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Educational Technology: Bridging the Gap Between Youth and Adult Learners of the 21st Century

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Abstract: 21st Century learners require activities that move beyond the traditional teacher-centered transmission model of education. This speculative essay considers education through an emphasis on collaboration, cooperation, and communication. This focus holds the capacity to bridge K-12 learning theories with those of Adult Education through the effective integration of educational technology.

Cahill (2014) discusses the manner in which educational technology, in the form of electronic education, has improved both the access and quality of adult education. These attributes provide innovative avenues for the circumvention of established barriers associated with higher learning. Further, the integration of educational technologies present learners with the opportunity to develop essential skills for not only living, but also thriving in the 21st Century (Rosefsky Saavedra & Opfer 2012). These skills, which must be fostered and refined through purposeful design, include communication, collaboration, and cooperation. These are essential for youth and adult learners alike, as a means of autonomously transitioning from passive to active learners within the educational process. The current educational system has the potential to either foster individual creativity through the development of autonomy or reduces that very sense of individuality leading to conformity.

Raz (1986) advances the idea that the autonomous person will lead a more robust life, simply by exercising control over his or her destiny. This holds true for either the adult or the youth learner. Bruner (1996) describes the very purpose of education as enabling “individual human beings to operate at their fullest potential” (p. 67), through the equipment of both skills and the understanding of how best to apply those skills. Educational technology allows the learning process to unfold organically through the capacity to organize, synthesize, and demonstrate the acquisition of new knowledge. This self-authoring freedom to drive the learning endeavor allows the individual to critically reflect upon his or her positionality within the educational process resulting in a cognitive response requiring a change in action and self-perception. This approach is unique in that it elicits a strong emotional response that allows the learner to participate extensively through an understanding of the context of his or her values and beliefs within the academic setting (Mezirow, 1991).

Learning in the 21st Century

When discussing adult education in the 21st Century it may be better to consider it as an age of the “relationship revolution”, as opposed to the widely held notion of the “information revolution” (Schrage, 2001, p. 1). By this, the strength of the learning activity is no longer simply limited to the access of basic units of information as in times past; but rather, learners are now provided with the opportunity to develop relationships, via technology, through the direct access to other individuals themselves (Brown & Adler, 2008). This form of active learning, as espoused by Strudler (2010), allows for engagement and must be championed by adult educators for “initiating and sustaining...efforts to integrate technology” (p. 226). Schrage advocates that the true transformative property of technology is centered on the ease at which individuals

communicate with one another, as well as with organizations found within society. Bonk (2009) furthers this sentiment by extolling the benefits of how individuals “can now communicate and learn from one another in a matter of seconds” (p. 7), as this period is perhaps the “most monumental...since [the age of] Plato” (p. 9). This new era of learning has opened the world to “quench our thirsts for knowledge” (p. 12), as the teacher is no longer the source of information and the world of education must come alongside this new frontier.

Through the advances in technology and with the understanding that humanity exists in a relationship rich society, adults of the 21st Century live in a participatory culture, where individuals actively they engage in the world around them with the intention of improving society (Jenkins, 2006). The active participation of all citizens has become a collective concern, and preparing students for this role, as future adult citizens, is of paramount importance. In order for individuals to truly engage, beyond their internal propensity to indulge in the pleasures of these technologies, it would behoove educators to align the educational enterprise in such a way that promotes autonomous and creative thought. Adult educators must seek to develop the digital and visual literacies inherent in the modern age or otherwise risk denying learners the “opportunity to become full participants in our society” (Mores, 2004, p. 267). In this there exists an educational obligation to prepare all learners to reach his or her fullest potential, as salient members of society capable of meeting the demands of both the individual and the community. Brown and Adler (2008) bolster this position in that “if populations are to thrive in the foreseeable future they will increasingly depend on the availability of robust local ecosystems of resources” (p. 17) that cherish creativity and innovation. This sentiment is directly related to the need for society to have authentic, creative, and innovative individuals who can both generate and provide for the distribution of such resources.

The Transformative Power of Educational Technology

According to Trilling and Fadel (2009) in 1991 an extraordinary event occurred in that the world witnessed the passing of the *Industrial Age* and the dawning of the *Knowledge Age*. It would appear that for the first time in human history, more resources were expended on the creation, organization, and transfer of information than applied to industrial goods. The transformation of the global economy rapidly increased, revealing a new need to educate all students, both children and adults, for the 21st Century (Rosefsky Saavedra & Opfer 2012). The traditional “transmission model of education” (p. 9), one of a teacher-centered approach although ubiquitous in the field of education, is simply unable to function in the new highly fluid and complex society of the 21st Century. The educational enterprise must once again focus on the process of learning with a renewed emphasis on collaboration, cooperation, and communication (Wolfe & Flewitt, 2010).

Whether it was the launch of Sputnik in 1957, the literacy crisis of the 1970’s, or the economic struggles of the 1980’s one thing is clear; technology has transformed the way society functions placing the ability to create and manipulate technologies as the ultimate prize. The symbiotic relationship between technology integration and society is also obvious, as one can no longer exist without the other. Lankshear and Knobel (2011) advance the idea that “If we are to *learn deeply*, we need access to the means, contexts, and tasks” (p. 212) that are innate to the very creation of knowledge. According to Jonassen, Carr, and Yueh (1998) educational technology provides that access through offering learners a near limitless potential as “knowledge construction tools” (p. 24), which emphasize the capacity to organize, synthesize, and demonstrate learning. Papert (1973) refines this idea in that simply providing access to a computer or computer software does not equate to meaningful instruction. Rather, instructors

must endeavor to “develop contexts in which the computer can be used by a...[learner] to serve real, personal purposes” (p. 8). In this, the significant contributions of a transformative experience with educational technology integration incorporate both the physical technology as well as the theoretical application for learning. It is in this vein where educators can transcend traditional aims of education and realize, as did Wenger (1998), that it is not “merely formative – it is transformative” (p. 263). Further, educational policy, such as discussed in the National Education Technology Plan 2010 (NETP), is an essential component to recognizing and implementing effective forms of educational technology that serve to enhance the learning process.

However, as a caution Strudler (2010) indicates while the potential exists for educational technology integration to positively influence both learning and instruction, it will remain under the auspice of teacher and administrative pedagogical approaches to ensure appropriate benefits are realized. This realization is the product of educators who understand the ever-present concerns of access, classroom implementation (Koehler & Mishra, 2008), and the evolving literacies of the 21st Century (Lankshear & Knobel, 2011). Only then, can instructors purposefully integrate educational technology that transforms education where students possess the confidence and capability to transfer their 21st Century skills to contexts beyond the classroom (Rosefsky Saavedra & Opfer 2012)

Mason (2006) discusses the strengths of educational technologies that are “appropriate for adult continuing education” (p. 121) as they embrace the flexibility and independence desired by lifelong learners. In recognition of the perpetual evolution of technology within society, developing the essential digital literacies to engage with one another is paramount. This mode of thinking embraces the participatory nature of social learning as offered by Wenger (1998). Students become active participants in learning, driving the experience beyond traditionally held conceptions of the teacher-centered approach. Learning is a holistic process (Jonassen et al., 1994), and must be approached with the recognition that teaching is a craft where outcomes alone do not account for the human aspect. Candy (1991) supports this position in the development of learners who continue to learn beyond the context of the classroom.

Educational Technology

Educational technology, according to Mangal and Mangal (2009) begins by “identifying the most suitable, appropriate and developed technology (both hardware and software) for serving the educational needs and purposes of the students and the society at a particular time and place” (p. 1). Such an understanding incorporates basic designs in the form of audio or visual aides and culminates in advanced web 2.0 learning tools. This understanding emphasizes an evolving and expanding appreciation that as society develops, so too should the manner in which it educates the young.

Consider the 1920's when film was introduced as a new form of educational technology, only to slip into obscurity due to the expense and lack of teacher support (Cuban, 1986). What of the radio of the 1940's or the television of the 1950's, 1960's and 1970's? These forms of media were nothing more than signs of the time, passing away as another would come to take its place. In the 1980's the introduction of the personal computer opened the floodgate for computer-based learning (CBL) with its overly emphasized focus on drill and practice exercises. Even with the introduction of the hardware, Reiser (2001) indicates that it “was having little impact on instruction in the public schools” (p. 62) due to teacher preparedness and buy-in, but the excitement of personal desktop computing was having a noticeable effect in the private sector.

Pedagogy in Educational Technology

Access to educational technologies involve more than simply providing hardware and software products for the purpose of learning, although it is a significant step in the integration process. The reality is that every student must be provided access to technology through the schools in order to develop the necessary skills to live in a world where computer technology occupies nearly every aspect of society. The inability to meet these criteria is tantamount to denying students the ability to engage the world in which they live.

Access is more than physical proximity. It constitutes the capacity at which the instructor utilizes and implements the technology for meaningful instruction (Hall, 2010; Papert, 1973). Hall indicates that the teacher's level of competency and "interest in adopting a new approach" (p. 232) are the most powerful indicators of the successful technology integration. This aspect above all others dramatically influences the success of any new educational endeavor. While there continues to be a dramatic increase in funding that promotes both improved availability and broader exposure to new technologies, there are those who have criticized the investments and have called into question their affects on learning (Clark, 1983).

Critics such as Oppenheimer (2003) and Clark (1983) advance the notion of how each new technology is greeted with overwhelming initial enthusiasm only to be followed up quickly with unrealized potential and eventual dismissal. Clark speculates that this fervor is connected to the "advertising budgets of the multimillion dollar industry" (p. 456) with its conferred interest in selling the new technologies for instruction. This is not unlike the sentiments of Cohen (1987) who espouses the romanticism that existed throughout history between educators and such technological advancements as "books, radio, and film" (p. 153). Further, he extols the near frantic state at which those connected to education have championed each new exciting technology as the answer for the would-be ailing educational system, only to fall by the wayside as a new technology is introduced. Finally, Clark encourages educators and administrators to abandon their initial enthusiasm over such technologies as the assurance of improved learning, and instead focus on how media "offer alternative...[environmental] features" (p. 456) that extend beyond the traditional classroom environment.

The benefits are significant, as noted by Lessig (as cited in Lankshear & Knobel, 2011) as new technologies are literally "changing what it means to be literate". Educators must not neglect the idea that their students live in a digital and visual world. Burmark (2008) anchors this point by drawing attention to a recent Tribune Freedom Museum report wherein 22 percent of U.S. citizens can name each family member of *The Simpsons* and only 1 in 1,000 can recall the 5 freedoms listed in the First Amendment. Educators must avoid attempting to keep up with the rate at which technology evolves; instead, it would serve their purpose to develop an appreciation of the landscape created by these technologies (Koehler & Mishra, 2008a).

According to Wolfe and Flewitt (2010), students of the 21st Century benefit greatly from the inclusion of learning experiences that incorporate the creation and production of multimodal digital activities. This concept is based upon the understanding that literacy is "inherently social" (p. 387) and must be developed in order for individuals to express "everyday needs through words, gestures and action" (p. 387). These pursuits engage learners through familiar digital environments where students often spend time in leisure. Developing multimodal projects serve as educational platforms where students enhance necessary life skills that also perpetuate a society capable of deciphering and communicating via multiple methods. Simply stated, the "ability to read, write and otherwise deal with information using technologies...are [now] essential life skill[s]" and must not be neglected (Lankshear & Knobel, 2008, p. 18). The

ability to comprehend and analyze the nuance of values and beliefs found within the various forms of communication will inherently increase the ability to live and thrive in an ever-evolving community.

Discussion of the Applications of Educational Technology

Currently, 21st Century students are encouraged to continue using 19th Century platforms for organizing and demonstrating knowledge in the form of basic term paper, thus stifling the creativity of learners (Rosefsky Saavedra & Opfer 2012). Continually, students are given instruction on writing a research paper of which they will utilize word processing and possibly the Internet as the only forms of technology. Instead, students would benefit greatly from the use of web 2.0 learning tools to both organize and demonstrate learning through the proper use of identifying and interpreting multiple modes of media (Reiser & Dempsey, 2011). Further, by providing students with the freedom to choose both the platform and the media, students will develop and foster critical independent skills of self-agency and self-regulation, which will serve to enhance skills for learning beyond the scope of the classroom (Candy, 1991).

I contend that effective instruction does not begin with technology, but rather with a clear understanding of best practices for using technology to achieve the desired outcomes and deliverables. It is accomplished through an extensive appreciation of K-12 learning underpinnings combined with adult theories of learning. Like Papert (1973), I acknowledge that instruction does not occur simply by providing access to either hardware or software. Rather, we must cultivate an atmosphere in which technology may be utilized to solve relevant problems. This level of integration occurs as we explore the resistance and unfamiliarity demonstrated by some faculty and staff through buy-in, training, and practice. Our active students demand that instruction maintain pace with these advancements, and I believe that it is our responsibility to introduce, implement, and evaluate educational technologies, rooted in pedagogical studies, that will serve the needs of all stakeholders.

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