

Innovative technologies for multicultural education needs

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Abstract

The purpose of this paper is to discuss several technology applications that are being used to address current problems or opportunities related to multicultural education. Five technology applications or technology-related projects are discussed, including a teacher education literacy tool, social networking communities, massive multiplayer online role playing games (MMORPGs), virtual patients, and an International Leadership in Educational Technology (ILET) consortium. Research and practical implications of this paper include the introduction of new technologies for improving multicultural education, research findings on the use of these tools, and potential opportunities or pitfalls as such tools are implemented and evaluated. The paper concludes with a call for new research in the area of technologies for multicultural education.

Introduction

There is a growing awareness of the importance of multicultural & intercultural education and communication (Davis, Brown, & Ferdig, 2005). There are educational, economic, financial, moral, and ethical reasons for this imperative (Martin & Nakayama, 2000). On December 10, 1948, the General Assembly of the United Nations adopted the Universal Declaration of Human Rights. Article 26, paragraph 2 of that document, specifically relates to the need for multicultural and intercultural education (Batelaan & Coomans, 1999). It states:

“Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.”

The fact that technology continues to link diverse cultures by reducing temporal and spatial separation makes the timing for this imperative even more crucial (Martin & Nakayama, 2000). The challenge, however, is that multicultural education is comprised of those with broad interdisciplinary interests. Hammer (1989), drawing on an oasis metaphor first described by Schramm (1982), talked about how multiple participants from various disciplines and fields come together to study and promote these new ideas. Those interested in multi- and intercultural issues come from numerous fields of study, including psychology, anthropology, sociology, economics, business, international relations, communication, and—of course—education. All come to the oasis to partake in the discussion, but most return to their home fields. Therefore, although multi- and intercultural education is important, the responsibility of how it happens and by whom is less clear. This issue becomes even more complex when it includes technology. It is possible that technology may be used to bridge multi- and intercultural gaps (Raybourn, McGrath, Munro, Stubblefield, 2000). However, it is also possible that technology can disempower and even destroy a culture or society (Sharp, 1952).

The purpose of this paper is to provide a review of five distinct projects that address the use of innovative technologies for addressing the needs and opportunities of

multicultural education. The hope is that these different innovations provide a glimpse into the diverse approaches and fields that are attempting to utilize the potential of technology. The purpose is also to stimulate and enhance a multi-cultural and international discussion of tools to promote change; these tools, at the very core, provide the users themselves with an opportunity to explore their own perspective on multi- and intercultural issues. The paper concludes with a call for more research.

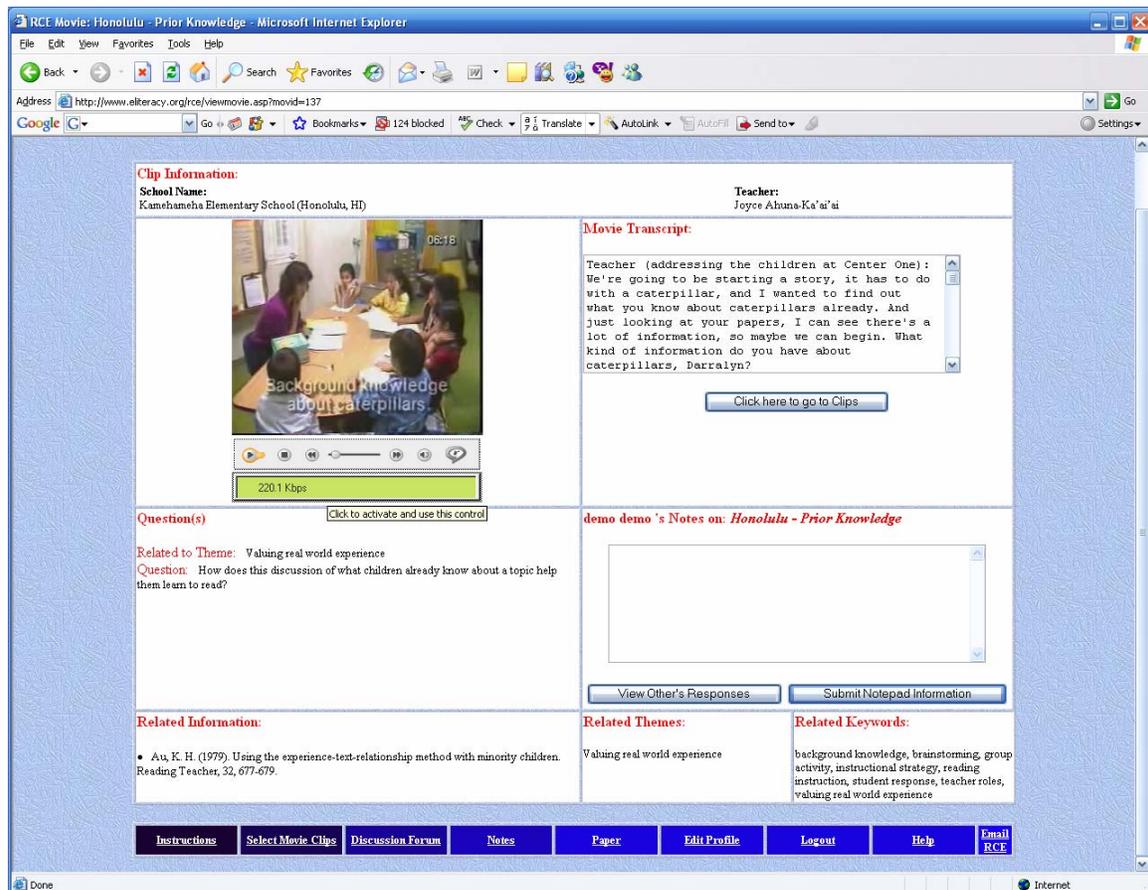
Case #1: The Reading Classroom Explorer

The Reading Classroom Explorer (RCE), available online at <http://www.eliteracy.org/rce>, is an example of a hypermedia environment for preservice teachers studying literacy instruction. It is difficult to ensure that teacher candidates will be placed in a classroom where their mentor teacher will demonstrate exemplary literacy instruction. Even if their lead teacher demonstrates strategies that reflect the reform-oriented practice that the teacher candidates learn about in their studies, there is no guarantee that the classroom will represent the diversity that students will undoubtedly face in their teaching position. RCE is a hypermedia environment that was created to address these issues.

The RCE environment contains movies, transcripts, questions, reading resources and an interactive notebook. Movies and transcripts of exemplary practices are organized by themes, keywords, schools, cases, or by free-form text (Ferdig, Roehler, & Pearson, 2002, ¶ 3). In this example, the hypermedia environment uses a database structure to allow users to access and organize various media sources in an effort to observe specific examples of literacy instruction. Without the use of the database structure, users may feel overwhelmed by the amount of information presented, and the effectiveness of RCE would be significantly diminished.

RCE allows pre-service teachers to get behind the scenes of a classroom, to understand context, teacher's goals, student reactions, and to more deeply understand the teaching of reading and writing. It brings the 'real' classroom into the university while scaffolding the novice by providing teacher candidates with classroom teachers' comments on their teaching, as well as other students' reactions to video environment. In other words, the development of RCE is an attempt to provide exposure to diverse

teaching environments for teacher candidates while helping them develop tools to analyze and understand what they are observing. The environment broadens teacher candidates' knowledge of teaching reading and expands the repertoire of experiences from which they form a teaching philosophy. (See Figure 1).



Over the course of the past five years, we have worked with hundreds of teacher candidates and their respective pre-service instructors across five states (Ferdig, Roehler, & Pearson, 2002; Boling, 2003; Ferdig, Roehler, & Pearson, 2006). This research has provided promising results. For instance, early work demonstrated that teacher candidates gained both a depth of understanding of teaching and learning as well as an appreciation for intertextuality after using RCE (Ferdig et al., 2002). Teacher candidates who used RCE were challenged in their prior assumptions about learning (Boling, 2003). Finally, teacher educators who used RCE were able to demonstrate teaching dilemmas that they encountered while teaching their courses (Boling, 2003).

The Reading Classroom Explorer is not a commercial product; it was developed as a research-based effort to improve pre-service teacher understanding of pedagogical and student diversity. One of the main questions is whether such tools can actually improve students' understanding of multicultural issues. In order to address this question, we developed a survey to examine three main areas: a) teacher candidates' comfort with technology; b) teacher candidates' understanding of important literacy teaching and learning strategies (pedagogical diversity); and c) teacher candidates' understanding of student diversity (Suh, Pearson, Oliver, & Park, 2002). 185 teacher candidates from four universities were selected to participate in this study. The pre-service teachers came from seven different classrooms within those four institutions, with four classrooms being chosen as experimental classes (106 teacher candidates) and three as control classes (76 teacher candidates).

Teacher candidates at each of the institutions were enrolled in a pre-service literacy methodology course. The researchers in this study provided introductory RCE lessons and support to the individual instructors, but each individual instructor was allowed to use RCE in whatever way fit into their existing curriculum. Students were given the survey as a pre-test in the beginning of the semester, and then again as a post-test at the end of the semester.

Data analyses revealed that 15 of the items on the survey exhibited significant differences between the control and experimental groups in the final post-test. Three of those items related to teacher candidates' comfort with technology. Two of the post-test items revealing significant experimental/control effects related to motivation and children's literature. What is most relevant for this discussion are the five items on the post-test that exhibit significant differences between control and experimental groups related to teacher candidates' understanding of pedagogical and student diversity.

- Pre-service teachers in experimental classrooms understood more clearly that students' attitudes about reading and writing can vary across grade levels (10A, $p < .05$).
- They felt more prepared to develop a curriculum that would include the perspectives, experiences, and contributions of groups from different backgrounds and cultures (7B, $p < .05$).

- Teacher candidates using RCE placed more importance on the home language, new languages (ESL), and/or dialects (6A, $p < .05$).
- RCE users placed more importance on diversifying their instructional strategies for learning how to write (5B, $p < .05$).
- RCE users placed more importance on diversifying their instructional strategies for learning reading skills and strategies (5A, $p < .01$)

This example of RCE supports the notion that technology can be used to promote multi- and intercultural perspectives in literacy pre-service teacher education. This work and much of the work being done on pre-service teacher education technologies, focuses on the time spent with the technology in pre-service teacher education. Less work has been done that is longitudinal. Data suggests that technologies such as RCE can help users learn about multicultural issues; less is known about how that impacts their working lives after graduation, or whether they return to these tools to get support in their future jobs. Future research should focus on these longitudinal issues as well as the impact of adding other voices (in addition to the videos currently in the system).

Case #2: Virtual Patients System

Virtual humans (VH) technology is an emerging and promising technology to examine and promote reflection about cultural diversity. The Virtual Patients project at the University of Florida (UF) and the Medical College of Georgia (MCG) integrates virtual reality, natural interaction, and visualization. The goal of this work is to allow medical students to develop patient-doctor interview skills while working with a diverse group of virtual human patient.

Medical students interact with the virtual patient in standard examination rooms. These interactions closely mirror an encounter with standardized patients (SPs), role-playing actors. The system is composed of two computers, two cameras for tracking the student, a data projector, a wireless microphone, and Dragon Naturally Speaking 9 for speech recognition (Figure 2). The total cost is less than \$8000 (USD). The use of commodity components makes wide-spread adoption a realistic goal.

The student uses natural speech (wireless microphone) and gestures to interact with the virtual patient. The student's posture is tracked. The students interact with VHs that are life-size. To begin, students knock on the exam room door, enter, and see the virtual patient projected life-size on the exam room wall. The student converses with the virtual patient for a ten-minute interaction to obtain a history of present illness (Figure 3).

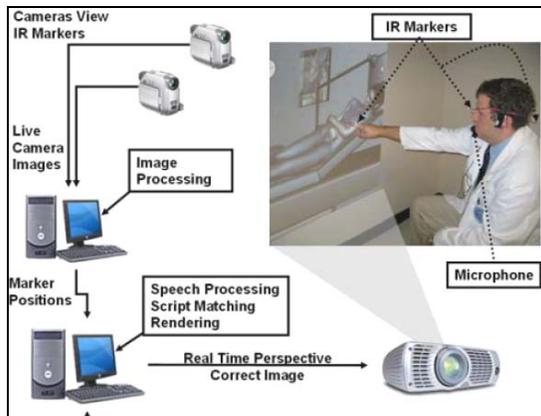


Figure 2 - The system is composed of commodity-off-the-shelf components.



Figure 3 – A screenshot of the virtual human, DIANA, in the virtual exam room.

Through the interaction, the system tracks and logs the student's posture, tone of voice, and speech content. Over 110 medical, nursing, and physician assistant students have experienced the virtual patient system. Studies have validated its use as an evaluation tool (Johnson, 2007) and that student performance is similar with the virtual patient as with a SP (Raij, 2006). More recent studies have attempted to address diversity within health care using these virtual patients.

Currently, students develop communication skills through role-playing with instructors, fellow students, and SPs. SPs are a validated and effective communication skills teaching tool, but SPs have drawbacks associated with diversity and availability (Fincher, 2005). Regional diversity also directly impacts the composition of an institution's SP population. There is substantial evidence that racial and social disparities affect health care delivery (Smedly, 2003). Studies find that even when insurance status, income, age, and severity of condition are accounted for, minorities still receive lower quality of care than Caucasians (Cohen, 2002). The differences between the culture of

health care providers and their patients on health/illness norms could cause significant conflict (Spector, 2002). A physician's understanding of diverse cultures and languages may be a better predictor of the quality of care than test taking (Clawson, 1999). Loudon studied educational medical student programs on ethnic diversity and called for research on valid methods of student assessment and program evaluation (Loudon, 1999).

As time to teach and test communication skills is limited in an already overcrowded medical school curriculum, patient diversity issues are covered only in lectures, if at all. VHS would help medical (and eventually all communication skills) educators fill a teaching void. VHS are also uniquely suited to studying and teaching diversity concepts. VHS allow for different *appearing*, yet similar *acting* representations. It is possible to ensure that other components (e.g. gestures, animations, expressions, and words spoken) are consistent.



Figure 4 – Are there differences in a student's interactions with these two VHS?

The system leverages the 1) presentation of virtual patients with diverse backgrounds but similar scenario content, and 2) tracking and visualization of the student's interaction with the virtual patient. This allows for assessing the effect of the patient's background on the interaction.

To facilitate self-reflection, the system enables the student to visualize how they interacted with the different virtual patients. For example, students can replay their performance with an African American and Caucasian VH side-by-side (see figure 4). The system also highlights interaction differences, such as empathy responses, interruptions, body lean, posture, and jargon usage. Researchers can ask questions such as: did posture change? Was interpersonal distance different? The goal is to understand

not only *if* the interactions were different, but *how* the behaviors changed. Helping students identify biases early in their career would help impact behavior. VHS also allow for the minimization of study confounds through standardization of responses and removing the potential for grader and patient biases.

A series of ongoing studies are evaluating the fundamental question, will people bring real world biases into the virtual world? A pilot study had 16 volunteer medical students interview VHS with varied backgrounds. A Caucasian VH and African-American VH were identical except for their skin color and recorded voice (the actual words spoken were identical). Preliminary data analysis shows that the VP's ethnicity affected the student's impressions of the VP's level of education and fiscal stability. The African-American VP was identified by the students as less wealthy (lower middle class) and less intelligent (possibly understood the student) than the Caucasian VP (upper middle class and probably understood the student). This was despite the fact that the two VPs presented exactly the same words, animations and gestures.

An expanded set of studies have sixty medical students experience multiple scenarios with virtual patients of different racial/ethnic backgrounds. The study compares and identifies differences in interactions within each student's set of interactions. These are correlated to validated psychology measures for racial biases, include the Skin-Tone IAT (Dovidio et al., 1997) and Scale of Primary Friendliness (Dovidio et al., 1997).

VH technology provides benefits difficult to realize even with human observers. For example, racial differences in time to respond to patient concerns (milliseconds), physical distance, supportive statements, nodding, and head-gaze can be strong indicators of bias. Constantly improving technology promises accurate and robust methods to effectively capture a user's behaviors during VH interactions. Future work will enable exposure to virtual patients with a variety of backgrounds beyond race/ethnicity. Medical students can be exposed to patients of varied gender, language, weight, age, sexual orientation, physical deformities, belligerence, psychological conditions, and intelligence.

Case #3: International Leadership in Educational Technology (ILET)

Prompted by technology in the 21st century, economic pressures are shrinking space, time, the variety of life styles, and cultural variation into a networked global society. Demands of globalization today continue to increase pressure on educators and educational leaders to change curriculum and learning in order to educate our children to become global citizens who preserve the variety and vitality of life. Leaders of educational multimedia design and applications have a special role in the shared leadership necessary for this change in education as emphasized by recent calls for cultural studies in instructional design (Rose, 2005).

There are many aspects of becoming a global citizen, and one of the most important areas of becoming a global citizen is an awareness and understanding of the variety and relevance of all cultures. In addition, there is an increasing need for inter and multi-cultural competence to be able to survive in a networked global society. The issue of teaching and acquiring such competence is becoming a major concern in schools, in teacher education (Leeman & Ledoux, 2003), and therefore in the preparation of future faculty and designers of multimedia enhanced curricula.

Multicultural education requires critical understanding of connections among the each educator's self, school, home, and culture, and it has to deal with sociopolitical realities about ethnic and cultural diversity within society and schools (Nieto, 2000). Thus, in order to prepare the next generation to be confident in diverse cultures, educators need to gain multicultural competencies that will allow them to be actively involved in preparation of multi- and interculturalized curricula and teaching. Moreover, the design and application of technology to support and model multicultural education becomes a critical issue in the increasingly digitized society of the 21st century.

In response to this demand, the International Leadership in Educational Technology (ILET) project (<http://www.public.iastate.edu/~ilet/>) was selected by funding agencies in Europe and the USA in 2001 to create a model intercultural learning environment for doctoral programs preparing future leaders of educational technology. The ILET project aims to create a transatlantic learning community for graduate students in six different universities: three from the European and three from the USA. The six universities are Iowa State University (US lead), University of Florida, University of

Virginia, Institution of Education in the University of London (European lead), Aalborg University in Denmark, and University of Barcelona in Spain. The ILET project emphasizes democratic collaboration of faculty and students across all locations. This innovative approach provides a framework for personalized study abroad with internships and intercultural experiences mediated by technology. Collaboration is key to the success of the model, since six different universities are involved. Doctoral students are supported to negotiate with one or more of universities to enhance their program of study. They use websites, emails and other technologies to negotiate internships and study experiences with partner universities. In this process, faculty and students become sensitive to the wide variety of academic environments and cultures. The ILET project has also blended technologies into doctoral program to create a virtual intercultural learning environment among the six transatlantic universities in annual online reading group, summer academy for short-term intercultural academic experiences, and ongoing long-term internship abroad.

Becoming a multicultural educator means first becoming a person that has multicultural competence. An educator in a global society needs to develop a multicultural perspective for teaching and learning (Nieto, 2000) in various school environments since culture is perceived as being shaped by living experiences and institutional forms organized around diverse elements of struggle and domination (Gay, 2003). U.S. and European school environments are becoming increasingly intercultural, and teachers are challenged to teach students who have diverse cultural backgrounds, sometimes with more than twenty home languages (Gay, 2003; Brown & Davis, 2004). In response to this challenge, many colleges and universities include 'knowledge of other culture' as a component of liberal education (Hopkins, 1999). UNESCO (1998) also points out that quality in higher education depends on a multi-dimensional concept, in that curricula in higher education need to be recast so as to go beyond simple cognitive mastery of disciplines and include competencies for communication, creative and critical analysis, independent thinking, and team work in intercultural contexts. Thus, competent educators and educational leaders reflect on their own multicultural beliefs, experiences, and behaviors and continue to develop professional competence and confidence in

intercultural education in order to prepare students to become multiculturally competent global citizens.

The goal of the ILET project is to provide a model program to support the development of multi- and intercultural competence with a combination of technology-based approach and real-life experiences for future leaders of educational technology. In the ILET context, multicultural competence has been viewed as a transformational learning process, which helps students become open-minded to the variety of approaches among partner institutions. Openness to other cultures helps students become flexible in adapting and respecting intercultural learning environments and collaborate for learning and research among different institutions.

Artifacts, anecdotal data, survey data, and interview data collected from ILET students and faculty have demonstrated that the ILET project provided an multicultural learning environment that helped students gain some degree of multicultural competence; particularly openness to a new academic area and culture and flexibility to accept and adapt new knowledge, customs, and cultural values. The ILET project also provided a unique opportunity for doctoral students to study in a personalized doctoral program suited to their academic interests and to experience different cultures. The findings show that collaboration of six universities with their academic programs did blend to create an intercultural learning environment. There is also evidence that educational technology can support and enhance an multicultural learning, with increasing participation each year (see Davis & Cho, 2005).

The online Reading Group community helped students to start and support ongoing intercultural learning. It appears to have supported the development of openness but stopped short of supporting flexibility. Participation appears to have reduced cultural shock, and with further experience supported students to become familiar with new people. In that sense, the technology can make a bridge for a cyber friendship that later developed into a real life friendship among different nations. Moreover, the online reading group helped students gain access to a wider range of knowledge and research topics as well as experts who could support their research. Educational technology thus facilitated an intercultural learning environment in this ILET strategy.

Evidence from the Summer Academy and a long-term study abroad provides richer evidence of students' on-going multicultural learning process. The ILET project definitely served as a vehicle for students to gain multicultural competencies. Working in an intercultural learning environment, students were motivated and stimulated to explore unfamiliar academic areas and cultures. It seems that the ILET project fulfilled its vision of providing an intercultural learning environment for future educators, faculties, and educational leaders to become multi- and interculturally competent in a digitally networked global society.

Multicultural competence is a learning process in which students gain awareness of different culture, become sensitive to other culture, and have flexibility and openness in their academic culture. Promoting of participation in the ILET strategies has been challenging, particularly for a longer term sojourners. Most doctoral students have their own professional and family responsibilities, so it is hard for them to make arrangements to be apart and to afford the extra finance. In order to motivate more students to participate in future, the project aims to provide strong and reliable evidence that the strategies developed by the project benefit doctoral education. Evidence of positive impact is also important for sustainability once grant funding expires and to spread the strategies into other programs.

Most of our measurement of multi- and intercultural competency in the ILET project has been conducted using individuals' reports, comments, interviews, and surveys. Although these methods can be subjective, the methods have been used commonly in the area of intercultural research. More rigorous scientifically-based evidence with multiple sources of data will require further development of instruments and related methodologies to research intercultural competence. Further work is also required to find ways of using technology to enhance the lived experience and to accelerate the development of intercultural competence in a shorter time span, as well as to prolong engagement in our intercultural doctoral community.

Case #4: Social Network Communities and Multiculturalism

The Web 2.0 movement refers to the second attempt to categorize Internet-based services including social networking communities, wikis, blogs, communication tools and

folksonomies that facilitate online collaboration and sharing among users (Web 2.0, 2006). The impact of this movement has provided new platforms for communicating, sharing ideas, and collaborating online. Social networking communities (SNCs) are one component of the Web 2.0 movement that allow users to create an online identities through profiles containing images, comments, messages, and personal interests. Stephen Downes (as quoted in Skiba, 2006) provides a simple description of how SNC's fit into the Web 2.0 movement: "In a nutshell, what was happening was that the Web was shifting from being a medium, in which information was transmitted and consumed, into being a platform, in which content was created, shared, remixed, repurposed, and passed along." Although there is yet to be a widely accepted definition for SNCs, most include the following components: profiles created by participants, public commentary, a friend's list, and images.

Over the past year, SNCs have become widely popular (MySpace has an estimated user profile base of about 130 million worldwide and Facebook has a estimated user base of 13 million as reported by Wikipedia.com) and participants are experiencing unique opportunities to engage in interactions with people from all over the world. Since the launch of the first SNC in 1995, participation has required users to have access, to be literate, and to be educated. Upon joining SNCs such as Facebook or MySpace, participants are introduced to an abundance of opportunities where they can join groups, add friends from high school or by location, and find their favorite musicians through the friend request option.

In the 1980's pen pals were the new and exciting format for interacting with people all over the world because they changed how people could communicate and with whom. SNCs have changed what we can do and at what age we can do it. Participation within SNCs provides members with unlimited access to information and allows the participants to interact with anonymity. In this interactive environment, teachers can collaborate with other educators on a global scale and gain cultural insight into societal practices and traditions and users have the opportunity to have a voice on important issues.

SNCs provide a variety of opportunities within multicultural education. By joining these online networks, participants have the opportunity to learn about other

cultures, interact with participants from other cultures or their own, and collaborate with participants across the world. Special interest groups such as musicians, politicians, and major advertising corporations are also taking advantage of these popular formats for communication.

Musicians have established a subculture within MySpace and as a result of their online presence participants are exposed to a variety of culturally specific music.

Politicians have established an online presence within MySpace and Facebook by using these platforms for gaining more youth involvement in campaigns through advertisements and creation of groups that target young people. Also, advertising has become a major staple within MySpace and businesses are taking advantage of the new opportunities to promote their product through online social environments.

In addition, participants can share files and resources with other users. Through Facebook's new share feature participants can quickly share a link on the Internet or attach an article or document for others to view. Another opportunity that is available through participation within SNCs is the growth, development, enhancement, or modification of one's personality within an across cultures. SNCs are also creating new ways for second language learners to interact and communicate. Sleeter and Tettegah (2002) argue, "technology can provide avenues for learners who would normally be excluded due to language differences."

One of the possible outcomes that can result from participation within SNCs is that current users are exposed to new cultures and can consequently become more accepting of other cultures. These unique group dynamics found within these environments provide opportunities for participants to acquire cultural competence in a comfortable and safe environment where profiles can be viewed at their discretion.

A possible danger of participating in SNCs is that participants may be likely to reject new cultures causing the community to become more homogeneous. Online social communities such as MySpace and Facebook have high variability within group demographics including differences in age, location, ethnicity, political preference, gender, and sexual orientation. Smaller groups of users who have similarities within one or more of these subcategories create their own online social networks based on specific interests. Many interest and group specific SNC's have been created and many are

culturally driven. Some examples include Adoos (Latin American and Spain), Arab-Zone (Middle Eastern), CyWorld (South Korea), iWiW (Hungary), Lunar Storm (Sweden), Grono.net (Poland), Mixi (Japan), Nexopia (Canada), and Vietspace (Vietnam). When participants join interest, group or location specific SNCs, they are secluding themselves to a population within their community that may not be as diverse as the wider population found in SNCs such as Facebook and MySpace.

With the increase in popularity among youth and college students, SNCs have great potential in education. Two decades ago, pen pals were used in the classroom as informal learning platforms to facilitate interactive learning and had great success in connecting cultures across the world. Although there is a considerable need for more research on SNCs, few researchers are focusing on the educational impact of these environments. Future research in this area can provide better insight into how these environments are enabling participants to represent themselves within and across cultures. Other research areas that will allow for better understanding include exploring what participants are learning through interactions in these environments and how different types of media are used within these environments across the world.

Case #5: Massive Multiplayer Online Role-Playing Games (MMORPG)

The popularity of MMORPGs (massive multiplayer online role-playing games) has seen great gains over the past decade with the largest leaps occurring over the past year. The best-known MMORPG, Blizzard's World of Warcraft, now boasts over 7 million active accounts worldwide and NC Soft's Guild Wars just broke 3 million accounts at the time this article was written. Other popular titles looming on the horizon hope to dethrone Warcraft's cornering of the market and bring together new and old gamers alike into their respective worlds. Where once virtual online spaces were populated with hardcore gamers, they are now becoming a ubiquitous component of everyday life.

MMORPGs provide a unique gaming experience in that players not only interact with the worlds they inhabit, but they must also coexist with other players from all over the world. This interaction disseminates new content and encourages collaboration providing for educationally viable experiences in which learners develop and enhance

interpersonal skills and cultural knowledge. The educational possibilities for MMORPGs are untapped in that no other genre of gaming offers dynamic content to its players. For a modest sum, usually hovering around \$15.00 per month US for most titles, gamers find new content and updates imbued into their worlds in hopes to alleviate the tedium and repetitive game play found in the more static content prevalent in console-based games. MMORPGs mirror the modern predicament of technology implementation and multicultural education. From their inception, MMORPGs have proudly boasted a social component infused into their game play. Where else could a Swede, an Aussie, an American, a Canadian, and a German (or nearly any other combination of culturally and linguistically diverse peoples one could imagine) defeat the never-ending plagues of monsters that infringe upon the borders of persistent digital worlds on a daily basis?

Games like EverQuest, claiming the tagline “You’re in our world now,” professed to bring together players from all over the world in order to accomplish a variety of quests and activities. Careful planning on the respective parts of players would bring large groups of gamers together at synchronous times in order to reach specific goals despite geographic differences. For example, knowing that half of the folks with which you will be playing live in Japan would require attention in terms of calling a start time for a ‘raid’ or ‘quest.’

World of Warcraft has brought about a new concept in the globalization of gaming. Continent/time zone-specific servers have been started to allow players to explore dungeons and quests with adventurers from their own specific geographical regions. Chinese servers host players from China and surrounding areas, European servers offer the same service for the multitude of Euro-gamers playing online. This phenomenon, akin to the isolation inherent in some aspects of multicultural education, is eliminating the natural assimilation process that once distinguished MMORPGs as special.

Invisible borders placed on server access have divided gaming populations on a global scale, removing the ability for players to cohabitate with a common vision; the establishment of more geographically specialized markets will further segment the already separated global gaming population. The logic behind geographic-specific servers is twofold. First, Vivendi Games, the parent company of Blizzard Entertainment

and World of Warcraft, sought to increase profits through global marketing. In a June 2006 presentation (Hack et al.), Vivendi highlighted current markets as well as future targets for expansion. Secondly, a great cultural rift began to solidify between English-speaking gamers and a large section of the Asian gaming population as a whole. Certain sects of Chinese and Korean gamers began selling in-game currency and items for real money, effectively disrupting the virtual economy and driving off droves of existing players. In a stroke of genius, Blizzard stepped in and blocked certain Chinese and Korean internet protocol addresses from accessing American servers. This allowed the virtual economies to avoid rampant inflation, established new markets for in which Blizzard could reach new customers, and set a precedent for the division of the once global gaming universe to be divided to more continent-specific pools of isolated gamers. They also tore the virtual world apart in that many of the digitally formed friendships and some cross-cultural communities that did manage to flourish were torn asunder. This shift has deeper implications in that it is compounding the divide between digital natives and digital immigrants in MMORPGs, forcing gamers to socialize and interact with only those people most like themselves (Prensky, 2001). The face of online gaming is becoming a frightening façade of homogeneity; the spark that once lured gamers to unite is now segmenting the very same populations. Gamers, much like today's diverse population of students, learned and grew to respect cultural differences out of necessity as well as interest. Working together, in a classroom or online, members of different cultures could pick and choose necessary skills in order to cohabitate most successfully. Nuances, idioms, and a variety of social exchanges that were once shared have been replaced with the dull interactions occurring all too frequently in the daily lives of students. This current shift of cultural segregation becoming prevalent in MMORPGs is removing the multicultural socialization benefit of online games.

Websites like Bruce Woodcock's <http://mmorpgchart.com/> reflect the impending growth of the global population of online gamers. The ironic similarities between multicultural education and MMORPGs are eerie to say the least. We are presented with the same problem on two separate fronts: we are removing the culture from our global experiences. Instead of encouraging gamers from all over the world to learn, play, and grow together, companies are isolating them down to geographic regions. Rather than

educate all students with a panoramic vision of multicultural education, we are isolating and confining them to learn from students just like themselves.

Further research is needed if multicultural educators ever hope of tapping the nearly unlimited educational promise of dynamic content and MMORPGs in education. Current research into avatar creation and representation of self in online environments is a great start, but the educational technology community as a whole must develop methods for the assessment and implementation of educationally-based MMORPGs post haste in order to best serve the global face of multicultural education.

Discussion

Technology has proverbially made the world a smaller place to live. Communication tools, video games, and social websites have provided new and immediate ways to interact with those that do not necessarily share the same skin color, language, religion, government, culture, or shared values. However, simply *having* the connection to others does not ensure that users will instantly have or gain the multi- and intercultural skills necessary to understand or appreciate cultural diversity and complexity.

The good news is that technologies, the same tools that provide the bridges and links between diverse groups, can also be used to successfully teach an appreciation and understanding of said diversity. Five different technologies were discussed in this paper; these technologies are examples of the kinds of tools that are successfully being implemented in and out of the classroom for multicultural education. RCE and the Virtual Patient simulator were given as examples of classroom learning technologies that not only introduce diverse content and subject matter, but also provide innovative ways to evaluate interactions with multicultural content. The ILET project was given as an example where technology was not only the tool to connect cultures but also the subject matter of the discussions between interacting international groups. Finally, social networking sites and online games were provided as two forthcoming technologies that have the potential to either dramatically decrease or increase cultural understandings.

Unfortunately, although research on the first three projects has provided some beginning, positive results, we still lack a tremendous amount of understanding into the

relationship between technology and multicultural education. Much of the research that has been done, both at university and federal levels, has focused on the important issues of equity and access. Future research needs to continue to focus on these issues as well as at least four other key areas. First, RCE examines student reflection on diversity; virtual patients examine non-verbal cues such as posture and eye gaze. We need further examination into the ways in which an appreciation or a lack of understanding of multiculturalism can be evaluated.

Second, online technologies, defined broadly as the Internet or more specifically as online education, social networking, or MMORPGs, increase the opportunity for people to interact. These interactions are not always positive nor are they heterogeneous in nature. The rapid increase in user specific sites (e.g. sites for musicians, gardeners, etc.) may indicate that rather than utilizing diverse opportunities, users find themselves in others online. Research would initially examine these interactions and then develop strategies for utilizing such tools in teaching and learning.

Third, technology is neither inherently good nor bad. Technology is only as useful or as dangerous as the people utilizing said technologies. There have been a tremendous amount of internationally funded collaborations between those who use technology to accomplish certain goals; however, the ILET project was one of the first internationally funded grants to focus on the multi- and intercultural competence of those using current and future educational technologies. We need more research to not only examine the use of technologies, but the education of the users of those technologies.

Finally, technology changes rapidly and we often equate progress with this change. It is important to continue to focus on forthcoming technologies such as mobile systems (e.g. mobile phones, PSP, etc.), virtual schooling (K-12 and beyond), social sites, and online games; however, we cannot forget that cultures and societies will find ways to use technologies regardless of how new and exciting they are. In other words, radio stations in Africa, older handheld devices in small rural schools, or USB memory sticks in one-computer classrooms may not make the headlines of technology newspapers, but they still present an opportunity to impact society, culture, and the opportunities to teach and learn about culture.

In conclusion, we have presented five different projects occurring at multiple universities. These projects are examples of some of the many exciting projects happening around the world. Our goal is to not only promote a continued discussion of the variety of existing tools, but also to invite readers to participate with us in these projects. Please contact the authors for access to any of the projects mentioned.

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