CLOSING THE ACHIEVEMENT GAP WITH CULTURALLY RELEVANT TECHNOLOGY-BASED LEARNING ENVIRONMENTS

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The most significant educational problem of our time has been the achievement gap. The author discusses the need for the field of educational technology to join in the social movement to close this gap. He provides background on the significance of incorporating culture throughout the design and development of technology-based learning environments.

Introduction
In Gloria Ladson-Billings’s 2006 presidential address to the members of the American Educational Research Association, she stated: “The questions that plague me about education research are not new ones. I am concerned about the meaning of our work for the larger public—for real students, teachers, administrators, parents, policymakers, and communities in real school settings” (p. 3). As I sat in the audience listening to her words, my initial thoughts were whether the field of educational technology has created meaningful learning experiences for minority students, and specifically for students of color.

According to Mayer (2009), there are two important paths toward fostering meaningful learning: (1) reduce cognitive load, and (2) increase learner interest.

Increasing learner interest allows the learner to use the available cognitive capacity for deep processing for meaningful learning. The question then becomes, how does one increase learner interest? The answer may be to create opportunities for high levels of student engagement. Newmann (1992) defines student engagement as: "...the student's psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote" (p. 12).

A report by the National Research Council Institute of Medicine (2004) suggested that student engagement is critical to academic achievement for students of color. In order to increase the academic achievement of these students, the field of educational technology has to consider the culture in which a student participates in order to design effective instruction that promotes student engagement.

Several years ago, colleagues and I published an article in Tech Trends that offered guidance specifically to instructional designers on how to begin to incorporate culture throughout the ISD process (Thomas, Mitchell, & Joseph, 2002). We argued that the field of educational technology had to begin to consider culture throughout the design process. Historically, however, the field of educational technology has been culturally neutral.

Background
Culture-based instruction is critical to the academic achievement of all students. Many classroom interventions have been implemented and studied over the years in an attempt to close the achievement gap.

For example, sociolinguists have argued that if a students’ home language (i.e., African-American English Vernacular—AAEV—or Arabic, French, Haitian Creole, Spanish, etc.) is incorporated into the design of instruction, then students will have a better opportunity to succeed academically (Delphit, 1995; Lee, 2003). The current president of the American Educational Research Association, Carol Lee, has been at the forefront in the research on incorporating AAEV into the design of instruction (Lee, 1995, 2002, 2003).

This strand of work stems from the body of research on culture mismatch that links what goes on in students’ homes to school (Irvine, 2003). Multicultural educational researchers have attempted to close the achievement gap by helping teachers to design instruction that is culturally responsive (Gay, 2000), culturally relevant (Ladson-Billings, 1994), and multicultural (Banks & Banks, 2004).

With the pressure on school districts to meet the federal requirements under the No Child Left Behind Act,
particularly in largely minority communities, educational technology is not being used to create enough in the way of meaningful learning experiences. Instead, some minority districts are likely to purchase "drill and practice" software that emphasize rote memorization and relatively lower-order thinking skills. However, in more affluent and largely White communities, it is more likely that technology is used to develop higher-order thinking skills (Joseph & Munn-Joseph, 2008). As a consequence, these circumstances are "reinforcing the current inequities in opportunities to learn, unintentionally widening the achievement gap" (Lee, 2003, p. 58).

Why Design for Particular Cultural Groups?
Designing for particular cultural groups may be viewed as going against the grain of the field of educational technology. Some have critiqued the idea as being inefficient and cumbersome, and that it is impossible to design for all cultures that exist in the schools in America. The major argument, however, for culturally relevant interventions is grounded in the cognitive learning sciences. The argument is, by making instruction culturally relevant and responsive, the instructor is tapping into students’ prior knowledge of their culture. By tapping into this prior knowledge, we can link that knowledge to new material, which should help students learn better. The student will not have to use as much available cognitive capacity as another student whose prior knowledge has not been tapped into.

Helping students engage with their prior knowledge will increase the likelihood that they will be interested and motivated in learning the content (Lee, 1995). Increasing student interest and motivation is another key argument for designing culturally based learning environments.

The argument is that if you incorporate cultural elements in the design of instruction, that are interesting and motivating to students, they will more likely spend more time working on the material, just as students are attracted to and spend time playing video games (Gee, 2003; Squire, 2007). This seems like a reasonable argument; however, it has not gained much traction in the field of instructional design within educational technology.

Gaining Insight from Related Fields
Researchers in the fields of communication and media, educational psychology, psychometric testing, and reading have been experimenting on ways to utilize culture to motivate, persuade, and improve learning.

Research in communication and media has provided some important insights for targeting and gaining the interest of specific cultural groups. The major goal of communication and media research is to identify cost-effective methods of marketing products to specific populations with a message that will persuade the target audience to go out and purchase a product. According to Appiah (2001), historically, advertisers, for example, have not used Black characters in advertisements for fear that the characters would offend White consumers and adversely affect total sales.

If, though, we focus on Black youth, Appiah states that "the most effective way to reach Black adolescents may be through the use of Black characters in ads" (p. 29). Appiah also believes that incorporating cultural cues within an ad can make it more effective. Appiah defines cultural cues as the ethics, traditions, rituals, symbols, values, material objects, and services produced or valued by specific cultural groups.

Where appropriate, designers should develop characters that the user can identify with, and incorporate cultural cues that will be valued by the target users’ culture.

Research in educational psychology is providing additional empirical evidence that support the idea of incorporating social and cultural cues in multimedia learning environments. Mayer (2009) has conducted several experiments that incorporate cultural cues in multimedia learning. Reading research has provided some direction for incorporating culture into learning environments.

For example, Brooks (2006) analyzed the text of three African-American children’s novels for cultural elements specific to African-Americans. She found three general features that are important considerations for designing culturally based learning environments: (1) recurring themes, (2) linguistic patterns, and (3) ethnic group practices. Every cultural group has its own set of recurring themes, linguistic patterns and ethnic group practices that are rooted in their lived experiences. Where appropriate, designers of learning environments should study and incorporate these cultural elements or cues within the entire design process.

Research by Freedle (2003) highlights the importance as well of taking into consideration learners’ cultural background when designing test items.

Final Thoughts
Some research is being done on the design of culturally relevant learning environments. Researchers in the field of instructional design have begun to provide guidelines and models for incorporating
culture throughout the design process (Branch, 1997; Subramony, 2004; Thomas, Mitchell, & Joseph, 2002; Young, 2008a, 2008b).

This is an area of study that deserves more attention from instructional and educational technology researchers and practitioners. In addition to models, a theory is needed to guide the research and development of culturally relevant technology-based learning environments. Sociocultural theory seems the most appropriate for this genre of research and development.

According to Nasir and Hand (2006), researchers and designers who adopt a sociocultural perspective are able to study and understand how students learn, by focusing on how they “participate in particular activities, and how they draw on artifacts, tools, and social others to solve local problems” (p. 450).

As a field that has a focus on developing scholars and practitioners in the art of the design and development of learning environments, there is a real need to be a part of a larger social movement to help close the current achievement gap between majority and some minority learners.

Designers should be knowledgeable in creating culturally sensitive and meaningful learning experiences for all students. Let us not stand on the sidelines and think that someone else will solve the problem.

Let us tackle the problem and be leaders at the forefront of trying to solve the problem of the achievement gap.

References


