Educational Settings and the Use of Technology to Promote the Multicultural Development of Children

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The early days of technology in education focused on films, with television and computers becoming the focus in recent years (Clark, 1998). Technology presents the greatest potential for underresourced ethnic communities to begin to improve their conditions and get their needs met through rich learning environments that act as scaffolds to learner performance (Laffey, Musser, & Tupper, 1998; Clark, 2005). There are many educational theories and approaches that allow for the use of instructional technologies like television, computers, and the Internet. The newest instructional technology paradigm involves the visual capabilities of television and the interactivity and processing capabilities of computer-based technologies (Clark, 1998). As a result, there are instructional strategies that are more conducive and appropriate for the use of these instructional technologies.

Roschelle, Pea, Hoadly, Gordin, and Means (2000) suggest that technology enhances learning in children by supporting four essential characteristics of learning: (a) active engagement, (b) participation in groups, (c) frequent interaction and feedback, and (d) connections to the real world. According to Jonassen, Howland, Moore, and Marra (2003), students do not learn from television and/or computing technology, but because students learn from thinking, these technologies should be used to engage and facilitate thinking and knowledge construction. The ways that technologies (television, computers, the Internet, etc.) can be used as tools to facilitate and support learning include supporting knowledge construction, acting as a vehicle for the exploration and access of information, supporting contextual and real-life learning situations, acting as a medium for collaboration and dialogue, and providing a mechanism to reflect on and represent their knowledge (Jonassen et al.). Regardless of the theoretical perspective—behaviorism, cognition, or constructivism—there are some common elements of
successful instruction such as active participation, practice, individualized instruction, reinforcement, realistic context, and cooperative groups (Heinich, Molenda, Russell, & Smaldino, 2002) that can be supported and accentuated by using instructional technologies and media.

Researchers (Clark, 1998; Peck & Dorricott, 1994) have identified 10 reasons to use technologies in educational settings: (a) to individualize instruction; (b) to help learners become proficient at accessing, evaluating, and communicating information; (c) to foster an increase in the quantity and quality of a learner’s thinking and writing skills; (d) to encourage learners to solve complex problems by independently organizing, interpreting, developing, and evaluating solutions and strategies; (e) to appeal to learners and encourage their artistic expression; (f) to help learners reach the world outside their physical location; (g) to provide opportunities for learners to create meaningful work through publication, postings, and other media outlets; (h) to provide access to high-level and high-interest educational materials; (i) to help learners feel comfortable with the tools of the Information Age; and (j) to make instruction more productive and efficient.

Although it is important to have access to effective educational technologies and media, the strategies used to present the content are just as important. Instructional strategies refer to the approaches used to achieve the learning objectives. The instructional strategies that are most conducive for the use and support of educational technologies are (a) direct instruction, (b) collaborative learning, (c) constructivist-based strategies, and (d) discovery learning (Conway, 1997).

The direct instruction strategy is grounded in behaviorist theory and focuses on the transmission of knowledge (Conway, 1997). Direct instruction is a structured approach that presents content in small steps with opportunities to check for learner understanding so as to elicit active successful participation from all learners. This form of instruction is particularly effective with facts, concepts, and procedures. The types of educational strategies that support direct instruction are (a) information gathering, (b) drill and practice, and (c) tutorials (Conway, 1997). Information gathering focuses on obtaining access to content and knowledge. Technology and media tools that may provide this access include but are not limited to Internet search engines (e.g., Google, Yahoo, MSN, and AOL), multimedia encyclopedias (e.g., MSN Encarta, Britannica, Grolier, World Book, and Wikipedia), education software (e.g., Plato Learning, The Learning Company, Sunburst), and television programming (e.g., PBS and Discovery). Drill and practice is the simplest and most common instructional strategy and is used to review and reinforce knowledge that has already been acquired. Examples of drill and practice include the use of didactic questioning, reading guides, and compare and contrast activities in educational software (e.g., Math Blaster).
Tutorials offer a one-to-one learning experience that provides opportunity for immediate feedback. This strategy typically presents or reviews new information with the goal to help the learner acquire basic facts and concepts. Examples of tutorials include the use of demonstrations, structured overviews and reviews, and guided viewing and listening activities (e.g., Mavis Beacon Teaches Typing).

The collaborative learning strategy is grounded in cognitive theory and emphasizes working in a group to acquire content knowledge or to achieve a task (Conway, 1997). The essential components of the collaborative learning strategy are (a) learners work in teams to acquire content knowledge, (b) teams are composed of individuals with diverse backgrounds and abilities, and (c) rewards/assessments are based on team achievements. Educational technologies that support the collaborative learning strategy are referred to as productivity tools. Productivity tools may include but are not limited to word processors (e.g., Microsoft Word, WordPerfect, or Apple’s Pages), spreadsheets (e.g., Microsoft Excel and Corel Quattro Pro), databases (e.g., Microsoft Access and Filemaker Pro), drawing and paint software (e.g., CorelDraw, Adobe Photoshop and Illustrator, and Tux Paint), and presentation software (e.g., Microsoft PowerPoint and Apple’s Keynote).

Constructivist strategies are based on the belief that one constructs knowledge in the context of creating personally meaningful artifacts (Nurrenbern, 2001). The collaboration and information/research software mentioned previously may be used to create instructional artifacts that are relevant and identified with specific students, groups, or communities. Learning occurs when learners create meaning based on their own past experiences and prior knowledge, rather than acquiring knowledge based on someone else’s interpretation. Learners should be actively involved in choosing the instructional objectives. When working toward these learning goals, scaffolding or support should be provided as needed for each learner, depending on his or her ability and prior knowledge. The learning environment in which the subject material or content is delivered must connect the skills to which the learner is being exposed to its applicability and relevance in real-world situations (Ertmer & Newby, 1993). These learning environments should support discovery or inquiry-based learning, and allow for social interactions and role-playing (Dabbagh & Bannan-Ritland, 2005). Inquiry-based learning provides students with the opportunity to experience and learn about the world around them by questioning. Emphasis is placed on the process of thinking, and divergent thinking is not only supported but encouraged. Constructivist strategies include cognitive apprenticeship and situated learning.

Cognitive apprenticeship emphasizes teaching processes or learning through guided experience or discovery (Dabbagh & Bannan-Ritland, 2005). Components of cognitive apprenticeship include modeling, coaching, articulation, reflection, and exploration. Media can be used to enable students to work with experts in the completion of a task. The expert can model and provide feedback to the students by using technologies such as electronic mail, messaging, and chat. Additionally, webcasts may be used by the expert to provide students with demonstrations and modeling of specific tasks or content.

Situated learning is a constructivist strategy in which the learning takes place in an environment where the skills can be applied and practiced. Situated learning environments “provide instruction through the exploration of authentic scenarios, cases, or problems” (Dabbagh & Bannan-Ritland,
Media such as graphics, audio, and video can be used to realistically depict and represent cases and scenarios as well as embed them with relevant resources and information (Dabbagh & Bannan-Ritland). A multisensory constructivist strategy promotes transfer to real-life situations by not only helping students acquire knowledge but also showing them how to use it in the real world.

Discovery learning is based in cognitive theory and approaches instruction by having the learner interact with his or her environment or manipulate objects (Dabbagh & Bannan-Ritland, 2005). Discovery learning encourages problem solving and critical thinking skills. The learners are given tools in an environment and they are encouraged to experiment and explore. They are able to create their own goals or learning objectives and outcomes. Discovery learning can be implemented through the use of simulations or virtual environments. Simulations reproduce realistic situations in which the student is able to manipulate different variables and make decisions that will determine the outcome. These types of instructional strategies help integrate one’s skills and knowledge and also help the learner develop problem-solving skills. Computer games have become popular vehicles for computer simulations. These computer simulation games (e.g., RollerCoaster Tycoon, SimCity, The Sims, MS Flight Simulator, and Civilization) are extremely popular and cover a variety of topics. For example, SimCity is a very popular game that allows students to build and maintain cities. Civilization is another simulation game that allows students to build and manage empires.

Simulations that allow the user to interact in the environment are referred to as virtual environments or virtual reality (Dabbagh & Bannan-Ritland, 2005). Virtual environments have the same benefits of simulations with the added feature of allowing students to become immersed in the learning environment. By taking a first-person view in the virtual environment, content, skills, and tasks become relevant and vital to the success of the student in the virtual space. One of the most popular virtual environments is SecondLife (and Teen SecondLife). SecondLife is an Internet-based virtual world in which users interact with one another through avatars to explore, meet others, socialize, participate in individual and group activities, and buy items and services from one another.

The use of direct instruction, collaborative, constructivist, and discovery-based strategies are key in the use of technology in educational settings. Technology provides opportunities for practice as well as the acquisition of new knowledge and skills. Technology also facilitates and supports collaboration through the use of tools like e-mail, chat, blogs, and file sharing. Last, the ability to learn in a multisensory, contextualized, simulated environment is possible through the use of educational technologies and media. Technology combined with the use of instructional strategies may also have a positive impact on the multicultural development of children.

MULTICULTURAL DEVELOPMENT

The use of technology has been shown to be effective with developing the multicultural development of young children by helping them (a) gain knowledge of the traditions, rituals, and practices of their own culture; (b) form an awareness of self and explore their individuality in relation to their place in a larger group; (c) build a sense of identification with others through the recognition of commonalities and an appreciation of differences; and (d) recognize unfair characterizations of groups and have the ability to empathize with them (Meadows & Murphy, 2004).
Calvert (1999) asserts that providing children of color with access to quality television programming and the latest information technologies may introduce them to new careers, create greater racial equality, and allow them to gain information about their own as well as other cultures. Direct instructional strategies may be used to teach children about their culture through tutorial and drill and practice activities. In addition to video, music, books, and magazines, technology and media provide access to multicultural content through online encyclopedias like *Encyclopedia Smithsonian*, *Wikipedia*, and *Digital Schomburg*. Providing children with access to quality media and technologies can help them obtain information about their culture and the culture of others (Calvert).

To help children form an awareness of self, explore their place in a larger group, and build a sense of identity with others, they should be exposed to technologies and media that reflect and affirm diverse cultures, languages, and heritages (Haugland & Shade, 1994). Technologies and media can positively influence the multicultural development of children by eliminating unfair characterizations of people, known as stereotypes. There is evidence that stereotyping may undermine a child’s academic achievement in important ways (Aronson & Steele, 2005). Just knowledge of a stereotype can influence the thoughts and behavior of a person as well as impact the child’s academic performance (Aronson & Steele). Steele and Aronson (1995) refer to this phenomenon as stereotype threat, which is the fear of confirming a negative stereotype associated with one’s identified group. In addition to exerting extra pressure on the stereotype target, confirming a negative stereotype such as low performance poses a threat to three human motives: the need for competence, the need to appear competent to others, and the need to belong socially in a domain that is valued (Aronson & Steele). Black and Latino students are especially susceptible to stereotype threat and its effects because their identified groups are often the targets of negative stereotypes. Research has shown that Black students performed dramatically better in nonstereotype threat situations versus stereotype threat situations (Aronson & Steele).

There are two triggers for stereotype threat: ability evaluation and the salience of a social identity that is stereotyped as inferior in the ability domain (Aronson & Steele, 2005). Technologies and media can mitigate stereotyping and its triggers by presenting positive portrayals of groups, depicting people of color and women in roles of leadership and intelligence, and eliminating instances where a person’s ability is evaluated based on his or her inclusion in a particular group. When children create their own images and depictions of themselves and their communities, they become more metacognitive about the content and how it is interpreted by others. By allowing students to use cultural contexts that are familiar and relevant to them, it may create a better link to academic content and support their multicultural development. Digital cameras and audio recorders are examples of hardware that allow children to create their own media. Software applications that allow children to create their own media include website tools (e.g., Adobe Dreamweaver, iWeb, and HTML) and digital content creation tools (e.g., iTunes, iPhoto, Adobe Photoshop, and iMovie). Virtual environments like SecondLife allow users to participate with others without regard for appearance, spoken language, or physical capability. You can create your own likeness or avatar, which may or may not be a true representation of your actual appearance. Additionally, the role-playing aspect of virtual environments allows users to experience the “life” of someone else from another gender.
or culture, which may result in increased sensitivity and understanding. Simulations allow users to have experiences and interactions that may be otherwise inaccessible. Having access to these “simulated experiences” may increase awareness, comfort level, and expertise of those who may have traditionally lacked access and exposure to these experiences.

In addition to mitigating stereotyping, technologies and media may also be useful in encouraging and supporting collaboration between and among groups. Collaboration between groups helps eliminate misconceptions about one another, whereas collaboration among groups has been found to have a positive impact on the acquisition of content knowledge. In Treisman’s (1985) landmark study, he observed African American and Chinese American students to determine the practices that resulted in the achievement of or difficulty with mathematics. Treisman found that African American students were more likely to study alone, separated their study lives from their social activities, and did not seek assistance from each other or the teaching assistants/professors. The use of collaborative technologies (e.g., chats, blogs, e-mail, instant messaging, and webcasts) allows students to create communities and connect with people with whom they would otherwise not have been able to connect, such as potential role models, mentors, and peers from diverse groups. Through these connections, students can learn more about themselves, explore their relationship to others, and recognize commonalities between themselves and others as well as appreciate differences. Examples of these collaborative technologies include social networking websites like MySpace, FaceBook, and BlackPlanet. Although collaborative technologies have beneficial attributes, their possible misuses should also be acknowledged. If in the wrong hands, these technologies can be used to inappropriately gain access to children, allow children to have access to inappropriate people and information, and allow people to conceal their identities and misrepresent their motives. With that said, the use of collaborative technologies with children requires the guidance of parents, teachers, and other caregivers.

Students are constantly exposed to the messages conveyed and materials created by the ever-changing and abundance of media forms readily available to them. Furthermore, youth are willing consumers of all that these technologies have to offer. It is for these reasons that the use of technologies and media in educational settings has the potential of having a significant influence on the intellectual as well as multicultural development of children. Therefore, the driving force for educators should be to maximize the positive capabilities of technologies and media while minimizing potential negative effects.

REFERENCES


