Culture as Customization: HCI, Cultural Relevance, and Learning Technology

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Abstract
This paper discusses three pivotal publications from the 1980s to provide a point of departure for the design and production of the next generation of Culturally Relevant Learning Technology.

Keywords
Children, Design, Culture, Learning, Technology

ACM Classification Keywords
K.3.1 Computer Uses in Education

General Terms
HCI, Children, Design, Learning, Technology, Culture

Introduction

New technologies bring with them new modes of interaction and information sharing. The internet and mobile devices of all sizes provide great examples of the ability to access and interact with information anywhere, at any time. These particular technologies have been explored by human-computer interaction and education researchers and practitioners to identify their potential use in the delivery of learning gains in schools across the world. Regarding teaching and learning, research literature suggests these technologies bring with them a range of beneficial

technologies, from multimodal information presentation to automated intelligent instruction, tutoring, and support. Nonetheless, the fact is, students learn with or without these technologies. What is of great significance in most countries is, to what extent students learn in formal academic settings and the degree to which that learning is measured on standardized tests.

The Achievement Gap & Cultural Relevance

For decades, the United States has measured and maintained an *academic achievement gap* – a gap between standardized test scores made by minority students (African-American also known as Black) and those of their White counterparts. Throughout this time, theorists have posited a variety of deterministic influences to explain this gap and the low academic achievement of some African-Americans and other minorities. These theories have matriculated from genetics in the 1960s, cultural deprivation/deficiency in the 1970s, and cultural and learning style differences in the 1980s, [3].

While some of these theories have been discounted, others have held their ground in several research communities. Within the past decade, education and psychology studies show that understanding a student's culture and emphasizing that culture throughout classroom instruction does more than balances the cultural and learning style differences found between a student's home/community and his/her classroom (since more than 90% of American teachers are White) [1], students who are recipients of culturally relevant instruction perform better than when this environment is not present [5]. Placing value on the cultural norms, beliefs, values, and practices of minority students within classrooms and emphasizing these characteristics throughout classroom instruction can be summarized as *culturally relevant pedagogy*.

figure 1. 'Say Say Oh Playmate' Culturally Relevant Reading Software by Pinkard, [6].

Cultural Relevance in Learning Technology

Over the past two decades, many researchers have combined culturally relevant pedagogy and the design of learning technology to produce student gains [5]. Figure one shows a screenshot from Pinkard's 'Say Say Oh Playmate,' culturally relevant instructional software used to teach reading skills by using typical hand-clapping routines familiar to African-American girls. Students who used the software experienced gains in vocabulary knowledge, word comprehension, and greater motivation to complete tasks. Pinkard [6] asserts these gains were due to student motivation and engagement in this technology because it builds on the students' knowledge and cultural experiences. This along with other tools like it, including Eglash's Culturally Situated Design Tools like 'The Virtual Bead Loom' [4], which connects contemporary Native American culture, traditional heritage and standard

math curriculum, to create a virtual bead matrix (figure 2), relate classroom material to the culture of the students using them producing better academic achievement, motivation, and self-confidence.

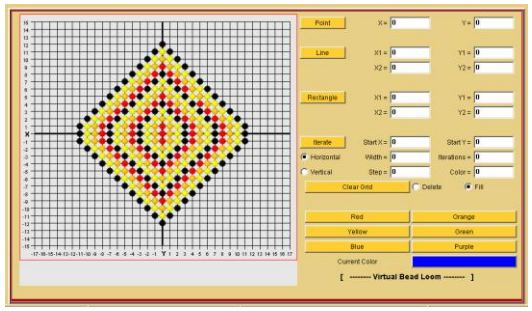

figure 2. 'The Virtual Bead Loom' Culturally Situated Design Tools by Eglash [4].

Next Gen: Culturally Relevant Learning Technology

These software tools provide a great point of departure for research in the field of culturally relevant learning technology and are what the author refers to as the field's first generation of these culturally relevant learning tools. These tools do well in representing a student's culture as it relates to their visual appeal and content. However, new technologies, such as mobile devices, tablets, and social networks and the interaction styles and collaborative nature they afford make room for new possibilities.

Specifically, when considering the academic achievement gap and the low academic performance of some African-American students, the author desires to push the envelope even further and suggests researchers and practitioners conduct deeper exploration of students' culture and marry their findings with new technologies and the affordances they bring with them. To aid in this exploration, a deeper investigation within the theories mentioned above used to explain the low academic performance of some African-American students uncovers three significant and extremely pivotal publications filled with design potential: **1)** Janice Hale-Benson's 1986 book, *Black Children: Their Roots, Culture, and Learning Styles*; **2)** Barbara J. Shade's 1982 article, *"Afro-American Cognitive Styles: A Variable in School Success?"*; and **3)** A. Wade Boykin's 1986 chapter, "*The Triple Quandary and the Schooling of Afro-American Children*."

The material in these publications highlights the resilience, learning preferences, and ideal environments conducive to high African-American student academic achievement. The author posits that, when combined with current human-computer interaction design principles, the cultural characteristics and environments described in these publications can produce the next generation of culturally relevant learning technology. For example, using elements of what Boykins describes as the *Black Cultural Ethos* (BCE), described below, learning technology for African-American students can go beyond resembling visual representations and familiar content and can span into modes of interaction with content, material and technology in ways that promote creativity, self-expression, and effective collaborative learning environments like none seen to-date.

The Black Cultural Ethos (BCE)

The Black Cultural Ethos (BCE) is a derivation of West African beliefs, values and traditions and characterizes

the way many African-Americans perceive, interpret and interact with the world. Boykins (1986) described the Black Cultural Ethos with the following nine elements:

- **Spirituality**: conducting one's life intuitively as though governed by supreme forces.
- **Harmony**: emphasizing versatility and wholeness.
- **Movement**: interweaving the ideas of rhythm often associated with music and dance into everyday life.
- **Verve**: preferring intense stimulation and action that are variable and colorful.
- **Affect**: placing a premium on feelings, emphasizing a special sensitivity to emotional cues, and cultivating emotional expression.
- **Communalism**: committing to the interdependence of people and to connectedness that esteems social bonds and responsibilities over individual privileges.
- **Expressive Individualism**: cultivating a distinct personality and a proclivity for spontaneous, genuine personal expression.
- **Orality**: emphasizing oral and aural (i.e. use of sound in an out-of- the-ordinary way) modes of communication.
- **Social perspective of time**: viewing time as a social phenomenon marked by human interaction and by the event shared by others.

Customized Instruction

Culturally Relevant Learning Technology is one form of customized instruction delivered to its students. Many research studies show their benefit in the learning gains experienced by the students who use them. The new modes of interaction and instruction that can come from combining current human-computer interaction design principles with more substantial elements of students culture provides promise for all learning environments, both formal and informal.

Concluding Reflection

The author shares and recommends the three publications mentioned above as crucial points of departure for designing and producing the next generation of Culturally Relevant Learning Technology and has already begun to use the content within them for future design and research studies.

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