Computer-Based Technology for Special and Multicultural Education

Enhancing 21st-Century Learning

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Preface

The use of computer-based technology in educational environments has increased very rapidly since the turn of the 21st century. In fact, we would argue that the advancement of this technology has outpaced a sound understanding, by many educators, to use it in consistent, effective, and efficient ways. Moreover, this technology has certainly outpaced researchers' efforts to establish a deep body of literature to validate many of the options that are available to implement with students. Even with this being the case, many schools and educators use computer-based, instructional technology as teaching tools. The purpose of this book is to present an overview of computer-based instruction for students with disabilities and for students who come from multicultural backgrounds. This book is intended for educators who work with these populations of students, including teachers and teacher candidates, administrators, and anyone who seeks to better understand the use of computer-based instruction.

When discussing the use of computer-based technology, several realities need to be taken into consideration. These realities include the ever-evolving nature of computer technology, the resistance to newly emerging technology, and the issue of inequities in resources for technology. The last point is especially poignant when it comes to students from culturally and linguistically diverse (CLD) backgrounds and students from environments with less economic resources at their disposal. We feel that it is important to address these realities upfront, so the reader can view the content of this book through the proper lenses and adjust their practices accordingly.

The first reality is the ever-evolving nature of computer-based technology. Some readers might remember a time when there was no such thing as a "smartphone"; some may even remember before there were any cell phones at all. However, over the past 15 years, the technology that gives us instant access to information has evolved exponentially. The same is true of computer-based, instructional technology. Less than 25 years ago, the only technology that might have been used in a

classroom was a desktop computer with limited access to the World Wide Web. Today, there are smartphones, laptops, smartboards, and portable tablets, all with Internet access and with numerous software programs and applications to help provide instructional supports. The evolution of computer-based technology is wonderful, in that it allows educators to access and use an ever-widening array of teaching tools. Moreover, these tools have become more sophisticated and contain enhanced features to deploy teaching strategies.

The downside to the rapid advancement of computer-based teaching technology is that it can become obsolete and ineffective very quickly. The process of evolution requires that less capable technology dies out, as newer and more efficient technology becomes available. Thus, software and application programs that might be highly effective and cutting edge this year will like lose some of their luster by next year. In several years, these programs will likely not be used at all. Understanding that computer-based technology will continue to evolve allows educators to adapt and stay current with the latest and most effective programs. One of the most important things to remember is that the technology itself is only the delivery system for the embedded, evidence-based instructional strategies.

The second reality centers on the educational environment and the ongoing battle between people who readily accept and use technology and those who resist it. Although many educators are willing to utilize certain forms of computer-based technology (e.g., smartphones, email, etc.) in their everyday lives, some are more hesitant to use technology as teaching tools. This may be due to their own discomfort when using new technology or the various components of more complicated technological devices. For example, as a college professor who spends time in K–12 schools, I have personally witnessed many classrooms with smartboards. However, I rarely observed these powerful tools being used as intended (i.e., to integrate lesson materials or to deliver instruction). When questioned, many teachers indicated that they were unfamiliar with the technology and therefore did not feel confident enough to use it effectively. The same can be said for the rise in the popularity of mobile or handheld devices (e.g., smartphones, tablets, etc.). These devices are less likely to be used to their fullest potential due to the misgivings of resistant educators.

The main point of this reality is that educators should continually assess their own understanding of and willingness to use computer-based technology within their classrooms. Those who are hesitant because they are uncomfortable perhaps should lobby their administration for professional development workshops to boost their skills. The fact is, computer-based technology has become an integral part of the landscape and should be used to improve the educational outcomes of students in need. Knowing where you stand as an educator can help provide options to incorporate it effectively.

The third and most concerning reality revolves around the haves and the have-nots. Inequities in resources are nothing new in our schools. It is well established that school systems with higher tax brackets can provide a deeper pool of resources for their students. This becomes painfully obvious when using computer-based technology. One of the major drawbacks of computer-based technology is the cost associated with purchasing and maintaining the hardware and software. Moreover, as pointed out in the first reality, the ever-changing nature dictates that the technology stays current. Periodic upgrade to the hardware can be very costly. Likewise, many software components are only available through purchase or via a subscription service that requires ongoing billing. In order to effectively use computer-based technology on a wide scale, it requires the type of commitment and financial resources that some school systems do not have.

Unfortunately, many of the students who need the most support (in the form of supplemental instruction) are also in school systems that are the most strapped for resources. This may not be coincidental; one can argue that if there were adequate resources to begin with, students from these schools might be in as much need. The main point of this reality is that even though there is an abundance of computer-based tools available, there may not be an abundance of resources to provide what is needed to make an impact. Educators, administrators, governmental officials, and technology developers all need to work together to address these inequities and to find actionable solutions to give students access to the technology they need. It is important to keep in mind that these inequities are very real obstacles to the use of computer-based, instructional technology.

Computer-based technology will only continue to play a larger role in how classrooms are designed and how instruction is provided to exceptional learners. If the advancement of this technology over the past 25 years is any indication, the next 25 years should see remarkable progress. As educators, it is our duty to find the most effective means to teach students. This is especially important for students from vulnerable and marginalized populations. We hope this book provides some insight on the role that technology has on the next generation of students and educators alike.

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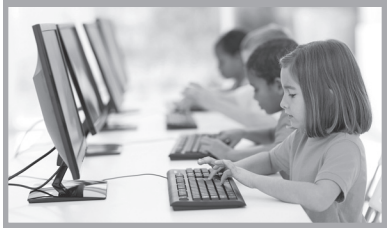

Using Computer-Based Technology to Enhance Culturally Relevant Pedagogy

Morris Council, Lenwood Gibson, and Gwendolyn Cartledge

Introduction

Culturally relevant pedagogy (CRP) has been a concept in education throughout the 1980s but was not formalized until the early 1990s with Ladson-Billings's (1992, 1995) ethnographic study of teachers of African American students. Culture is dynamic with many internal (e.g., group members) and external (e.g., economic conditions) influences (Ladson-Billing, 2014; Paris, 2012). Additionally, cultures and subcultures differ according to a variety of factors such as beliefs, language, behaviors, and traditions. CRP has centered on the impact of ethnic and linguistic diversity on school-age children, but as researchers continue to extend the depth of this theory, several adaptations have emerged such as culturally responsive teaching (Gay, 2002,

2010), culturally relevant education (Aronson & Laughter, 2015), and, most recently, culturally sustaining pedagogy (Paris, 2012), which was endorsed by Ladson-Billings (2014) in "Culturally Relevant Pedagogy 2.0: A.k.a. The Remix."

The commonality between these frameworks is social justice education with the classroom as a location for social change (Aronson & Laughter, 2015). Culturally responsive teaching focused on curriculum and evolved to emphasize instruction and the environment shaped by the teacher (e.g., high expectations). Culturally relevant education sought to combine the frameworks of culturally responsive teaching (Gay, 2010) and culturally relevant pedagogy (Ladson-Billing, 2014), placing emphasis on evidence-based research and dissemination. Finally, culturally sustaining pedagogy extended focus of culture beyond race and ethnicity to be inclusive of global identities (e.g., youth and athletic culture) (Ladson-Billings, 2014).

Despite these extensions, CRP characteristically has three primary goals: (1) develop students who can achieve academically, (2) produce learners who demonstrate cultural competence, and (3) develop students who can both understand and critique the existing social order (Ladson-Billings, 1995, 2014). Undergirding these goals is the understanding that CRP would use "student culture as the basis for helping students understand themselves and others, structured social interactions, and conceptualize knowledge" (Ladson-Billings, 1992, p. 314). When culturally and linguistically diverse (CLD) learners enter into a school setting, they bring with them their experiences and a cultural perspective that is not always nurtured or valued in the school setting (Nichols, Rupley, Webb-Johnson, & Tlusty, 2000). CRP seeks to bring the experiences and values of these students to the forefront of quality academic and social skills instruction (Gay, 2010, 2014).

To achieve these goals, adaptations are needed within schools and by classroom teachers. Recognizing that most teachers (especially in the elementary schools) are White, middle-income females (Morrell, 2010), cultural differences are a given relative to race or ethnicity and possibly also according to language, socioeconomics, and gender. Schools and teachers are expected to become culturally competent, in that culturally competent enables better bonds with their CLD students. This means

that they learn about and endorse the culture of their students, and they understand that no culture is superior and that all children should be helped to value their own culture while simultaneously adapting to the culture of the school and larger society. For example, children who come to school speaking a language or dialect other than Standard English should not be led to disparage their native tongue but helped to acquire an additional language. Moreover, they should be taught to understand the conditions under which this new language would be helpful. Being multilingual should be a badge of honor, not of shame.

Culturally competent schools and teachers assume their role to present diversity as something to be appreciated and embraced. Toward this end, culturally competent teachers are charged with creating a community of learners, where students learn to work cooperatively with each other for the good of the group. This may be culturally relevant (CR) for many minority youth, who come from collectivistic societies focused on group rather than individualistic outcomes (Cartledge & Milburn, 1996). Cooperative learning and reciprocal tutoring events are equally important for diverse groups who may begin to learn about each other and value their respective strengths. Another major marker of culturally competent schools and teachers is that they are caring and fair. Emphasis is placed on the positive, motivating students to want to learn and be appropriate in their behavior because it brings the best returns. Teachers communicate caring behaviors in encouraging students to do their best, having high expectations for their students, and ensuring that punishing consequences are rare, humane, and fair. Trust and positive affect between student and teacher is mutual.

An essential feature of the cultural competence is that both school personnel and the students need to believe in the students' ability to be successful. That is, school personnel need to believe in their ability to teach CLD students, and the students need to believe that the school can help them meet the desired school goals. A major concern for many advocates of CRP is the manner in which formal school curricula deal with the needs of CLD learners. Some researchers argue for ways to transform traditional educational pedagogy that embraces Eurocentric values into a more culturally sensitive framework (Aronson & Laughter, 2015; Gay, 2014; Ladson-Billings, 2014; Morrier, Irving, Dandy,

Dmitriyev, & Ukeje, 2007; Paris, 2012). Gay (2002) rationalizes that one factor contributing to White American children's better school performance is access to a curriculum that largely reflects the values and beliefs of their culture. Likewise, according to Gay (2002, 2010), marginalized groups that do perform well have been socialized to mainstream school culture. Thus, considerable attention within CRP is on CR instruction that utilizes cultural characteristics, experiences, and perspectives of CLD students to maximize their potential (Gay, 2010).

Specific Culturally Relevant Instructional Strategies

CRP is an ecological framework designed to account for all aspects of the educational experience (e.g., teacher's interactions and curriculum design), which is critical to address the inequities and issues of social justice in education. Although the framework has always stressed academic achievement (Ladson-Billings, 2014) as a core principle, suggestions for CRP education place emphasis on the curricular resources, environmental support, and instructional approaches.

Curricular Resources

A major concern for many advocates of CRP is the manner in which formal school curriculums fail to meet the education needs of CLD learners. Gay (2014) suggested that curriculum largely reflecting values and beliefs outside of their culture can result in negative effects on academic achievement. The curriculum that students are exposed to can have a significant influence on student engagement and learning outcomes. Tatum (2005) suggested that curriculum should not be a functional tool used to prepare learners for high-stake testing but instead empower students to challenge inequity and develop critical thinking skills.

Culturally relevant curriculum should feature aspects of students' daily lives into text, instruction, and planning. Mr. Cane has taught public school in Harlem, New York, for 18 years

and has recently accepted to teach ninth-grade language arts in hopes of helping to better engage and increase learning outcomes for his class. A critical state standard to be taught in the year was poetry, but Mr. Cain quickly realized that the curriculum was outdated and covered themes that were novel to the experiences of the class. To address this issue, Mr. Cain worked to utilize poetry from the Harlem Renaissance (HR) that better aligned with students' experiences. He also created an activity that required students to use the Internet to find more contemporary poetry of their choice and analyze and compare it to the famous works from the HR. Mr. Cain was able to engage learners on their level and deliver curriculum that incorporated their cultural experiences. Reshaping curriculum in this manner has the potential to provide critical validation to marginalized learners and capitalize on the learners' background knowledge to improve engagement.

Researchers have been increasingly focusing on culturally relevant text over the last decade (Banks, 2015; Cartledge, Bennett, Gallant, Ramanth, & Keesey, 2015; Ebe, 2010, 2011, 2012; Husband, 2012; Tatum, 2005). Culturally relevant texts are unique because they do not simply display the race/ethnicity of a group but rather relate directly to the experiences and background knowledge of the reader). Ebe (2010) conducted a study that explored the relationship between reading proficiency and the cultural relevance of text for nine third-grade English language learners (ELLs). The author used a research-developed culturally relevant rubric to rate the cultural relevance of two stories with identical reading levels from a standardized assessment. Results indicated that participants had fewer miscues and better comprehension when reading the stories they identified as culturally relevant. Cartledge and colleagues (2015) conducted a study that included eight African American second graders who attended an urban school and were at risk for reading failure based on an oral reading fluency (ORF) assessment. The researchers used an alternating treatment design to evaluate the effects of culturally relevant and non–culturally relevant (NCR) passages on ORF, comprehension, and passage likability. The results indicated that participant fluency was better when reading culturally relevant passages. In addition, comprehension improved and culturally relevant passages were preferred over NCR, although there was

no statistical significance. While empirical data to support culturally relevant text are limited, these studies show initial promising positive effects of cultural relevant curricular resources on students' reading achievement. Environment is another critical component of incorporating CRP into education.

Environmental Supports

Environment for the purpose of this chapter refers to the overall classroom climate and management practices of the teacher. Teachers must create warm classroom environments that are inviting and promote positive self-concept (Gay, 2002, 2010, 2014). These classrooms are designed to engage collaboration between students, peer groups, community, and the teacher (Callins, 2006). Positive classroom environments have high expectations for all learners and promote engagement and motivation. A major advantage of CRP is the emphasis on arranging a nurturing environment to promote the academic success of all learners.

Educators can facilitate culturally relevant environmental support from a technological perspective by encouraging digital natives and reflecting on barriers to technology that can negatively affect students' access and classroom engagement. Mrs. Sprick is a third-grade teacher whose classroom will take state-mandated tests in math and reading at the end of the semester. Mrs. Sprick is concerned because these tests will be delivered 100% on the computer for the first time in state history. To prepare her students to test on computers, she engaged her class in conversation to dialogue about their access to technology. She also created group activities that helped students gain computer-based prerequisite skills (e.g., mouse control and how to properly use headphones). At no point did Mrs. Sprick lower expectations for her classroom; instead, she created an environment that supported their success regardless of previous experiences.

Kauffman and colleagues (2008) suggested that although the vast majority of educators advocate for cultural sensitivity, the term has yet to be operationalized in a manner that ensures all teachers can demonstrate cultural sensitivity. The authors stated,