeates all aspects of student life, but its use as a tool has become paramount" (Kvavik & Caruso, 2005, 6).

These findings parallel the analysis of the positive and negative trends taking place in the studies analyzing the use of technology in online instruction. It is a tool to be utilized for learning, but to be successful several key factors need to be present. There must be: student motivation, student-teacher interaction, prompt feedback, student and faculty technology training as well as support, and student-student interaction (Garrison & Cleveland-Innes, 2005). Perhaps, the most basic feature needed and often neglected in online courses is good website design and navigation, which uses multiple media including sound, video and graphics not just text (Zhang,

2005; Choi & Johnson, 2005). There is no question that online college courses are necessary and can be very valuable, but more studies are needed to look at what works and what does not work and these studies must be more rigorous. The case studies and qualitative analysis have been helpful, but more experimental research on integrating the successful strategies already identified in earlier studies is necessary. Without more systematic studies, there can be no literacy when it comes to successfully using technology in education. New technologies are tools that should be used to help instructors motivate and prepare students for the future, not instruments that create walls between human beings. It is often said that this technology tears down the walls that block communication, a major concern of the education field should be "What's left standing when the wrecking ball is still" (Layng & Rosner, 2004).

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