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Research and innovation in teaching and learning are prime topics for the *Journal of Instructional Technology and Distance Learning* (ISSN 1550-6908). The Journal was initiated in January 2004 to facilitate communication and collaboration among researchers, innovators, practitioners, and administrators of education and training involving innovative technologies and/or distance learning.

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Editorial

Instructional Design 4: Need a learning architect?

Donald G. Perrin

Some years ago I adopted the title of learning architect. Having worked with leading architects on design and construction of academic buildings, I became aware of the far reaching role played by the architect. Specifically, I found the architect conducted deep research into my own discipline – instructional technology – and into educational research, theories, practices and methods. The architect was asking me questions about alternative futures that were beyond my own research, knowledge and understanding. He was challenging me with questions that my colleagues and students have yet to answer.

Unlike the instructional designer who makes continuous quality improvements with each iteration, the architect's work is set in stone. The foundation and external walls must be permanent, with some opportunity for remodeling interior spaces. A well designed building may stand for centuries with relatively minor modifications. For this reason, the architect has to research not only the past and the present, but anticipate changes that may occur in the future. The overall structure must have strength and stability, but internal spaces must have the flexibility to respond to future needs.

Schools have existed since ancient Greece and Rome. The industrial revolution advanced the need for public education. In 1837, Horace Mann formalized the system of education now used throughout the United States. In the mid-twentieth century the basic educational model was still the school and classroom. Lecture-demonstration-discussion was the prime method of instruction. Curriculum was built on educational policies and traditional values. The chalkboard and bulletin board were the only technologies found in every classroom. Large assembly rooms might sport a filmstrip or slide projector and occasionally a 16mm motion picture projector.

It was Sputnik that awakened US education to the need for change. It began with studies and curriculum reforms in Physics, Chemistry, Biology and Mathematics and spread to the entire curriculum. Textbooks and teaching methods were updated. Needs assessment, technology and research played an increasing role in the design, production, delivery and evaluation of curriculum materials in various formats. Audiovisual became instructional technology which in turn was integrated with curriculum, libraries, computer systems and information technology.

Such massive changes strained the resources of teacher training institutions. There was no way to retrain millions of teachers – the entire teaching force nationwide – for the new curriculums. The alternative was to embed the curriculum into materials of instruction for use by students. As students learned, the teachers learned also. This stimulated progress. Also, it was faster and cheaper to revise curriculum materials than continually retrain the teaching force. This began the transfer in responsibility for learning from the teacher to student and prepared the way for distance learning in the future. Where schools did not buy or use the new materials of instruction, reforms were only partially implemented, if at all. Half a century later we are still struggling to keep our educational systems up to date.

Changes in technology complicated the change process. Up till the 1950s, instructional technologies facilitated group instruction. These included filmstrips, slides, motion pictures, audio recordings, radio and later, television. The second half of the century introduced individualized and interactive technologies such as language laboratories, teaching machines, computers and smart phones. Schools trailed behind business and the populace-at-large in adoption of new technologies, primarily because of cost and a lack of understanding how to make

these innovations successful in education. We understood that an automobile needed driver training, fuel and regular maintenance. Early adopters of instructional technologies often scraped together enough money to purchase a new instructional technology but failed to provide teacher training, professionally produced materials, operating funds, technical support and routine maintenance. As a result, there were many setbacks. It was not until the 1990s that governments and communities recognized the value of the computers for education and made massive investments in computers, software, courseware and networks. However, the support systems needed for them to be effective were often lacking.

The Learning Architect is concerned with of the entire learning environment - much more than men and machines, curriculum and materials, teachers and students, methodologies and teacher training. The Learning Architect coordinates with the entire system of teaching and learning from inception to funding to implementation and beyond. This includes research on teaching and learning in education, training, communications, psychology and related fields. It involves needs assessment, setting goals and objectives, a determination of what the learner already knows and needs to learn. Design, implementation and evaluation of teaching and learning experiences are sensitive to cultural and individual differences and learning styles.

In 1997, I worked with faculty and administrators in the Riverside Community Colleges to introduce state-of-the-art computer labs, networks and faculty training. The system was engineered to be responsive to change and relevant well into the 21st century. It was based on student and faculty needs and institutional policies and goals. It incorporated relevant aspects of new and traditional pedagogy, outstanding educational programs, and state of the art products of the most innovative hardware and software companies. The total system was designed to be efficient and responsive to the needs of learners and teachers in all disciplines.

Technologies change rapidly and computers have about a five-year lifespan. For this reason, \$12 million budgeted for the system-wide plan was withheld until the institution made a commitment of 20% of this amount annually to keep these systems fully functioning and up to date. Fifteen years later this is still an exemplary system where many others have failed.

The policies, learning environments and support systems, like the architects building, providing a firm foundation. The internal design establishes policies and structures to support day-to-day operations, future planning, growth and change. The learning architect coordinates a team representing the interests of students, teachers, administrators and community. This team may include social scientists and specialists in needs assessment; subject matter/curriculum experts; designers and producers of courseware and learning environments; teacher trainers; and evaluators. Its purpose is more than managing the *status quo*, but to plan and support the ever changing needs.

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Editor's Note: Two areas of focus for educational administrators are student recruitment and attrition. These have a powerful economic impact on the day-to-day operations, reputation and the future of the organization. Recruitment is costly, so attrition is a major concern, particularly if it relates to the quality of education and support services.

Logging off: Attrition in online community college courses

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USA

Abstract

The purpose of this study was to investigate factors for student attrition from online community college courses. A researcher-developed survey that combined information from a pilot study and a convergence of five retention theories was used for this study. Fifty-three students who had withdrawn from courses during the Fall semester participated. Additional data were obtained for all students enrolled in an online course through the community colleges' student information system (SIS) database. Results indicated an overall negative perception with regard to a sense of belonging in an online course prior to withdrawing. Online participants indicated they were dissatisfied or did not use several of the tools that are available within the LMS, indicating that further training should be conducted for faculty teaching online courses. Additionally, online participants who participated in the survey acknowledged time management and lack of communication as primary factors for withdrawal from an online course.

Keywords: community college, online, attrition, retention, distance education, junior college, demographics.

Introduction

While distance learning may seem like a relatively new phenomenon given the recent popularity of online learning (DLN, 2010), distance education has existed in some form or another since the 1800s. Originally, distance education was provided in the form of short lessons being delivered via mail. Eventually, the ability to relay knowledge more quickly came in the form of radio and televised distance education. However, accompanying the growth in Internet usage, today's distance education focus has dramatically shifted toward internet-based delivery. Howell, Williams and Lindsay reported in 2003 that the Internet was being used more than any other continuing education delivery strategy. More and more learners are requiring flexibility in program structure to accommodate their other responsibilities. Many people taking online courses are doing so because they have full-time jobs and/or have families (Porter, 2009). Online learning has provided students with families, jobs, and time conflicts the opportunity to obtain an education anywhere and anytime via technology (Howell et al., 2003; Liu, Gomez, & Yen, 2009). The convenience that online learning provides has led to an increase in online course offerings. A survey by The Sloan Consortium, an online education group, estimated that in the 2009 academic year more than 5.6 million individuals took online courses (Allen & Seaman, 2010) and 96% of colleges and universities offered some form of distance learning (DLN, 2010).

In 2010, over one million new students logged into an online course, which brought the growth rate of online enrollment to over 21% (Allen & Seaman, 2010). However, online learning suffers from student attrition issues more so than face-to-face programs. The 2010 Sloan-C report (Allen & Seaman, 2010) reemphasizes this point, which has been made by a chorus of researchers and reports (Snow, 2010). Those reports estimate online course attrition to be anywhere from 10% to 80% higher than attrition in traditional face-to-face courses (Ali & Leeds, 2009; Angelina, Williams, & Natvig, 2007; Martinez, 2003; Tinto, 2006; Yukselturk & Inan, 2006).

Over the decades, several retention models have been developed to explain the factors that inhibit students from persisting in their educational courses. Spady (1970), Tinto (2006), and Bean (1980) each identified reasons why students might discontinue in courses. One such factor was socialization with the institution, including faculty members and classmates. However, these theories primarily focused on the traditional learner who attended a 4-year institution. Bean and Metzner (1985) expanded on the previous theories noting the gap in the research in regard to nontraditional learners. Their Conceptual Model of Nontraditional Undergraduate Student Attrition, which looked at older, part-time and commuter students, placed less emphasis on social interactions because non-traditional students tend to be older and enrolled in courses part-time, and placed a higher emphasis on outside institutional variables such as age, gender, ethnicity, motivation, and other environmental factors. While this theory is more fitting of the students who enter into community colleges, it does not take into account the online learner. Kember (1989) proposed the Longitudinal Model of Drop-Out from Distance Education as a means to bridge the gap on reasons for attrition between online and traditional learners. His model was influenced by previous theories, but focused solely on the online learner. Kember's model suggests that learners engaged in distance education are more likely to be mature adults with families than other students attending college. The situation of these mature learners introduces other factors, such as the learner's ability to "integrate the demands of part-time off-campus study with family, work, and social commitments" (Kember, 1989, p. 294), circumstances that are far less common among college undergraduates. According to Kember (1989), family circumstances such as the number and age of dependents, housing conditions, and the pressures of responsibilities such as earning an income to support the family, can all have a significant impact on a distance learner's decision to quit his or her course. Kember (1989) also identifies levels of income, gender, and geographic distance from the institution as contributing to attrition (Tyler-Smith, 2006). Since Kember's model is over two decades old, it does not take into account the changing demographic characteristics of the current online learner. While the online learner does typically tend to be older with family and work obligations, 83% of undergraduate students were enrolled in online courses in 2009 (Allen & Seaman, 2010).

The demand for online and distance education opportunities is growing on a national level. The increase in online courses is a direct result of the type of individuals who select to learn virtually. Most online students tend to be older, working, and involved with family and activities in the community (Howell et al., 2003; Palloff & Pratt, 2003; Smith, 2009; Tyler-Smith, 2006). Currently, 96% of traditional universities offer online courses (DLN, 2010), and over 5.6 million individuals were enrolled into online courses during the Fall of 2009 (Allen & Seaman, 2010). While the number of individuals who enroll into online courses is increasing, so is the number of students who withdraw. For many colleges, attrition and retention go hand in hand. Students who withdraw from online courses affect the overall retention rates.

Understanding online attrition and retention is a critical factor because online student retention has been suggested as one of the greatest weaknesses in online education (Herbert, 2006; Hill, 2000; Patterson, 2009). Several factors can contribute to the need to withdraw from an online course. In some situations, the very circumstances that draw students to online courses such as jobs and family obligations are what get in the way of a student's continuation (Palloff & Pratt, 2003).

Maintaining student enrollment is critical for all institutions, but some administrators place a higher emphasis on retention because retention rates can influence an institution's ranking in college guides and other mediums of popular press, with the implication that the higher the retention rate, the higher the quality of education (Derby, 2004). Additionally, retention rates are often taken into consideration when administrators are evaluating whether or not an instructor is providing a quality online educational experience that promotes student success. Understanding

and maintaining retention rates is especially important for community colleges due to the fact that students traditionally enter into these institutions for the purpose of obtaining a 2-year transferable degree or a terminal certificate, enhancing job skills through workforce development, or for personal enrichment. Due to the fact that students may have various distinct goals for entering into a community college, tracking and studying retention becomes much more difficult than it would be in a 4-year university, where students' one primary goal is solidified around obtaining a bachelor's degree (Derby, 2004). Understanding the goals and needs of community college students, especially those enrolled in online courses, and how those needs and goals drive retention rates is paramount because there is a significantly lower retention rate among online courses versus traditional courses (Muller, 2008).

Theoretical framework

An institution's ability to provide students with a quality education regardless of location is vital to the success of distance learning. The theoretical foundation of this study is based in part on existing theories of student retention and attrition. Research by Spady (1970), Tinto (1975), Bean (1980), Bean and Metzner (1985), and Kember (1989) identified factors for student attrition but these theories have focused primarily on (a) traditional learners at a 4-year institution, (b) nontraditional learners at a 4-year institution or community college, and (c) nontraditional online learners. These theories, while relevant, fail to take into account the demographic and environmental characteristics of today's online learner.

Four out of the five theories indicate that student demographics such as age, race, gender, socioeconomic status, ethnicity, and enrollment status are defining factors as to whether or not a student completes his or her academic goals. Furthermore, emphasis is placed on social interaction or integration into the institution as having an impact on student persistence. Course subject or academic variables and previous educational experiences were also identified in two out of the five theories as an additional reason for student attrition. Noting some gaps in each of these theories in relation to community college online learners and the lack of current online retention models, the researcher suggests a convergence model that combines major components such as student demographics, course subject, previous online experience, and social interaction, which are embedded within these theories.

Purpose and Research Questions

The foundation for this study was based in part on a portion of the eastern central Mississippi community college's mission statement, which states that the college seeks to serve a diverse student population through the use of campus-based and distance education programming. That portion of the mission statement can be implied to mean that the quality of education provided to campus students will also apply to online students, yet attrition from online courses was 17% higher than the traditional campus courses during the Fall of 2010. The purpose of this study was to determine factors for student withdrawal from online community college courses.

Seven research questions guided this study:

1. Is there a relationship between student characteristics and withdrawal from online community college courses?
2. Is there a relationship between previous experience with online college courses and withdrawal from online community college courses?
3. Do online community college students withdraw at a higher rate from specific courses?
4. Does the length of time enrolled in an online community college course decrease the likelihood of withdrawal?

5. What are the self-reported reasons for student non-completion of online community college courses?
6. What is the level of satisfaction by learners of the interactive LMS tools in the online course?
7. What is the perception of student engagement prior to withdrawing from an online community college course?

Methodology

Setting

The research site is a community college that is located in a city less than 90 miles from the Mississippi state capital and boasts a population of 38,000, which is comprised of 46% females and 54% males. Additionally, the city's ethnical make-up is 44% Caucasian, 54% African American, and 2% other. The average household income is \$25,000 (Citydata, 2009). The research site is a small, eastern central Mississippi, 2-year community college, which was founded in 1937 as the 13th and 14th grades of one of the local area high schools and did not become formalized as a community college until 1980 when it adopted its own district and Board of Trustees. Currently, the College offers General Education classes, 2-year programs, University Transfer, and Community Education courses. The College also offers online courses for these offerings through the Mississippi Virtual Community College (MSVCC).

The MSVCC is a consortium of Mississippi's 15 community colleges that makes it possible for these colleges to leverage their distance learning resources--including faculty, courses, support services, and technology. Through the MSVCC, students may take courses from community colleges anywhere in Mississippi while getting support services from a local college. To take a course from a remote college, a student enrolls at a local community college. The host college supports the student with a full slate of student services, including advisement and counseling, financial aid, and learning resources. The host college awards credit for the course. The remote college provides the course instruction. (MSVCC, 2011,1)

During Fall 2010, the community college had an overall enrollment of 3,979 students. The student body was comprised of 32.55% male and 67% female. Of the total enrollment, 2,945 students were enrolled full-time and 1,034 students were enrolled part-time. The ethnic make-up of the student body was comprised of 50.16% Caucasian students, 45.52% African-American students, and the remainder of the student body (5.32%) was Hispanic, American Indian, or Race Unknown. Of the total enrollment, 2,522 of the students were enrolled in at least one online course. The retention rate in the online courses was less than 60% (59.2%) and the attrition rate was 30%, which is 17% higher than the attrition rate of the traditional courses.

Instructors for the online courses are either adjuncts who teach less than four courses or full-time faculty members who teach a maximum load of seven courses per year whether online, traditional, or a mixture of the two. Online courses are maintained using Blackboard 9.1 as the Learning Management System (LMS). Instructors receive voluntary training on Blackboard and other technological resources from the Office of E-Learning and through academy courses offered through the MSVCC. Training for online courses is not mandatory; therefore, enrollment by the instructors in the training courses is low. The MSVCC (2011) reported that the research site had a total enrollment of 40 in the academy courses over the last 2 years. The enrollment was comprised of predominately the same instructors taking multiple course offerings. Additionally, the Office of E-Learning provides training throughout the academic year and for 2010 had approximately 150 enrollments with many of the same instructors attending multiple training courses. With over 100 instructors teaching the online courses, it is estimated that over one-third of the instructors have not recently attended a training session. The community college selected is

the employer for the researcher and was selected for convenient access to the data with full disclosure and support from the institution's senior administration.

Participants

The target population of this study consisted of full- and part-time students who had withdrawn from an online class at the institution being studied. Because the college is a part of the MSVCC, it is possible that students who withdraw can be a resident in any district within the state of Mississippi. Students who withdrew from online courses were identified through a drop report that is maintained in the Enrollment Tool, a database for the MSVCC. Students received an e-mail through their campus e-mail address notifying them of the research study and the importance of the data as well as a link to the questionnaire. The total number of students surveyed was 490. The response rate to the survey was 10.8%; however, use of the SIS database allowed for demographic characteristics, course enrollment, course withdrawal, and last week of attendance to be obtained for 100% of the online students. Only the students who withdrew were asked to complete the questionnaire as this research project is designed to determine factors for student withdrawal from online course offerings.

Data were obtained for all students enrolled in an online course through the community colleges' student information system (SIS) database. Participants were identified through a report in the Mississippi Virtual Community College (MSVCC) database. The online survey was developed on a professional website designed to collect and store data from survey responses. A total of 1,566 students enrolled in online courses during the course of this study. Upon IRB approval, invitations to participate in the survey were emailed to the 490 students who had withdrawn from an online course during the research period. Participants began completing the survey in August and the survey concluded in November when withdrawing from an online course was no longer available to the students as per the research site's academic calendar.

Instrumentation

A researcher-developed survey that combined information from a pilot study and a convergence model of five retention theories was utilized for this study. The time involved in developing the instrument took place in several stages. Through the literature review and pilot study, the survey was developed, refined, and revised. The instrument was designed based on information gathered from the literature review and the content validity of the survey was determined through a review by educators with knowledge in the field of instructional technology and educators with knowledge of working with and around community college students. The questionnaire was administered online and assessed various possible factors associated with student attrition from online community college courses. Because this instrument was used in a pilot study, the pilot study participants were removed from the list of participants in the current study. The pilot study provided valuable information regarding the appropriateness of instructions and items contained in the survey.

Demographic information was obtained to determine whether there was an underlying relationship between students who withdrew from online courses and their demographic characteristics. In addition, the instrument collected data regarding whether engagement or a lack thereof was a significant reason for students not completing the online course. Students were also asked if they had any prior experience with online courses and if they would consider registering for another online course in the future.

Data collection

The online questionnaire was administered using Survey Monkey. Additional data were obtained for all students enrolled in an online course through the community colleges' student information system (SIS) database. At the beginning of the Fall 2011 term, an electronic message was posted to the LMS notifying students that they would be requested to complete the questionnaire if they

withdrew from an online course. This electronic message served as a courtesy to the students to encourage them to participate. The e-mail address of the participants was retrieved from a list generated in the Enrollment Tool, a database system managed by the MSVCC.

On the day that a student withdrew from an online course, he or she received an e-mail message, including the survey link, explaining the objective of the research, its importance, information pertaining to confidentiality, instructions for completing the questionnaire, and a link to the questionnaire. Survey Monkey allowed for the link to be uniquely tied to each individual student, therefore, it was convenient to send the second and the third emails to students who did not participate on the first and second survey, accordingly. Student privacy was carefully protected and students were not asked to provide their names or other identification. Additionally, because not all students who withdraw from online courses will continue to check their school e-mail account, a printed postcard was mailed within one week of withdrawing from the online course. Student addresses were located from the school's student information system. The postcard included the objectives of the research, the printed link to the survey, and a reminder that the survey had also been e-mailed to their school e-mail address.

Results and discussion

A total of 3,691 course enrollments and 773 course withdrawals were recorded during the Fall semester. The enrollments were comprised of 1,566 unduplicated students who ranged in age from 17 years old to 75 years old ($M = 27.70$, $SD = 8.50$). The individual student course enrollments ranged from 1 to 11 courses ($M = 2.35$, $SD = 1.59$). The individual student course withdrawals ranged from 1 to 5 withdrawals ($M = 1.57$, $SD = 0.86$). Of the potential 490 students who comprised the 773 course withdrawals, 53 (10.8%) elected to participate in the research study. Table 1 presents student demographics based on ethnicity, age, and gender available from the SIS data for the entire population of students enrolled in online courses during the Fall semester.

The highest percentage of course withdrawals was by African American (62.2%), female (81.8%) students between the ages of 18-23 (42.0%). Additionally, the highest percentage of surveyed withdrawn students indicated that they were single (49.1%) with no children (28.3%) and were not employed (39.6%) due to a full-time college enrollment status (71.7%). No statistically significant associations were indicated. The findings in this study indicate that online community college learners hold similar attributes to students who attend traditional courses at 4-year institutions in that they are between the ages of 18-23, attend school full time, and are not necessarily constricted by environmental characteristics such as spouses, children, or job obligations. These findings are contradictory to previous research conducted by Kember (1989), which stated that online learners were more likely to be mature adults who were taking online courses out of the need to integrate the demands of family, work, and social commitments.

Table 1
Demographics for all students enrolled in online courses

	N	%
Course Enrollments	3691	
Students	1566	
Mean Age / SD	27.70 / 8.50	
Minimum / Maximum / Range	17 / 75 / 58	
Mean number of courses enrolled / SD	2.35 / 1.59	
Minimum / Maximum / Range	1 / 11 / 10	
Gender: n (%)		
Male	767 (20.8)	
Female	2924 (79.2)	
Race or ethnic group: n (%)		
African American / Black	2081 (56.4)	
Caucasian / White	1402 (38.0)	
American Indian	83 (2.2)	
Asian / Pacific Islander	11 (0.3)	
Hispanic	15 (0.4)	
Multi-Racial / Other	99 (2.7)	
Age: n (%)		
18-23	1548 (42.0)	
24-29	854 (23.3)	
30-35	588 (18.7)	
36-41	298 (7.9)	
42-47	181 (4.9)	
48-53	89 (2.4)	
54-59	25 (.06)	
60-64	4 (0.1)	
65 or older	4 (0.1)	

Student Characteristics

Student demographics available from the SIS data for the unduplicated population of students who withdrew from online courses during the Fall semester are presented in Table 2.

Table 2
Demographics for students withdrawn from online courses

	N	%
Course Withdrawals	773	
Students	490	
Mean Age / SD	27.85 / 8.53	
Minimum / Maximum / Range	17 / 63/ 46	
Mean number of courses dropped / SD	1.57 / 0.86	
Minimum / Maximum / Range	1 / 5 / 4	
Gender: n (%)		
Male	89 (18.2)	
Female	401 (81.8)	
Race or ethnic group: n (%)		
African American / Black	305 (62.2)	
Caucasian / White	166 (33.9)	
American Indian	1 (0.2)	
Asian / Pacific Islander	1 (0.2)	
Hispanic	3 (0.6)	
Multi-Racial / Other	14 (2.9)	
Age: n (%)		
18-23	206 (42.0)	
24-29	115 (23.6)	
30-35	84 (17.3)	
36-41	42 (8.4)	
42-47	27 (5.4)	
48-53	10 (2.0)	
54-59	5 (1.0)	
60-64	4 (0.2)	
65 or older	0 (0.0)	
Marital Status		
Single	26 (49.1)	
Married	16 (30.2)	
Divorced	5 (9.4)	
Widowed	2 (3.8)	
Committed Relationship	4 (7.5)	
College Enrollment		
Part-time	13 (24.5)	
Full-time	38 (71.7)	
Not Indicated	2 (3.8)	
Hours Worked Per Week		
Not Currently Employed	21 (39.6)	
1-15 hours	2 (3.8)	
16-30 hours	8 (15.1)	
31-45 hours	17 (32.1)	
46-60 hours	4 (7.5)	
Not Indicated	1 (1.9)	
Minors Residing in Home		
None	15 (28.3)	
1	17 (32.1)	
2	8 (15.1)	
3	7(13.2)	
4 or more	5 (9.4)	
Not Indicated	1 (1.9)	

With respect to marital status, students were categorized as single, married, divorced, widowed, or in a committed relationship. The students' marital status was recorded by the students who participated in the survey at the time of their withdrawal from online courses. At the time of withdrawal, the greatest number of students ($n = 26$, 49.1%) reported that they were single at the time of withdrawal. The second greatest number of students ($n = 16$, 30.2%) reported that they were married at the time of withdrawal. Respondents were asked to indicate overall enrollment status at the community college and indicated Part-time (13, 24.5); full-time (38, 71.7) and Not indicated (2, 3.8). Regarding hours worked per week, respondents reported: not currently employed (21, 39.6), 1-15 hours (2, 3.8); 16-30 hours (8, 15.1); 31-45 hours (17, 32.1); 46-60 hours (4, 7.5); not indicated (1, 1.9).

At the time of withdrawal, respondents reported the number of minors (children under the age of 18) who resided in their homes. Of the 53 respondents, one elected to not answer this question. Most respondents ($n = 17$, 32.1%) reported having one minor child in the home while 28.3% ($n = 15$) reported no minor children in the home.

Whether there is a relationship between gender and withdrawal from online community college courses was examined using a chi square test of independence. The results of the nonparametric chi-square test of independence did not indicate a significant association, $\chi^2(1) = .001$, $p = .976$ between gender and course withdrawals. While females had a higher number of course enrollments (78.9%) and withdrawals (80.5%) when compared to males, the expected and observed numbers do not show significant variance.

Whether there is a relationship between ethnicity and withdrawal from online community college courses was examined using a chi square test of independence. The results of a nonparametric chi-square test of independence did not indicate a significant association, $\chi^2(5) = 0.49$, $p = 1.000$, between ethnicity and course withdrawals. African Americans had the highest number of course withdrawals (62.2%) but also had the highest number of course enrollments (56.4%). Caucasians had the second highest course withdrawals (33.9%) but also held the second highest course enrollment (38.0%). American Indian and Asian/Pacific Islanders held a withdrawal rate of 0.2%, respectively, but American Indians comprised 2.2% of the course enrollments while Asian/Pacific Islanders only comprised 0.3% of the overall course enrollments.

Online course previous experience

When examining whether there is a relationship between previous experience with online college courses and withdrawal from online community college courses, results indicated that 22.6% reported Fall 2011 as their first online experience. These findings are consistent with previous research (Allen & Seaman, 2010), which has reported online learning as one of the fastest growing forms of instruction with an average yearly growth rate of 21%. Yet, attrition rates are estimated to be 20-50% higher than traditional courses (Diaz, 2009). Kember (1989), revisiting Tinto's (1975, 1987) Longitudinal Model of Individual Departure, proposed that previous online educational experience as well as depths of commitment to completion were indicators of student attrition. Influenced by Bandura's (1986) theory of self-efficacy, Knowles and Kirkman (2007) acknowledge that students must log into the online classroom as a solitary initiative and then remain active throughout the duration of the course. Students with a higher sense of self-efficacy will more likely disallow external variables to prevent them from persisting in online endeavors. However, as previously reported, the findings in this study indicate that primarily the students who elected to withdraw were not characterized as having the same external variables as cited by Kember (1989) to prevent them from persisting.

The results of a chi-square test of independence indicated a significant association, $\chi^2(1) = 7.978$, $p = .005$, between prior experience with online course enrollment and online course attrition. These findings indicate that students who have prior experience with enrolling and withdrawing

from online courses are more likely to do so again. The findings are consistent with previous research studies (Kember 1989) in which students who have previously enrolled and withdrawn from an online course are more likely to withdraw from future online courses. Additionally, based on the findings, it can be concluded that for the students who reported Fall 2011 as their first time as having enrolled in an online course, external variables such as family and job obligations were not primary factors for non-persistence, and other factors influenced their decision to withdraw.

Withdrawals from specific courses

When examining whether online community college students withdraw at a higher rate from specific courses, results showed that 17.1% of respondents reported withdrawing from English Composition, 11.4% of respondents reported withdrawing from Chemistry, and 7.6% of respondents reported withdrawing from Introduction to Philosophy. This may indicate that students withdraw from subjects they find more difficult or that do not fit well with their commitment or abilities. Prior research has found that course content, including the difficulty, or perceived difficulty, of the subject matter as well as the abilities and commitment of the student are considerations for student attrition (Diaz, 2009; Kember, 1989). Additionally, students withdrew at a lower rate from Student Success (1.2%), Business Office Technology (8.9%), Mathematics (10.0%), and Fine Arts (10.5). These disciplines also had the lowest rate of withdrawal during the Summer pilot study, which included withdrawal rates from Student Success (2.4%), Business Office Technology (2.7%), and Mathematics (7.5%).

Length of course enrollment

When examining whether the length of time enrolled in an online community college course decreases the likelihood of withdrawal, the greatest number of students (11.9%) reported withdrawing during the last available week (Week 11). The second greatest number (11.4%) of course withdrawals was recorded during Week 1. Weeks 2 and 5 reported similar withdrawal rates of less than 9.5%, which were also the fourth and fifth highest weeks of withdrawal. These percentages indicate that the length of time enrolled in an online community college course does not decrease the likelihood of student attrition, which correlates with other research (Diaz, 2009), showing that students enrolled into full-term (16-18 weeks) online courses may fall into a lapse of concentration due to time management or time constraints. This may be more problematic in an online setting where a lack of face-to-face contact may exacerbate inattention to class participation and/or activity, resulting in a student's need to withdraw by set deadlines to prevent receiving a failing grade for the course even though they remained enrolled for an extended time.

Table 3
Course withdrawals by week

	n	%
Week 1	88	11.4
Week 2	72	9.3
Week 3	78	10.1
Week 4	55	7.1
Week 5	73	9.4
Week 6	53	6.9
Week 7	67	8.7
Week 8	66	8.5
Week 9	62	8.0
Week 10	67	8.7
Week 11	92	11.9
Totals	773	100

Table 3 presents the data on course withdrawals by week and shows the frequency and percentage by students.

Table 4 shows the frequencies and percentages of total course enrollments and withdrawals by students who withdrew during the Fall semester. A total of 490 students comprised the 773 course withdrawals and 1,563 of the course enrollments. Total course enrollments by students who eventually withdrew during the Fall semester ranged from 1 to 11 ($M = 3.18$, $SD = 1.79$). Total course withdrawals during the Fall semester ranged from 1 to 5. The greatest number (62.9%) of students reported withdrawing from one online course. No students reported withdrawing from six or more courses.

Table 4
Course enrollment activity by withdrawn students

	Courses Enrolled	Courses Withdrawn
	n (%)	n (%)
One	110 (22.4)	308 (62.9)
Two	99 (20.2)	106 (21.6)
Three	51 (10.4)	54 (11.0)
Four	122 (24.9)	21 (4.3)
Five	68 (13.9)	1 (0.2)
Six	24 (4.9)	0 (0.0)
Seven	8 (1.6)	0 (0.0)
Eight	1 (0.2)	0 (0.0)
Nine	5 (1.0)	0 (0.0)
Ten	1 (.2)	0 (0.0)
Eleven	1 (.2)	0 (0.0)
Totals	490	490

The results of a chi-square test of independence indicated a significant association, $\chi^2(40) = 33.820$, $p < .05$, between course enrollments and course withdrawals. The results indicate that the probability for withdrawing is greater as the number of online courses in which a student enrolls increases. As illustrated in Table 5, the greatest number of courses that a student was enrolled in was 11 and the greatest number of courses that a student withdrew from was 5. The student who elected to enroll in 11 courses eventually withdrew from 4 courses. Additionally, the student who elected to enroll in 10 courses eventually withdrew from two courses. Of the 110 students who elected to enroll in 1 online course, 100% of those students eventually withdrew from the online course.

Table 5
Course withdrawals by course enrollment

Enrollment	Withdrawals	1	2	3	4	5
1	Observed	110	0	0	0	0
	Expected	69.1	23.8	12.1	4.7	0.2
2	Observed	110	34	0	0	0
	Expected	69.1	21.4	10.9	4.2	0.2
3	Observed	27	18	6	0	0
	Expected	32.1	11.0	5.6	2.2	0.1
4	Observed	61	31	24	6	0
	Expected	76.7	26.4	13.4	5.2	0.2
5	Observed	35	12	16	5	0
	Expected	42.7	14.7	7.5	2.9	0.1
6	Observed	6	10	4	4	0
	Expected	15.1	5.2	2.6	1.0	0.0
7	Observed	1	0	2	5	0
	Expected	5.0	1.7	0.9	0.3	0.0
8	Observed	1	0	0	0	0
	Expected	0.6	0.2	0.1	0.0	0.0
9	Observed	2	0	2	0	1
	Expected	3.1	1.1	0.6	0.2	0.0
10	Observed	0	1	0	0	0
	Expected	0.6	0.2	0.1	0.0	0.0
11	Observed	0	0	0	1	0
	Expected	0.6	0.2	0.1	0.0	0.0

Self-reported reasons for withdrawal

When reviewing the self-reported reasons for student non-completion, comments were categorized into eight themes: Time Management Dropped by Instructor, Instructor Communication/Lack of Communication, Financial Aid/ Payment for Course or Supplies, Job Responsibilities, Computer Access, course design, and family. One of the prevalent themes was related to time management. Respondents reported:

More work than I expected. Thought it would be easier online.

Not enough time at home to devote to course.

The course was very time consuming. Course was reading intensive.

“Dropped by instructor” was another prevalent theme. The policy of the research site specifies that students are required to attend class regularly. Specific attendance requirements for each course are determined and enforced by the instructor and must be presented in writing via the course syllabus at the beginning of the term. Additionally, if the student misses two consecutive weeks of work or fails to submit assignments in a timely manner, the student may be dropped from the roll with a “W” being recorded on their transcript (Meridian Community College, 2011).

Approximately 20% of participants acknowledged communication or lack thereof as a factor for withdrawal. Miscommunication between the assignments and lack of communication with the instructor were indicated.

Couldn't get a response from the instructor.

Communication issues with the instructor. I emailed her several times and the only response I received was to verify that I was dropping the class.

Only 3.8% of participants strongly agreed that the online course allowed for social interaction, 7.5% strongly agreed that the online course allowed them to effectively communicate, and 5.7% strongly agreed that they were able to develop relationships with their fellow classmates and instructors. While 32.1% of participants strongly agreed or agreed that their instructor was prompt in responding to e-mails and phone calls, effective communication in an online course is vital for student retention. This fact was also evident from previous research, which found that the communication and interactions that take place between the learners and between the learner and the instructor, is at the heart of the learning experience and is one of the defining characteristics of successful learning in both traditional and online learning environments (Baker, 2010).

Furthermore, retention theorists Spady (1970), Bean (1980), and Tinto (2006) have advocated social interactions as a primary factor for student retention in a face-to-face course setting and in the online environment (Kember, 1989).

Time management, family, and job responsibilities were cited by 37% of participants as the primary reason for withdrawal. This relates directly to the type of learners who elect to study online. Previous research by Kember (1980) has identified personal responsibilities including children, finances, and social commitments as influencers of a student's ability to effectively learn online. Kember indicated that these circumstances did not relate to the typical aged undergraduate student. However, in this study, 1,548 of the course enrollments were comprised of individuals between the ages of 18-23. From that enrollment body, 206 elected to withdraw from one or more of the online courses in which they were enrolled. Furthermore, 49.1% of the participants indicated that they were single and 28.3% of the participants indicated that they did not have any minor children residing in their home during the research period. Moreover, 39.6% of the respondents indicated that they were not currently employed. This may be in relation to the fact that 71.7% indicated that they were attending college on a full-time basis. The data findings are contradictory to Kember's Longitudinal Model of Drop-Out from Distance Education and further demonstrate that previous retention models do not take into account the changing demographics of the current online learner.

Satisfaction with interactive LMS tools

The level of satisfaction by learners of the interactive learning management system tools that are currently available for instructor use in online courses was examined in this study. Effectiveness has been defined as having a positive impact on student learning (Feiman-Nemser, 2001). Determining impact was outside the scope of the research; therefore, effectiveness was determined by the perceptions of respondents as cited by their choice of response.

Findings illustrate that *Did Not Use This Tool* had the highest percentage, which ranged from 35.8% to 52.8% on seven of the nine tools available. E-mail was the only tool to receive the highest rating (22.6%) under *Very Satisfied*, which was only one of three tools to receive a rating above 9.4% under *Very Satisfied*. All of the tools, while low, received ratings under *Very Dissatisfied*, indicating that students were either very dissatisfied with their limited use of the tool or how the tool was used in the course.

With the exception of e-mail, these percentages indicate that participants were not satisfied with their use of the LMS tools. Furthermore, these findings could indicate that either there is a lack of

use on the instructor's part to incorporate interactive elements into the online course or that some students lack technical skills or working knowledge of the available tools. The lack of use may be a direct result of the fact that online instructors must not only be disseminators of knowledge, but must also possess the basic technical skills to be course designers as well. To do so, faculty must learn and stay current concerning technologies that can be used to create online courses in a way that will impact student learning. The lack of use of eight of the nine LMS tools indicates that instructors may not possess the necessary training needed to use interactive elements that can produce successful courses in which interaction is engaging and productive (Blau & Gorsky, 2009; Moffett, 2004). Because e-mail received fair rankings under *Very Satisfied* and *Satisfied*, it could be that instructors use this tool more due to ease of use and familiarity. Failure to use the tools on the students' part may contribute to the students' inability to complete required assignments or participate in class activities. Inability or lack of use of interactive LMS tools may contribute to student attrition and suggest that interaction through the use of these tools does not just happen, but rather has to be designed, with a working understanding, into the course. Table 6 shows the percentages of student satisfaction with tools available for use in the LMS.

Table 6
Student level of satisfaction with LMS tools

	Very Satisfied (n = 44)	Satisfied (n = 43)	Neutral (n = 44)	Dissatisfied (n = 44)	Very Dissatisfied (n = 44)	Did Not Use this Tool (n = 44)
Podcasts	7.5%	15.1%	11.3%	0.0%	1.9%	47.2%
Discussion Board	13.2%	26.4%	15.1%	5.7%	1.9%	18.9%
Blogs	9.4%	13.2%	12.3%	1.9%	1.9%	43.4%
E-mail	22.6%	22.6%	9.4%	5.7%	9.4%	13.2%
Journals	7.5%	11.3%	13.2%	1.9%	1.9%	47.2%
Video Clips	7.5%	15.1%	18.9%	0.0%	5.7%	35.8%
Audio Clips	7.5%	15.1%	18.9%	0.0%	5.7%	35.8%
Wimba Pronto	5.7%	9.4%	11.3%	1.9%	3.8%	50.9%
Wimba Classroom	5.7%	7.5%	13.2%	0.0%	5.7%	52.8%

Student engagement

Students' perceptions of engagement in the online community college course prior to withdrawing were also examined. Social interaction in a virtual course can be accomplished through the use of communication tools available in the LMS. Wimba Classroom (52.8%), Wimba Pronto (49.1%), Journals (49.1%), and Blogs (47.2%) received the highest percentages under *Did Not Use This Tool*. None of the six tools received a ranking higher than 18.9% under *Strongly Agree*, and only Discussion Board (22.6%) and E-mail (20.8%) received a ranking over 20% under *Agree*. E-mail (18.9%) received an 11.4% higher ranking under *Strongly Agree* as compared to the other five LMS tools and a rating of 20.8% under *Agree*, which suggests that e-mail was an effective means of communication in the online community college course. Moore's (1997) Transactional Distance Theory states that geographical separation does not impact the

quality of teaching and learning, rather it is the social interactions that take place within it. This theory has been used by prior researchers to explain why the use of electronic communication tools might increase the social interactions that take place in the online environment (Baker, 2010; Chen & Willis, 1998; Gorsky & Caspi, 2005).

Social transactions among participants allow members to see themselves as legitimate members of the online learning community (Lee, Bray, & Carter-Wells, et al., 2004); yet in this study 76.4% of respondents strongly disagreed with the statement, "Even though I was not in a physical classroom, I still felt like I was a part of a learning group or that I belonged." In relation, 90.2% gave a rating of neutral or below to the statement "I was able to develop friendships in this course." Furthermore, only 3.8% of participants strongly agreed to the statement "The online course allowed for social interaction." Social interaction in an online course should be considered a prime component of learning (Maeoff, 2003). Gaillie (2005) reported that increased social interaction had significant effects on student retention, and that increased social presence could decrease student attrition in the online environment. Additionally, Gosmire, Morrison, & Van Osdel, (2009) suggested that students who feel disconnected in an online course due to the lack of face-to-face time with the instructor and fellow classmates may benefit from use of LMS communication tools. This study's findings suggest that lack of social interaction is a factor for student attrition in an online community college course. Table 7 shows student perceptions of social interaction and engagement in an online community college course prior to withdrawing. There were a myriad of responses. "My instructor was prompt in responding to emails and phone calls" received the highest ranking (17.0%) under *Strongly Agree*.

Limitations

Identifying limitations provides researchers with the opportunity to identify possible weaknesses related to the study (Creswell, 2003). This study was limited by the length of time – one Fall academic term and that only 53 students elected to participate in the survey. Small sample sizes impact any statistical calculations conducted. The participants were individuals who withdrew from at least one online course at an eastern central Mississippi community college; therefore, the results cannot be generalized to all online community college students.

Conclusions and implications

The diverse population of community college students continues to expand and evolve almost as quickly as the growth of online learning. With attrition rates 20-50% higher from online courses than traditional courses and community college retention rates lower than 4-year institutions, it is important to understand factors that impact student attrition.

Community colleges need to employ online instructors who desire to teach online courses and who have the necessary technical skills to design and facilitate the online course. Administrators will need to provide the necessary support, resources, and training to instructors in order for them to conduct a quality online course that incorporates and encourages social interactions. There are a variety of means and methods of communication in the online environment to encourage social interaction: e-mail, blogs, journals, discussion board, Wimba Classroom, and Wimba Pronto. Instructors will need to seek out means to stay current on the use and emergence of the varied LMS tools.

Slightly more than a quarter of the surveyed students responded that the online course enrolled into and withdrawn from during Fall 2011 was their first online learning experience. This implies that some students may not be prepared to learn in an online environment or lack the self-motivation and time management skills required to be successful in an online course.

Table 7
Social interaction

	n	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Even though I was not in a physical classroom, I still felt like I was a part of a learning group or that I belonged.	42	9.4%	20.8%	13.2%	9.4%	76.4%
The online course allowed for social interaction.	41	3.8%	24.5%	24.5%	5.7%	18.9%
The online course allowed me to get to know my fellow classmates.	41	3.8%	13.2%	20.8%	20.8%	18.9%
The online course allowed me to get to know my instructor.	41	7.5%	15.1%	26.4%	13.2%	15.1%
My instructor was prompt in responding to emails and/or phone calls.	40	17.0%	15.1%	24.5%	7.5%	11.3%
I was able to develop friendships in this course.	41	3.8%	5.7%	24.5%	18.9%	24.5%
I was able to communicate effectively in this online course.	41	7.5%	13.2%	28.3%	15.1%	13.2%
The online discussions allowed me to build relationships with my fellow classmates and instructors.	41	5.7%	7.5%	28.3%	18.9%	17.0%
The online course allowed me to build relationships based on the sharing and exchange of ideas.	41	3.8%	11.3%	32.1%	11.3%	18.9%
Social interaction in the online course allowed me to convey my thoughts and feelings.	41	3.8%	11.3%	32.1%	9.4%	20.8%
I communicate with my online classmates even when the assignment does not require it.	41	1.9%	11.3%	18.9%	18.9%	26.4%
Online communications with my classmates helped me with the learning process in online courses.	40	1.9%	11.3%	22.6%	20.8%	18.9%
Online communications with my instructor helped with the learning process in the online course.	40	11.3%	11.3%	24.5%	11.3%	17.0%

Administrators will need to provide students with an orientation to online courses as is done for traditional class settings. The orientation can prepare students on what to expect in an online course, study skills, and techniques for time management. Additionally, because several students reported lack of communication as a reason for attrition, administrators will need to implement a mandatory timeframe in which instructors must respond to student inquiries. Instructors provide content expertise during online learning; therefore, instructors will need to become integrated members of the online course in which they participate in course activities such as discussion boards, journals, and blogs. Increasing the interactivity and, therefore, the communication can lead to an enhanced level of motivation and learning.

Results from this study imply that the diverse student population and varied academic goals of online community college students do not fit into previously theorized retention models. With consideration to Kember's (1989) research, these findings suggest the emergence of a new model for online community college attrition, which can be formulated into two broad categories: the student and the institution. Upon further dissection, smaller subsets, as shown in Table 8, begin to emerge. These subsets suggest a direct or indirect impact on student inability to persist in an online community college course.

Table 8
Summarized Subsets for Online Community College Attrition

The Student	The Institution
Demographics	Course Design
Environmental Characteristics	Technical Support
Institutional Fit	Student Support Services
Academic Goals and Abilities	Instructor Communication
Motivation	Instructor Motivation
Experience	Retention Efforts
Technical Skill	Instructor Technical Skill or LMS Training

This model, while in its infancy stage, contributes to previous research conducted on attrition and could be utilized by 2-year institutions for its articulation on the diverse student body and institutional design of a community college, which currently has limited research analyzing factors for online attrition.

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Editor's Note: Rote learning, whether it is an individual or group activity, has little support from research because it is often devoid of meaning. Systems that use triads – text + sound + action and/or object are more effective, and immersive programs such as a visit to a foreign country with direct purposeful experiences, or simulated experiences with “language learning in context” are much more effective. This article examines the effectiveness of methods for learning L2 grammar used in language textbooks.

"Communicative" or Communication: What your textbook is teaching.

Andrew J. DeMil
USA

Abstract

In the past 2 decades, studies have offered evidence that mechanical drills, i.e. where learners produce a grammatical form without knowing the meaning, do not help develop an underlying language system. This is problematic when learners are asked to communicate.

Studies have looked at language textbooks to see how the methodology follows, or fails to follow theories and research in Second Language Acquisition. This study looks at best-selling intermediate Spanish texts for university classrooms, analyzing activities used to reintroduce the preterit tense. Findings support previous research that at the intermediate level textbooks are not providing exercises that promote communication, but rather mechanical exercises.

Keywords: classroom, communication, communicative, input, language, grammar, preterit, processing instruction, second language, SLA, Spanish, teaching, textbook.

Introduction

Second Language Acquisition has developed around issues of how second languages are learned and what the instructor's role in this process is. In other words, “What types of teaching techniques are most helpful for learners to start building a mental representation of the L2 grammar” (Fernández, 2011:155) Furthermore, what methods have been shown to be ineffective for the acquisition of a second language?

Background

According to generative perspectives of acquisition, when learning a language, input, or language that is heard or read by a learner that containing communicative intent is necessary because it helps build our mental language representation. (Chomsky, 1981). Universal Grammar (UG), originally hypothesized for the first language, has been thought to be part of the second language learning process. (White and Juffs, 1998; White, 2007) UG proposes that all humans have an underlying Language Acquisition Device (LAD) which sets the possibilities and rules for the language being learned. Learners must be exposed to input to learn a language, and the LAD is activated by input. The function of input is to show learners what is possible within a language. While learners are able to project beyond what they are exposed to in the input, acquisition cannot occur without input. (White, 2007)

Input and input processing

Benati and Lee (2008) claim that though output practice [meaningful language production such as writing or speaking] may help learners become more fluent, it does not help to develop learners' developing system of language (VanPatten, 1993, 2004). Instruction based on output is asking learners to produce when the necessary changes have not yet been made to the developing system

that allow language development. (Benati and Lee, 2008: 24). Below is a model of the Second Language Acquisition (SLA) process (VanPatten, 2004).

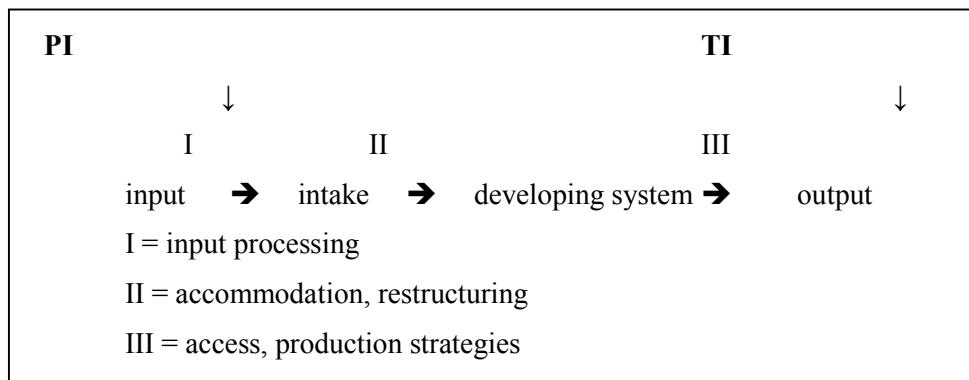


Figure 1. Set of Processes in L2 Acquisition

VanPatten's theory of Input Processing (IP) look at the problems that arise when learning a second language. As Vanpatten states (VanPatten, 2007: 115) "A good deal of acquisition is dependent upon learners correctly interpreting what a sentence means." The main constructs of IP are:

Under what conditions do learners make initial form-meaning connections?

Why, at a given moment in time, do they make some and not other form-meaning connections?

What internal strategies do learners use in comprehending sentences and how might this affect acquisition?

VanPatten has delineated principles of processing that L2 learners use when processing input. For example, when learners encounter second language input, they will use certain skills to try to understand the meaning of the input. A few of the things that learners do are:

The Primacy of the Content Words Principle: Learners process content words in the input before anything else.

The Lexical Preference Principle: If grammatical forms express a meaning that can also be encoded lexically (i.e., that grammatical marker is redundant), then learners will not initially process those grammatical forms until they have lexical forms to which they can match them.

The Preference for Non-Redundancy Principle: Learners are more likely to process non-redundant meaningful grammatical markers before they process redundant meaningful markers. (VanPatten, 2007).

If input is the first process of SLA and the learner brings the above strategies to the table, it follows that learners should be trained to interpret input in a more efficient way, rather than bypassing comprehension through interpretation and going straight to production. *Traditional Instruction*

Traditional Instruction (TI), is the most prevalent form of instruction in most foreign language classrooms in the United States (Fernández, 2011, Wong & VanPatten, 2003: 406). TI typically utilizes three types of drills: mechanical, meaningful, and communicative (Paulston, 1972, 1976). Mechanical drills only allow one correct answer and students do not need to comprehend stimulus to complete the drill, as in Example 1.4:

Example 1 TI activity for accusative pronouns: Mechanical Drill

Complete the sentence with the preterit tense.

1. *La mujer _____ (ver) al chico.*
2. *El chico _____ (abrazar) a la mujer.*

As can be seen above, learners complete the sentence by producing the preterit tense. It is not necessary to understand any meaning to complete the activity, and is therefore named a mechanical drill. The focus of the activity is on production of the form.

In TI, upon completion of mechanical drills, learners move to “meaningful drills.” For meaningful drills, the answer is controlled, but the student must know what the question means to be able to answer it, as in Example 2:

Example 2 Meaningful Drill

Answer each question with a complete sentence using the preterit.

1. ¿Dónde puso la profesora su libro? 'Where did the professor put her book?'

In meaningful drills, there is only one correct answer (i.e., *La profesora puso su libro en la mesa*. 'The professor put her book on the table'), but unlike mechanical drills, learners must usually understand the question to be able to answer, which is available to them by looking at where the professor has placed her book in the classroom.

Finally, learners practice 'communication' using the target form in a “communicative drill”. These are similar to meaningful drills, except learners communicate the information to each other, and there is not only one prescribed answer. In example 3, the English is provided, but is not available to learners.

Example 3 Conversation activity

Talk in groups about what you did yesterday.

Use complete sentences with the preterit tense.

Modelo: comer en un restaurante 'Model: to eat in a restaurant'

Student 1: ¿Comiste en un restaurante ayer?

'Did you eat in a restaurant yesterday?'

Student 2: Sí, comí en un restaurante/No, no comí en un restaurante.

'Yes, I ate in a restaurant./No, I didn't eat in a restaurant.'

1. visitar a mi mamá 'visit my mother' 2. ir a la playa 'go to the beach'

Even though communicative drills may focus on one specific grammatical form, the answers are open to personal opinion, beliefs, etc. (e.g. “Where do you put your books at home?”). However, there is no burden of communication for the students. That is, if a student tells the other student, 'I ate in a restaurant.', there is no need for the other student to understand what was said, as the student does nothing to follow up with the information in this activity. Furthermore, it is possible to complete the entire activity without comprehension. If you fill in the example with non-sense words, the activity can still be completed.

Example 4

Modelo: ponjear en un repapante 'Model: to ponjear in a repapant' [nonsense]

Student 1: ¿Ponjeaste en un repapante ayer?

'Did you ponjear in a repapant yesterday?'

Student 2: Sí, ponjeé en un repapante/No, no ponjeé en un repapante.

'Yes, I ponjeared in a repapant./No, I didn't ponjear in a repapant.'

At first glance, it seems learners are communicating. In reality, they are just performing a mechanical drill, and listening to another student do the same. It is often the experience of this researcher that after an activity like Example 3, when asked a follow up question like, "When did you last visit your mother?" or, "Which beach did you go to?" the student reveals that s/he had no idea what the original sentence meant.

Although the use of mechanical, meaningful, and communicative drills are found in many foreign language textbooks, this type of instruction is criticized for two main reasons. First, TI is problematic because it forces learners to produce grammatical forms before they are linguistically capable. This has been shown to lead to generalizations and overuse of the form when not necessary, e.g. producing the preterit instead of the present (Lightbown, 1983). TI does not give learners an opportunity to work with the input, or comprehend language. Second, the ability to connect form to meaning is the basis of second language acquisition. If meaning is absent in instruction, acquisition is not occurring. If TI lacks input, and input is necessary for acquisition, TI is not providing learners what is needed to acquire a second language (Wong & VanPatten, 2003). Furthermore, output, or language production, is independent of acquisition of a linguistic system (Pienemann, 1998). The learner [subconsciously] creates an implicit system by comprehending input, and then develops the ability to produce accurate, meaningful language. Wong & VanPatten (2003) make the claim that, "There is sufficient evidence to discard mechanical drills from instructional practice." (Wong & VanPatten, 2003: 403) The salient points of the researchers' argument are that learners bring internal mechanisms to task of acquisition unaffected by explicit instruction i.e. UG, learners need access to input, as described above, and learners know more than what they are taught, can project beyond evidence." All of this is a consequence of comprehension of input, and *not* mechanical drills and traditional instruction (Wong & VanPatten, 2003: 407-408). This argument caused a strong reaction by some (Leaver et al., 2004) but there is a lack of evidence that can refute the claim that drills are simply unnecessary. (Wong & VanPatten, 2004).

Processing instruction

Processing Instruction (PI) is a different type of grammar instruction that is based on the principles of Input Processing (above). The goal of PI is to push learners away from non-optimal processing strategies, like the Lexical Preference Principle, in order to facilitate comprehension, which is thought to be the first step in language learning. PI consists of three parts. "According to newer perspectives to L2 teaching, it is critical to engage L2 [second language] learners' learning processes during form-focused instruction, including, of course, grammar instruction for learners to begin to develop an implicit linguistic system" (Fernández, 2011: 155). First, learners are provided with explicit information about the target form or structure. Second, learners are informed about a particular processing strategy (e.g., "Remember that in Spanish, you must pay attention to the verb to know *when* the action happened") Next, learners work through *structured input activities* (SI) that are designed to push learners away from incorrect processing strategies by asking them to rely on form (or syntactic structure) to interpret meaning. Example 1.7 is an SI activity for the Spanish preterit tense. The English is provided for the reader but not available to the learner.

In example 5, the learner attempts to understand when the action happens based on the verb form, and then decide whether the sentence describes the picture. In SI activities, learners demonstrate comprehension of meaning by interpreting verb morphology, without producing language.

PI is geared towards teaching grammatical forms that cause processing problems for second language learners. It focuses on input, essential for acquisition. Again, as in Figure 1 above, TI begins with the last step of the process of language acquisition, and skips over the first steps: development of the linguistic system. TI cannot really be described as output, due to the mechanical nature of the exercises. Output, by definition is meaningful production.

Example 5 Example PI activity

Instructions: Mark when the action happened [*hoy* 'today' or *ayer* 'yesterday'] and then mark *Cierto* 'True' if the sentence describes the drawing, or *Falso* 'False' if it does not.

1. *El chico habló.* 'The boy spoke'

hoy/ayer

cierto/falso



2. *La mujer escucha.* 'The woman listens.'

hoy/ayer

cierto/falso



Processing Instruction has been shown to be more effective than traditional instruction when training learners to comprehend written and spoken Spanish, and has shown to be equally effective for producing language. This is noteworthy because PI never trains learners to produce, yet they are able to do so as well as learners *only* trained to produce, mechanically and meaningfully, such as in TI. These results begin with VanPatten & Cadierno (1993), with teaching Spanish object pronouns and are replicated in Cadierno (1995) with the Spanish Preterit Tense, Benati (2001) with the Italian future tense, Cheng (2004) the Spanish copula, and VanPatten and Wong (2004) with the French causative, and Benati and Lee's (2008 a, 2008b, 2008c) with 3 studies concerning Italian Noun-adjective agreement, the English past tense, and the French Imperfect.

PI has been researched to find what causes improvement in interpretation and production: explicit grammatical information (EI) or the structured input activities, (SI). Van Patten & Oikennon (1996) found that for English speakers learning Spanish direct object pronouns, SI activities alone were enough to improve learners interpretation and production of Spanish, when compared to EI only, or EI and SI together. Benati replicated this study with English speakers learning the Italian future tense (2004a) and Italian adjective agreement (2004b), and found similar results. However, for some forms, such as the Spanish subjunctive (Farley, 2004b), or French negative plus the indefinite article when writing, (Wong, 2004), EI and SI combined (i.e. PI) helped learners perform better than SI alone. Finally, Lee and Benati (2007a) taught Italian speakers learning the Japanese past tense, with SI or TI and found the SI group to be significantly better at both interpretation and production.

PI has also been shown to perform as well as or better than *meaningful* output instruction (MOI) instruction. In contrast to TI, MOI has learners produce language in a communicative situation. However, when compared empirically, learners trained with PI perform as well, if not better, than MOI (Benati, 2005; Farley, 2001a, 2001b, 2004a; Morgan-Short and Bowden, 2006). In short, training learners to comprehend language first improves their overall comprehension and production of the language better than traditional instruction, and as well as other types of instruction, and provides benefits for further language learning.

Previous Studies on Grammar presentation in L2 Textbooks

Byrnes (1988) points out that the textbook often dictates course syllabus and overall curriculum, and therefore makes the textbook choice an important consideration for a language program. Aski, (2003), Fortune (1998), R. Ellis (2002), and Islam (2003) observed that many of the activities in English as a Second Language (ESL) textbooks, were fill in the blank, mechanical exercises, most production was geared towards oral production, (listen and repeat) and 2 predominant features were present: explicit description and controlled production practice, and exercises followed the tradition format of mechanical, meaningful, and communicative drills, i.e. Traditional Instruction (TI). These studies noted that these texts were far behind current SLA research on teaching methods. Other researchers found that the drills used for communication were simply mechanical drills partially disguised in a communicative context and no more effective (Walz, 1989). Walz points out some problems with second language textbooks is that they often contain exercises with no communicative theme, are repetitive drills, lack a need to comprehend the task, and there is little distinction between mechanical, meaningful and communicative activities. Furthermore, many drills ask learners to "falsify reality" rather than communicate real information. Walz suggested that in order to improve textbooks, exercises should lead to more communicative situations, students should start with exercises that give them a forced choice when interpreting language, similar to *structured input exercises* (SI), and that the composition of textbooks should contain a majority of communicative exercises, rather than mechanical or meaningful drills. This recommendation is supported by others in the field (Celce-Murcia 2002; Fotos, 1994). Lally (1998) examined French textbooks to see if any of Walz's suggestions had been incorporated. The researcher found that at least half of the 6 texts she analyzed had a preponderance of mechanical drills, and much improvement is still needed.

Fernández (2011) analyzed 6 elementary Spanish university level textbooks, and how these textbooks chose teach the preterit. Fernández found that the prominent features of the textbooks were explicit information and controlled production practice. Only half of the textbooks provided aural activities as the main activities to teach the preterit, and half provided learners the opportunity to process the form. According to Fernández, "at least half of the textbooks...overlook what is currently known in SLA: the central role of input in the development of an L2 grammar." (Fernández, 2011: 165)

The present study

Aside from Fernández's study on beginning textbooks, I'm aware of no study that looks at approaches to grammar instruction in Spanish textbooks at the university level. Fernández study focuses on beginning texts, while this wanted to look at how intermediate Spanish textbooks deal with presenting the preterit tense for intermediate learners. Students using intermediate texts will have already been instructed with the TI method in most cases; therefore, though evidence supports that drills are unnecessary, (as supported by 2 decades of evidence), in the intermediate level, when students are simply reviewing the forms and using them to communicate, these drills should no longer be necessary. In other words, students have already practiced production of the grammatical form in previous courses. Besides an initial review, intermediate texts should focus more on communication, at the very least in the form of communicative drills, and the interpretation of Spanish.

Research questions

The research questions that guided this study are:

1. What types of activities are used for instruction of the Spanish preterit tense in current intermediate University Spanish textbooks?
2. How do these activities reflect current SLA research on grammar instruction?

Method

The latest editions of seven top-selling textbooks of intermediate Spanish were selected to analyze their approaches to grammar instruction regarding the Spanish preterit tense. The following texts were included in the study: *Atando Cabos: Curso intermedio de español* (González-Aguilar, and Rosso-O'Laughlin, 2012), *¡Avance! Intermediate Spanish* (Bretz, Dvorzak, Kirschner, Bransdorfer, Kihyet, and Morris, 2008), *Enfoques: Curso intermedio de lengua española* (Blanco and Colbert, 2012), *Identidades: Exploraciones e interconexiones* (Guzmán, La puerta, Liskin-Gasparro, and Olivella de Castells, 2013), *Imagina: español sin barreras, curso intermedio de lengua española* (Blanco, Tocaimaza-Hatch, and García, 2011), *Interacciones* (Spinelli, García, and Galvin Flood, 2013), *Más allá de las palabras: Intermediate Spanish* (Gallego Smith, Godev, Kelley, and Esparragoza Scott, 2012). Though Fernández pointed out that books in a higher edition indicates a) they have been used for some time, b) they have widespread distribution and use, and c) they continue to be selected, a decision on edition alone might be problematic, because the methodology may not be as up to date as a new book in its first edition. Therefore, representatives from various publishers were consulted to see which popular books would fit in a second year intermediate Spanish program. These books are promoted by the representatives of a variety of publishing companies (John Wiley and Sons, Heinle Cengage Learning, McGraw-Hill, Pearson/Prentice Hall, Vista Higher Learning), and therefore have a relatively widespread use. All texts were in at least the 2nd edition and up to 2013 copyright. All selected textbooks were self-identified as "communicative" approach. The analysis was the chapter where the preterit was introduced, as in Fernández (2011). This analysis of activities consisted of a) number b) type (input activity, mechanical drill, communicative drill) and c) whether the activity promoted communication based on the instructions and the steps provided.

Again, an input activity has learners read/listen to the Spanish and respond without producing the target form; a mechanical activity (drill) has learners produce the correct grammatical form without having to know meaning; a communicative drill has students talk to each other using the correct grammatical form, but, as explained above, meaning is not necessarily exchanged.

Finally, a decision whether the activity promotes communication was made, based on whether learners were asked to exchange and demonstrate comprehension of previously unknown information.

Results

Of the seven (7) texts, there were a total of 48 activities to teach (strictly) the preterit. The most activities included in a book were thirteen (13) and the least, three (3). Of the 48 activities, only one (1) of the activities had some input, i.e. verbs provided in the preterit tense whose meaning needed to be understood to complete the activity. The majority of the texts (6/7) had a greater number of communicative drills than mechanical drills, while one book had five (5) mechanical drills and only two (2) communicative drills. Of the communicative drills, only 2 had steps to make them communication. That is, in all 7 texts, of 48 activities used to teach the preterit, only two (2) were designed so that learners needed to understand the meaning of the language to complete the activity.

Discussion

According to theories and empirical research in Second Language Acquisition, drills do not promote language acquisition. Instead, evidence supports the effectiveness of activities designed to push learners to interpret the meaning of language (input) by understanding grammatical forms; activities that help develop their underlying language system (Structured Input Activities).

Table 2
Analysis of activities

Textbooks	Number of preterit activities	Input	Mechanical Drills	Communicative Drills	Communication
<i>Atando Cabos</i>	6	0	2	4	1
<i>¡Avance!</i>	7	0	5	2	0
<i>Enfoques</i>	6	0	1	5	0
<i>Identidades: Exploraciones e interconexiones</i>	7	0	2	5	0
<i>Imagina: español sin barreras</i>	6	0	2	4	1
<i>Interacciones</i>	13	1	3	10	0
<i>Más allá de las palabras</i>	3	0	1	2	0
<i>Total</i>		1	16	32	2

All of the activities in all texts were production based (48) though one of the activities (1/48) provided some input. This activity asked learners to work in groups to complete the dialogue. Students completed sentences with the preterit form and 2 of the verbs were already provided, e.g. *fui.....* 'I went...' A student must comprehend the verb form to complete this sentence, which, by nature, is input. However, the student did not have to communicate this information to another learner, and the activity was fictional and contained information that was contrived, e.g. *Regresé a medianoche...* 'I returned at midnight'. In this way, a student knows the dialogue is fictional, because, regardless of what time the student *actually* returned home, the dialogue forces the student to say things like, "I returned at midnight." or, "I called you.", or what Walz describes as a falsification of reality. Therefore, although this activity contains input, it is a communicative drill.

Second, in tasks the tasks that claim to be communicative, as Lee and VanPatten, (2003) point out in, *Making Communicative Language Teaching Happen* "it is important *not* to mistake 'getting or exchanging information' as the purpose of the task". (Lee and VanPatten, 2003: 62, emphasis in original) What *is* the purpose of the exchange of information?

"Learners will not only get and exchange information--they will *do something with it.*" (Lee and VanPatten, 2003: 62, emphasis in original) Even when an activity has learners speak to each other, this does not imply communication. For example, 2 of all 48 activities actually had students do something with the information provided by another student, making it communication, and not just a "communicative drill". In one activity, the students had to listen to classmates' information and decide who was more active. In the other, students listened to decide whether the speakers vacation respected the indigenous culture and nature. Ideally, these activities would provide scaffolding, or language were provided for them to follow in order to complete the task, e.g. *'Listen to your classmate and then state, 'I think (Name) was more active because...'*. However, these 2 activities, out of a total of 48, were the only designed to promote communication.

Limitations

Currently, there are researchers publishing textbooks that implement theories and research from the field of Second Language Acquisition, in the explicit grammar information provided and design of activities. However, their use is not widespread. Why is this so? According to Wong & VanPatten, (2003) this is due to a cycle of teachers modeling behavior passed on from their instructors. Instructors were taught with drills and explicit information, and therefore, believe that this is *how they learned*. However, as the authors point out, just because A preceded B does not mean A caused B. This ignores all the other things that happened that made the instructor an advanced speaker of the language, such as seeking opportunities to study outside of class through music, film, books, opportunities for conversations with natives, and extensive study abroad, all which provide learners with lots of input. As suggested by Fernández, (2011) a close look at SLA research will help textbooks reflect what is known about how languages are acquired.

Second, this study takes a strict view of communication based solely on whether the book instructs the students to exchange and comprehend information. It is likely that instructors with experience are transforming these activities in order to promote communication in the classroom. However, it seems logical that if an instructor must continually preview and adapt activities in order to promote communication, it is the textbook that should change, and not leave the responsibility on instructor. A textbook with an instructional method firmly based on SLA theory and research will benefit both the learners and the instructors.

Conclusion

The main instructional method present in all of these textbooks is overwhelmingly the traditional method that begins with mechanical drills and finishes with communicative drills. As pointed out, these drills do little to promote actual communication. However, since Lally (1998) there have been some changes regarding contextualization of drills. That is, most activities are based on a communicative theme, e.g. the environment, the family, etc. rather than a grammar point, e.g. the preterit. In time, it is hoped that textbooks will look to research in SLA to transform mechanical drills to communicative exchanges, and design activities that require real communication in order to transform current language instruction practices.

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Editor's Note: Introduction of computers for teaching and learning requires computer training, computer laboratories, software, courseware, and support systems at district and local levels. Teachers need specific training in use of computer packages available for their disciplines, and both administrators and teachers need to be aware of the constantly evolving technologies to support and improve opportunities for teaching and learning.

The adoption of computer packages in teaching advanced level geography in Zimbabwe: opportunities and challenges

S. T. Marimo
Zimbabwe

Abstract

The paper discusses the opportunities and the challenges that hinder the successful adoption of computer packages as a technology-medium of instruction in high schools in Gweru urban, in Midlands province in Zimbabwe. The method employed in this study was the descriptive survey research which enabled the researcher to work with a limited numbers of cases and draw conclusions that can be generalized to the whole population.

The respondents of this study were the heads of schools, Advanced Level Geography teachers and Advanced Level Geography students. The population comprised of 9 schools offering Advanced Level Geography, 9 heads of schools, 20 Advanced Level Geography teachers and 715 Advanced Level Geography students. Stratified random sampling procedure was employed to select 5 schools that is, dividing the schools into homogeneous groups (groups containing similar characteristics) that is low-density urban schools and high-density urban schools. Purposive sampling procedure was used to select, the Geography inspector, 5 heads of schools, 5 Geography heads of departments, 15 Advanced Level Geography teachers and 350 Advanced Level Geography students.

The methods of data collection used were content analysis, questionnaire and interviews. The researcher self-administered the questionnaire to the Advanced Level Geography teachers and students. Interviews were done with the heads of schools, Geography heads of departments and Advanced Level Geography teachers. The questionnaires and interview solicited information on the opportunities and challenges hindering the utilisation of computer packages in the teaching and learning of Geography at Advanced Level Geography. The questionnaires and interview were pre-tested using other heads of schools, Geography heads of departments, teachers and students who were not part of the sample. The researcher sought respondents' consent to participate in the study. Content analysis was done on available official documents such as schemes of work and school policy on the use of computer packages for teaching Geography at the Advanced Level. Findings revealed that use of computer packages in teaching Advanced Level Geography has been slower than expected, especially when measured against its potential as a medium of instruction.

This research suggest that there are a number of reasons for limited success, which include infrastructural development, support and methodological considerations for utilisation of computer packages in teaching and learning of Advanced Level Geography. The researcher recommends that the schools through the district should initiate in-service training programmes that will assist the Geography teachers to learn how to implement computer packages in teaching and learning of Geography. Schools should establish support structures for the utilisation of computer packages in teaching and learning of Advanced Level Geography.

Keywords: adoption, computer packages, instructional media, geographical software, challenge

Introduction

With the introduction of computers in Zimbabwe, teaching and learning have been made easier. Fisher and Binns (2005) assert that use of computers as a tool for teachers and learners has prominence as something which is being introduced in schools, especially in Less Economically Developed Countries (LEDCs). This reveals that the use of computer packages in the teaching and learning is relatively new. In the globalised world, technology has become the *in-thing* as countries are devising means of gaining a competitive edge over each other. In Zimbabwe, the government is attempting to introduce computer studies in schools. Bukaliya and Mubika (2011) assert that the Information Communication Technology (ICT) has played a major role in linking business and individuals far apart, in terms of geographical distance. Research has shown that computers that have been donated to schools are presenting both challenges and opportunities for teachers, learners and schools. It has been realised that access to information through ICT and the use of different computer packages is crucial for education.

The president of Zimbabwe, Robert Gabriel Mugabe has donated many computers to schools in all the ten provinces. The belief of the President is that these computers can be effectively used where the computers are connected to internet. "We have distributed computers to many schools but these computers should not be like typewriters. The computers should be on the internet through the satellites installed above so that we access more information about different subjects or disciplines" (E-Learning Programme, 2012). This was said by the president of Zimbabwe, during the official launching of the e-learning programme at Chogugudza Primary School in Goromonzi district, Mashonaland East province, in March 2012. This suggests that the most held belief among people is that the computers are only useful when they are connected to the internet. However, in as far as teaching using computers is concerned, this is not the case. The use of computer packages can be of great value during lesson presentation without the internet. Shafika (2007) say Zimbabwe as a country has a clear-cut national ICT policy that was adopted in 2005 and that makes significant reference to the promotion of ICTs in education including pedagogical use in educational institutions.

In 2005 the government of Zimbabwe adopted a national ICT policy and was informed by both the Harvard University guide e-readiness survey which suggested that the country was not e-ready and by a host of preceding general and sectoral policies including Vision 2020, the National Science and Technology Policy adopted in 2002. The Nziramasanga (1999) commission report recommended promotion of educational use of computers for teaching and learning in education.

Hennessey, Harrison and Wamakote (2010) report that there is substantial evidence that in the right hands, and used appropriately for specific purposes in specific contexts, ICT can be an effective tool to support teaching and learning. This entails that, if computers are put to good use, they can produce many opportunities in the teaching and learning process of Geography. However, it is not firmly established that the introduction of computers into schools does not by itself improve the quality of education. Encouragingly, there is widespread and growing awareness that the pedagogical and technical expertise of the teacher is absolutely critical in the use of computers as an instructional media in teaching and learning of Geography.

In pursuit of the objective to ensure that the country advances its technological base, Zimbabwe, through the Ministry of Education, Sport, Arts and Culture introduced computer education in the school curriculum. However, the introduction of computers has failed to take-off in the majority of schools, (Bukaliya and Mubika, 2011). Given the scenario, it became imperative for this study to focus on the adoption of computers packages in teaching of Advanced Level Geography in Zimbabwe: opportunities and challenges.

Teachers meet a lot of challenges in trying to incorporate computers in teaching Geography. Major barriers, as reported by Hennessy et al., (2010) are lack of computer hardware: 60%,

software: 56%, and reliable internet connections: 52%, particularly in African countries such as Ghana and Zimbabwe. This entails that, in most LEDCs in Africa, there is a shortage of computers and their accompanying accessories. Lack of access to technology is inevitably a major barrier to computer application in teaching. Nevertheless, availability of computers does not necessarily translate into their use. In a study in Nigerian secondary schools by Tella, Toyobo, Adika and Adeyinka (2007), lack of technical support in the schools and teachers' lack of expertise in using ICT were the prominent factors hindering teachers' readiness and confidence in using ICT.

Kozma, McGhee, Quellmalz and Zalless (2004) assert that teachers enthusiastically engage in collaborative projects and often display knowledge of constructivist pedagogy. However, school administrators offer very little structural support and few incentives to teachers for them to effectively use computer packages in the classrooms. Thus school administrators become a barrier to computer use in the teaching process.

A major obstacle arising from the use of computer packages is the tendency of national policies and school curricular in most African countries in Sub-Saharan Africa, to treat ICT as a discrete subject in the form of computer science or information technology when assessed by the national examination boards. The implication of this is that computers in schools are treated as a subject without integrating them with other subjects. There is almost universal emphasis on teaching basic skills for software use and information gathering, whereas research indicates that integrating ICT into learning subject matter is far more effective for students. Emphasis on skills is hampered by lack of modern technology located in classrooms and a corresponding concentration on purpose built laboratories (Cox, Cox and Preston, 2003). It is difficult for teachers to access computers because they are locked in store rooms where they are gathering dust.

Statement of the problem

Gweru district is one of the districts where computers have been donated by Non-Governmental Organisations (NGOs), the government or sourced by the schools. Teachers are facing challenges in implementing computer packages in the teaching of Geography in secondary schools. Teachers are not utilising the computer packages in the teaching and learning of Geography. Teachers are not conversant with the opportunities that emanate from the use of computer packages in teaching Geography. To make matters worse, most classrooms are not electrified, and where the computer laboratories are available, they are always occupied by classes that will be doing Computer Studies as a subject or computer appreciation. There is no time dedicated to teach Geography using different available computer packages. The major question that guided the study was what challenges and opportunities are faced in implementing computer packages in teaching Advanced Level Geography in Gweru district high schools and ways to improve these challenges.

Methodology

The method employed in this study was the descriptive survey research which enabled the researcher to work with a limited numbers of cases and draw conclusions that can be generalised to the whole population. Respondents of this study were the heads of schools, Advanced Level Geography teachers and Advanced Level Geography. The population comprised of 9 schools offering Advanced Level Geography, 9 heads of schools, 20 Advanced Level Geography teachers and 715 Advanced Level Geography students. Stratified random sampling procedure was employed to select 5 schools that is, dividing the schools into homogeneous groups (groups containing similar characteristics) that is low-density urban schools and high-density urban schools. Purposive sampling procedure was used to select, 5 heads of schools, 5 Geography Heads of Departments (HODs), 1 Geography Inspector, 15 Advanced Level Geography teachers

and 350 Advanced Level Geography students. The researcher wanted to engage with the respondents who were directly involved with the teaching and learning of Geography at Advanced Level.

The methods of data collection used were content analysis, questionnaire and interviews. The researcher self-administered the questionnaire to the Advanced Level Geography teachers and students. Interviews were done with the Geography inspector, heads of schools and Geography HODs. The questionnaires and interview solicited information on the opportunities and challenges hindering the utilisation of computer packages in the teaching and learning of Geography at Advanced Level Geography. The questionnaires and interview were pre-tested to other heads of schools, Geography HODs teachers and students who were not part of the sample. The researcher sought respondents' consent to participate in the study. Content analysis was done of the available official documents such as schemes of work and school policy on the use of computer packages in the teaching of Geography at Advanced Level.

Results

A questionnaire was administered to 350 Advanced Level Geography students and the following are their responses as shown in Table 1.

Table 1
Results of responses from students' questionnaire

Question	Responses			
	N	%	N	%
1. Are you able to access computers at your school?	Yes		No	
	30	9	320	91
2. Do your teachers use computers when teaching Geography?	15	4	335	96
3. Are there Geography periods dedicated for use of computers?	0	0	350	100
4. Do you think what is taught using computers is easier to understand?	280	80	70	20
5. How do you access computers at your school?	By booking		Anytime	
	30	9	17	4
6. How often do you access computers at your school per term?	Nil	Once	Twice	Thrice
	250(71%)	55(16%)	45(13%)	0 (0%)
7 .What improvements do you think should be done concerning the use of computer packages in teaching of Geography?	-make computers available to each student -connect computers to the internet -have a big screen in the Geography room -have computers specifically for the Geography department -use of power-point presentation in teaching Geography			
			N	%
			330	95
			344	98
			205	59
			186	53
		134		38

N=350

The responses from the students' questionnaire show that failure to access computers and low frequency of visits to computers limit the use computers in learning Geography. Ninety percent of teachers were not using computer packages in teaching Geography. Eighty percent of the students believe that if they are taught using computers they can improve their understanding in Geography concepts. Responses from the student questionnaires reveal that 86% of the students were advocating use of computers and 76% were advocating connection of computers to the internet.

A questionnaire was administered to 15 Advanced Level Geography teachers and the following are their responses as shown in Table 2.

Table 2
Results of responses from teachers' questionnaire

Question	Responses				
1. Are you computer literate?	Yes			No	
	6			9	
2. Where did you get the literacy?	Self taught	College/university	Private college	Other(s)	No training
3. Are you able to access computers at your school?	Yes			No	
	5			10	
4. Do you think some Geography concepts can be taught using computer packages	11			4	
5. Which computer packages are you using in teaching Geography?	None 15				
6. Have you ever used computers in your teaching in the last two school terms?	0			15	
7. Have you attended any workshops where the use of computer packages in teaching Geography was discussed?	0			15	
8. Do you think the training/in-service you obtained on the use of computer packages was enough?	0			15	
9. What challenges do you face in the use of computer packages in the teaching of Geography?	<ul style="list-style-type: none"> -lack of skills in using computer packages for teaching -no internet connections -no computer for Geography department -lack of accessories such as projectors -unavailability of geographical software -no workshops and staff development 			11 13 15 13 15 15	
10. What opportunities are there in implementing computer packages in teaching Geography?	<ul style="list-style-type: none"> -improves syllabus coverage -teaching of abstract concepts becomes easier -improves teacher-pupil and pupil-pupil interactions 			10 15 15	
11. What do you think should be done so that teachers can use computer packages in teaching Geography?	<ul style="list-style-type: none"> -in-service and staff development -holding of regular workshops -installation of geographical software -compulsory computer studies at teachers' colleges 			13 11 14 9	

N=15

Responses from the teachers' questionnaire reveal that although six out of the fifteen teachers are computer literate, the training they received was not adequate because it was not specific to the teaching of Geography. The lack of knowhow and skill is also a big factor hindering the use of computer packages in the teaching Geography. Other major challenges raised by the teachers include lack of skills, no computers available to the Geography department, no workshops/ in-service being held, no internet connections and lack of geographical software in schools. The fifteen teachers revealed that computers are quite relevant and should incorporated and integrated in the teaching of Geography. A number of opportunities could be created such as teacher-pupil interaction and pupil-pupil interaction through e-mail and chat group forums if the computers are connected to internet. The responses from the teachers' questionnaire also reveal that in-service training and installation of geographical software in schools is of paramount importance if teachers are to use computer packages in the teaching of Geography.

The researcher carried out a physical observation of the laboratories in schools and also determined the total number of computers available and the number of computers working and not working as shown in Table 3 below.

Table 3
Showing results from a checklist on computer laboratories in schools

	School 1	School 2	School 3	School 4	School 5
Total numbers of computers available	15	12	11	9	10
Total number of computers working	9	6	5	4	5
Total number computers not working	6	6	6	5	5
Total number of computers connected to the internet	3	0	0	0	0
Total number of computers not connected to internet	12	12	11	9	10
Availability of a school computer policy	1	0	0	0	0
Availability of a departmental computer policy	0	0	0	0	0
Number of computers with geographical software	0	0	0	0	0
Number of computers available to students	5	3	2	1	2
Availability of a computer laboratory	1	1	1	1	0

N=5

The checklist reveals that schools were attempting to improvise computer laboratories. Only one of the five observed schools had a proper laboratory, two schools had turned their staff rooms into computer laboratories, and one school had turned its junior library into a computer laboratory while one school did not have a computer laboratory. The school without a laboratory was keeping the available computers in the storeroom. Only one school had its computers connected to the internet.

Results from interviewing geography Heads of Departments (HODs)

An in-depth follow up interview of five Geography HODs on adoption of computer packages for teaching and learning of Advanced Level Geography found two out of the five HODs were not computer literate and that most Geography teachers in their departments were not computer literate. One HODs had this to say:

All my teachers are not computer literate and i have never observed them using any computer packages in their lessons even in their schemes of work it is not reflected (interview: 10/1/2013).

HODs' responses on the question on whether they have any geographical software in their departments for teaching and learning purposes they all revealed that there was nothing. The HODs were aware that a number of concepts could be taught using geographical software. The five departments were operating without departmental policies on the implementation of computer packages in teaching and learning Geography. One of the HODs had this to say:

We do not have a departmental policy for computer packages utilisation because there are no computers allocated specifically for the Geography department (interview: 12/1/2013).

The available computers were not used for teaching Geography except for computer appreciation and for studying Computer Studies. There no staff development workshops conducted on the use of computer packages in teaching Geography. The major hindrance to computer package implementation in teaching and learning of Geography was computer illiteracy, among teachers inaccessibility of computers by both teachers and students. Computers in schools were reserved for the teaching of Computer Studies.

Results from interviewing heads of schools

Five heads of schools were interviewed to establish the adoption of computer packages in schools curriculum at their support. Three out of the five heads of schools indicated that they acquired computer literacy during their undergraduate studies. The heads of schools revealed that the available computers were mostly donated by the President of Zimbabwe and Non-Governmental Organisations. For teaching subjects other than the Computer Studies there was no policy. The school heads indicated that lack of staff development had a negative impact on use of computer packages by teachers. Challenges raised by the school heads affecting the use of computer packages in the teaching and learning of Geography were: there were no proper laboratories, no internet connections, shortage of financial resources and no computers allocated to the Geography department. Three out of the five heads of schools recommended that teachers should integrate the teaching and learning of Geography with the use of computer packages.

Results from interviewing Geography Inspector

In order to establish the position of the Ministry of Education, Sport, Arts and Culture in implementing computer packages in teaching of Geography at Advanced Level, an interview was done to a Geography inspector in Gweru district. The Geography inspector indicated that he was computer literate. Responding to the question on the Ministry of Education Sport, Arts and Culture's position concerning the use of computer packages in teaching and learning of Geography, the inspector had this to say:

*The thrust of the Ministry focuses on three aspects, maps, Physical and Human Geography. All these need the use of computers but there is no specific area where it is documented on how these computers should be used in teaching Geography
(Inspector interview: 25/01/2012)*

The Geography inspector revealed that no staff development and workshops were conducted in the district. The challenges being faced in schools as indicated by the inspector were lack of computer skills by the teachers, lack of *geographical* computer software, limited knowledge of how to integrate computers in teaching Geography and lack of internet connections in most schools. The Geography inspector made the following suggestion on the way forward in order to improve the use of computer packages in teaching Geography:

It is a technique that demands the use of modern technology; therefore, teachers need to be adequately trained in the use of computer packages in the teaching of Geography.

There is also need to enlighten school heads to source computer software for Geography. Staff development workshops and in-service training on the use of computer packages should be held (Inspector interview: 25/01/2012).

The Geography inspector appreciates the importance of the use of computer packages in the teaching and learning of Geography at Advanced Level.

Discussion

The responses from the Geography Inspector, school heads, Heads of Departments, teachers and students show that although the Ministry of Education Sport, Arts and Culture was advocating for the use of computer packages in the teaching of all subjects and the teachers are facing challenges in trying to use computer packages in teaching Geography in secondary schools. Teacher responses reveal that the challenges they face are lack of skills, thus they have limited understanding on how to integrate ICT in teaching, no internet connections for the Geography department and lack of accessories to use in teaching. Comments of Hennessey et al; (2010) note the major barriers to the use of computers was lack of hardware, software and reliable internet connections. This suggests that teachers were not using computer packages due to lack of computers and accessories in schools.

Teacher responses reveal that training they received in use of computers was not enough for use in the teaching of Geography. Jegede (2003) notes that the most critical factor in successful integration of ICT is the extent to which teacher educators are able to prepare teachers with the required knowledge and skills to effectively utilise ICT. This supports teacher responses that the training they received at teachers' colleges and universities was not specific to the subject and therefore not useful. This implies that teachers need in-service training and staff development workshops on the use of computer packages in the teaching Geography in order for them to improve their confidence and competence in teaching with computers and computer packages.

Lack of skill on the part of the teachers was also noted as one of the factors mitigating against use of computer packages in teaching. Jegede and Adelodun (2009) propose that computer aided instruction (CAI) is a required skill for the classroom practitioner but it is least possessed by teachers. This was supported by teachers' response when they said that they were unable to use computers in their teaching due to lack of skills. This entails that the starting point in improving the use of computer packages is by equipping teachers with the requisite teaching skills.

Responses from heads of schools revealed that the belief among administration is that teachers should teach about computers and not teach using computers. The administrators' thinking is a stumbling block to computer use in the teaching process so long as they confine computers to the computer studies department.

Teachers and HODs revealed that the allocation of computers to departments was crucial but school heads said it was impossible as the computers are few. Chetsanga (2000) observes that the number of computers in schools were not enough for both the computer and the non-computer teachers to use effectively. This suggests that computers in schools were few and are kept as a preserve of the computer studies department. Kuwadza (2012) proposes that the presidential initiative of donating computers needed to be complemented by the corporate world and well-wishers. The school heads' responses show that schools', School Development Committees (SDC) and responsible authorities were trying their level best to complement the presidential effort by purchasing more computers. This suggests that school authorities were aware that computers in schools were not adequate for use by all stakeholders at the schools and need to be supplemented.

The school heads, heads of departments and teachers raised the issue of in-service training, workshops and compulsory computer studies as some of the improvements which need to be undertaken. This augurs well with what Shafika (2007) proposes when he said that to ensure ICT trained staff for each school, teachers should go on attachment to the Education Technology Centre (ETC) to receive training on upgrading and maintaining computers. This implies that the teachers' computer literacy level is very crucial if teachers were to incorporate computers in their teaching.

Conclusion and recommendations

Findings revealed that the use of computer packages in teaching Advanced Level Geography has been slower than expected, especially when measured against its potential as a medium of instruction. This research suggest that there are a number of reasons for limited success, which include policy, infrastructure development, support and methodological considerations for the utilisation of computer packages in the teaching and learning of Advanced Level Geography.

The researcher recommends that the school districts initiate in-service training programmes that assist Geography teachers to implement computer packages in teaching and learning of Geography. In addition, schools should establish support structures for the utilisation computer packages in teaching and learning of Advanced Level Geography.

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Editor's Note: The generation gap is increasingly apparent as teachers adapt curriculum and methods for the younger generation. It is necessary to recognize where students are at in their developmental sequence and how best to motivate and engage them. This requires us to enter their world and understand changes we must make to be effective teachers and optimize their learning.

Can using commercial video games in the classroom improve student learning?

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Abstract

In the past few years, there has been more emphasis on the teacher's ability to engage learners throughout their lessons. With the popularity of commercial video games among students, it has become increasingly more difficult to create lessons to compete with the fast paced and continued excitement that these games create to engage students on a daily basis. To foster this level of engagement and motivation for the students in classrooms, teachers should consider implementing units and incentives that incorporate commercial video games within the class.

Keywords: student motivation; enrichment; intervention; student engagement; video games; socialization; cooperative; digital natives; boredom.

Introduction

In the past few years, there has been more emphasis placed on the teacher's ability to engage their learners throughout all lessons. With the popularity of commercial video games among students, it has become increasingly more difficult to create lessons that maintain the fast paced and continued excitement that these students are engaged in on a daily basis. Angelone (2010). Though video games have a historically bad reputation, their attractiveness to students and immersive nature are reason enough to rethink the possibilities for learning”.

Schools are already attempting to incorporate video games into units and finding success within their classrooms. In “Commercial video games in the science classroom”, Simpson & Clem (2008) state that “Albany County School District in Laramie, Wyoming, has begun to take a hard look at whether teachers' techniques are sufficient up to date for today's learners and whether the teachers know how to integrate new tools to motivate students”.

Although commercial video games are misrepresented as being bad for students and inappropriate for the classroom, students would benefit from having the addition of commercial video games incorporated into the classroom. To foster this level of engagement and motivation for the students in classrooms, teachers should consider implementing units and incentives which incorporate commercial video games within the class.

Student motivation

Today's students have been born into a technological world, whereas, many of their teachers have not had that luxury. This makes these students digital natives, a “person who has been familiar with computers, the Internet, and other digital technology from a young age” (digital native, 2013). Marsh (2005) addressed these students by stating that they “grow up in a digital world and develop a wide range of skills, knowledge, and understanding of this world from birth...engagement with media is generally active, not passive, and promotes play, speaking, listening, and reading”. They are programmed to request instant gratification in their actions, to handle non-stop action, and to handle massive amounts of visual stimulation, which impedes

them from being able to focus and pay attention in the classroom. Simpson & Clem (2008) also say “they basically grow up digital”. Addressing the needs of students requires educators to rethink how they teach. Gaming has created students who can “become part of a virtual world not possible at school”. (Gee, 2003) It is difficult to ensure that these students are being challenged because learning in the classroom is different to the gaming they are so used to participating in on a daily basis. Teaching to digital natives requires much planning and attention to the steps that are involved in prepping a classroom full of students who are focused on instant gratification to learn.

Incorporating video games in the classroom adds a comfort level for the students in the classroom. Teachers are running into problems with students who are not easy to motivate in the classroom. Many times, teachers run into a scenario where they plan very interesting lessons that they think will grasp the students’ attention and the response is “I’m bored”. According to “Video game invades classroom, scores education points”, “Indiana University’s High School Survey of Student Engagement found that 65% of students are bored “at least every day, in class”. (Video games, 2013). How can a teacher address this issue in an effective way?

Incorporating video games in units can assist in motivating the students to participate, contribute, and learn. Students are usually familiar with educational video games. However, these games can be monotonous and look different to the commercial games that they are used to playing. Incorporating the commercial games that they are used to will motivate them to want to participate in well planned units. Angelone (2010) states that “commercial video games may have a leg up on typical educational games because students do not have an immediate association between the game and school, which could be a great benefit to students who are turned off by all things school related”.

Many times, when video games are used within the classroom, they are tied into the behavior system. Commercial video games can be tied into a positive behavior system within the classroom. It takes a lot of planning to ensure that everyone is able to participate in the system.

Students who have the opportunity to work with commercial video games within the classroom have better opportunity to practice leadership. Many students who may not usually take leadership roles within the classroom will become more verbal and lead because they know how to manipulate the games and the technology and are more willing to contribute to the class. Angelone (2010) points out that “with such motivation present, we as teachers should harness this media in a productive way in our classrooms. Students today are much more technologically advanced than ever before, and using video games is one more way to use something from their world as a teaching tool”.

Addressing the needs of subgroups

The needs of subgroup populations in school must also be addressed. Students with learning disabilities can be motivated by having use of commercial video games within the classroom. In the article “E is for everyone: The case for inclusive video game design”, Pitru (2008) suggests that “students with physical disabilities who are often unable to “play” as the other kids do, are on an even playing field in the virtual world of a video game”. Therefore, video games create an inclusive environment for students with disabilities.

Girls are also an overlooked subgroup within the classroom. However, this subgroup is motivated by commercial video games as well. In “From quake girls to desperate housewives”, Jenkins & Cassell (2008) noted that “Girls have been shown to have less interest in video games than boys, but they do have different interests (relational, cooperative), which should be considered”. Addressing the needs of this subgroup is a necessity to keeping them motivated.

Underperformers in the classroom are also a concern of teachers. However, these students are usually can teach anyone how to play these types of games. They have a tremendous amount of

experience with commercial video games. In “Why Johnny Can’t fly”, Joseph (2008) points out that “Students who have trouble with school have been shown to have greater success when video games are incorporated into the curriculum. Teachers can meet the needs of these students by incorporating commercial video games into cooperative groups who use these games to solve a problem or create something. This builds in a familiar learning medium with the added supports that an underachieving student may need to be successful.

Commercial video games can also be used to add enrichment to the classroom. Those students who are always finished with their course work before the rest of the class and need to be challenged can be addressed through the use of video games in the classroom. Some students could do research and create their own video games and present them to companies to be marketed as commercial video games.

Student engagement

Individuals can be engaged within the classroom by allowing them to participate in challenging, problem-based learning which motivates them to work hard to discover or to create something. Creating units that incorporate commercial video games allows students to feel a sense of accomplishment at the task at hand. Student Engagement is necessary in today’s classrooms as the students are different learners than what educators have had in the past. Keeping the student engaged will increase learning within the classroom. Marzano (2003) addresses student engagement by pointing out that “Research shows that motivation yields time on task, and time on task yields learning”. When students are on task, they are actively engaged in what they are doing, which, in turn, produces learning.

Possible applications within the classroom

Cooperative learning experiences are necessary in today’s classrooms to prepare students to work in tomorrow’s workforce. Teachers are responsible for preparing their students for situations where they will be required to work together in groups. Commercial video games have been incorporated into the classroom as a means to creating cooperative learning experiences. Creating units where students work in groups and incorporate video games into the lesson to create things or to solve a problem address the needs of using higher order thinking skills and working together in a cooperative capacity. Units have to be designed carefully to ensure that all students are given a job within the group and that all students are responsible for some contribution to the assignments.

Planning and implementation

Accepting the challenge to incorporate video games in the classroom may be somewhat difficult for teachers on several levels. Angelone (2010) states that “teachers should carefully select video games that align with the content or skill they intend to teach and become familiar with all aspects of the game so that they may best use its features to aid their teaching and students’ learning”. Obtaining the game system and suitable games can be a challenge for educators who are already on a budget. Educators must first receive approval from several levels of authority, including the board of education, the administrator, and the parents. Many times these educators will need to look into copyright laws as it applies to the use of these commercially purchased items when pertaining to a group. Knowing what that the school’s procedures and rules are regarding introducing new technology into the classroom is an asset in making the process run smoothly. Most districts have a technology department on hand to answer questions and to assist with filling out forms and documents when needed.

Once these approvals have been obtained, the educator will need to address which video games would be incorporated into the classroom. This could include games that address a unit about

ancient civilizations where the students may need to reenact something or a unit on local government where the students need to create and manage a municipality. There are a variety of commercial video games that could be used and are appropriate for the classroom. The educator will need to be flexible in their unit design. Angelone (2010) suggests that “teachers develop units that allow students to play in small groups, create their own identities, explore as much as possible, debrief with teachers and peers, and then, as an assessment, produce a final product that displays the new knowledge or skill they developed in the game”. This will truly give the teacher an opportunity to create a challenging unit that will engage the students. Requiring the students to keep data in graphs and to journal their findings will serve as a performance task and as evidence of mastery of the subject matter and the objectives of the lessons.

When the approval is granted, the educator will then be able to obtain the game. There are several ways to do this. However, the safest way to obtain the video game or system is to purchase it. If the funds are available, a request can be made to the parent teacher organization within the school to inquire whether the purchase can be made through their organization. If that doesn't work and the educator or school cannot purchase it, the teacher can write a grant for the equipment. Usually, when writing a grant, the teacher must write an explanation of what the money will be spent on, and then, show the contributing organization proof that the item is being used within the classroom. This can be accomplished in many different ways. Videos, blogs, and pictures are all acceptable ways to show the organization that the item that they donated or paid for is being used effectively within the classroom.

Possible commercial video games for use within the classroom

There are very good commercial video games that can be used within the classroom that are acceptable for use within the educational setting. Some of these games include, but are not limited to: Zoo Tycoon; Wii Fit; SimCity; and Spore.

Zoo Tycoon is described on its website as a “...,program (that) is about taking care of animals, as well as designing and managing a zoo”. (Learning Village 2013) This game could be incorporated into a unit plan that deals with animals or habitats. The students could be assigned to groups to determine how best to construct the zoo and what each type of animal will need for survival. Wii Fit is has the capacity to be used in the classroom as an addition to the much needed exercise that some children are currently lacking. It can also be used in the case of the need for inside recess. SimCity is used in classroom units where students or individuals are responsible for creating a town and being the mayor. Infrastructure and other necessities are handled by the student to ensure that the town runs appropriately. Spore is a game that allows the user to create a creature and bring it through the process of evolution in order to survive in civilization. (Electronic Arts Inc., 2009) This video game can be incorporated into an evolution unit plan to culminate the activities.

Conclusion

Commercial video games have become an important aspect of our students' lives. In “Video games in the classroom: developing digital literacies”, Beavis (2012) points out that “computer games, virtual worlds and social networking sites are seamlessly integrated into their everyday work, relationships, and play”. In order to address the educational needs of our students, teachers must think strongly about the benefits of incorporating this form of technology within the classroom. In doing so, teachers will keep their students motivated, engage students of subgroups who may not always be engaged, and assist with enrichment and intervene where these intense assistance is needed. These games can help the students who have problems with socialization with becoming more active within the classroom. Student who may refrain from units on a normal basis for fear of being bored by the subject matter show more enthusiasm when games are

incorporated. There are many benefits to incorporating commercial video games into the classroom. Therefore, educators should take a close look and make an attempt to find a way to incorporate commercial video games into the classroom.

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Editor's Note: With the exploding availability of tablet computers and other mobile devices, it expands the options for teaching and learning. This paper studies the available research to determine its possible values in focusing student interest, motivation, engagement and learning.

Using touch technology in the classroom

Lori Crockett
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Abstract

Research studies have been conducted on the use of touch technology devices in educational settings. The research findings have been conflicting and may require further research and data collection. The use of touch technology has almost universally been reported to increase student engagement, but the impact it has on academic achievement is still dependent on the different research studies. Touch technology has been used to help students learn academic skills and nonacademic skills such as behavior and social skills. Minimal research has been conducted that targets the use of touch technology with students that have been identified with a disability and receive special education services or support.

Keywords: touch technology, iPad, iPod, special education, Nook, Kindle, electronic books, generalization

Introduction

Touch technology devices such as iPod touch, iPad, Kindle and Nook have created new opportunities for teachers to bring technology to students in the classroom. School districts have recently begun purchasing touch technology devices for students to use in multiple ways but research has not been readily available that evaluates the effectiveness of using these devices. Currently, touch technology devices are being used as electronic book readers at the university level, and they are being used for literacy, numeracy, social skills and functional skills instruction at the k-12 grade levels. This research paper examines the available research and attempts to synthesize the combined information.

Electronic books

Universities are moving toward the use of electronic books in the classroom and libraries (Ahmad and Brogan, 2012). Ahmad and Brogan (2012) conducted a longitudinal case study examining the actual use of electronic books in the university setting. The researchers gathered data through software that recorded each time an electronic book was accessed, the amount of time the book was read, and the students that were accessing the books. Their research had unexpected results. 68% of the university population did not access electronic books by either browsing or reading. Only 5% of the electronic books available to the students were read during the research study. The research uncovered the idea of "power users" (Ahmad and Brogan, 2012). Power users were a small group of students that were responsible for accessing most of the material provided in electronic book format. The researchers were not able to conclude why students were not using the electronic books that were available to them. The researchers hypothesized that because electronic books were still a relatively new mode of technology students were not comfortable with using the electronic book format. Ahmad and Brogan hypothesized that student use would eventually increase with understanding and increased ease of use.

In a separate research study, a pilot program was used to determine whether using touch technology devices at the college level for electronic books would be beneficial to college students (Martinez-Estrada and Conaway, 2012). The research evaluated student learning, course outcomes, and results of participant survey assessments. The use of touch technology devices engaged the students and made resources immediately available to both students and faculty.

Some of the positive aspects of using a touch technology device were the lower cost of electronic books vs. printed books, the portability of using electronic books, and having immediate access to internet and the multiple resources it provides.

Martinez-Estrada and Conaway reported the results were positive overall, but there were some negative aspects of using the devices in place of traditional means (2012). Students reported that taking notes and manipulating figures were difficult. Students also expressed concern about checking the references on material used on the devices. Students also reported they had difficulty with the touch controls of the touch technology device. They wanted an easier way to move through an electronic book instead of the cumbersome means created.

One of the unexpected benefits was in the read aloud feature of the electronic books. Some foreign exchange students were able to read the book in English as well as having it read aloud to them in English (Martinez-Estrada and Conaway, 2012). This gave them two modalities to understand material that was presented to them. These students reported it was beneficial to have the information presented in this manner and help them develop their English language skills.

The researchers concluded that while this type of technology was well received by the participants, the constant change in technology would likely make gathering current data difficult (Martinez-Estrada and Conaway, 2012). By the time data was gathered and analyzed it would have likely been collected using a machine that is no longer current.

Academic use

Banister (2010) researched how iPads and iPods were being used in the K-12 classroom. Banister noted that these hand held devices allowed students to connect with web content with ease. Web applications are easily installed via the Internet. The web applications provide students with a multitude of learning experiences in academic and nonacademic areas. The researcher noted that the web applications could be woven into a learning activity if the teacher can determine how to use and evaluate student learning.

Banister (2010) determined many of the ways in which iPads, iPods and other touch technology devices could be used in the classroom have not been researched. While touch technology may increase student engagement, it has not been concluded that all uses of the devices increase academic achievement (Banister, 2010).

Administrators in school districts have invested in touch technology devices in hopes that they will increase student achievement (Carr, 2012). Carr conducted research that examined the use of hand held touch technology devices in a 5th grade math class. The quantitative quasi-experimental study compared math scores on a pretest-posttest between two groups. One group was provided a touch technology device to use in class, while the other was provided traditional instruction and resources. Research indicated that the group of students that used touch technology devices did not have a statistically significant difference in scores from the group of students that were not using the devices. Carr did report that further research would be beneficial. Possible changes in the research could include giving students access to touch technology devices outside of school, gathering qualitative data, and increasing the number of student participants (2012).

Teachers can have students access the Internet or use web-based applications on touch technology devices (Carr, 2012). The challenge that teachers face is finding and using appropriate applications that are meaningful and enhance learning outcomes (Carr, 2012). Carr discovered there were few applications that met the criteria for “truly innovative teaching and learning in the sense that they represent resources that extend what educators and students could otherwise do” (2012).

Non academic use

A recent research study evaluated the use of a hand held touch technology device for a student that was identified with difficulties staying on task and self-monitoring his behavior. (Blood, Johnson, Ridenour, Simmons, & Crouch, 2011) The researchers provided the student with a device to use that had activities and videos for his attention and off task behavior. The research results indicate that the intervention was successful in changing the student's behavior. The touch technology device allowed the student to access the video instructions when the student was off task. This was accomplished without having the student leave the classroom or disturb classmates. A hand held touch technology device allowed the student to gain the support and tools without the technology being intrusive. This would not have been possible with a typical computer or laptop. The researchers concluded that in this instance touch technology devices were beneficial for students learning pro-social learning skills (Blood, et al, 2011).

Crichton, Pegler, and White (2012) examined the use of touch technology devices in the K-12 after implementation of a program to use these devices. Research revealed that the students and teachers at the elementary and middle school levels were receptive to the introduction of the technology and found it beneficial in the classroom. Research participants at the high school level expressed dissatisfaction with the touch technology devices (Crichton, Pegler, and White, 2012). The students stated that the devices did not offer applications or uses for their age and grade level. When the devices were incorporated at the high school, teachers and students reported it felt forced upon them and extraneous to the true learning objective.

When teachers at the high school level used the devices they had a tendency to focus on web-based activities and uses (Crichton, Pegler, and White, 2012). When teachers attempted to use web applications they had great difficulty in finding appropriate applications for the content.

Spatial relations

Martin-Dorta, Saorin, and Contero, (2011) researched the use of touch technology devices in the training of spatial relations. They used a pretest/posttest to determine the effectiveness of the intervention. The data showed significant statistical increase in student performance with the use of touch technology devices. The research participants reported positive experiences with using the technology devices. Research participants were engineering students at the university level.

Special need students

A qualitative research study was conducted that examined the use of a touch technology device with a fifth grade student that was identified with Attention Deficit Hyperactivity Disorder (McClanahan, Williams, Kennedy, and Tate, 2012). The student was reading below grade level at the beginning of the study. The teacher worked with the student for six weeks using a touch technology device and conducted pretest and posttest to evaluate the student's progress. After the six week intervention using the touch technology device the student increased a full grade level in reading comprehension and fluency (McClanahan, Williams, Kennedy, and Tate, 2012).

After the research study concluded, the student continued to receive reading intervention with the help of the touch technology device (McClanahan, Williams, Kennedy, and Tate, 2012). The student and teachers report that he is more independent and is able to focus more on academic tasks when he uses the device. The researchers were not able to determine what made the change in the student's ability to focus or engage in an assigned task.

Haydon, Hawkins, Denune, Kimener, McCoy and Basham (2012) examined the use of touch technology devices in a high school math class with students that were identified with emotional disturbances. The devices were used in place of student worksheets. When the students were tested using the devices their scores increase significantly. Students were able to complete 2.5 to 5 times more mathematic problems correctly when they used a touch technology device. When

the students completed a standard math worksheet they scored lower. The math concepts tested were coins, fractions, patterns and operations. Student participation increased almost 31% when students were using the devices as compared to when they used traditional worksheets.

Educational purposes

Research conducted by Murray and Olcese (2011) tried to determine what educational purpose touch technology devices could serve. They looked at the function of the device with four areas in mind: tutor, communicate, tool and explore. The result of the research indicates that most of the web applications available were not in alignment with research based teaching practices. The research revealed that most of the applications were targeted at consumption and not educational purposes. Of the applications that were designated to be educational, only a small portion of them were truly educational and fit the guidelines of acceptable teaching methods in instruction.

The touch technology devices have a great range of capabilities but educators are dependent on the web application companies to design and create meaningful applications for the classroom (Murray and Olcese, 2011). Few of the applications focused on creating and collaboration, instead they focused of providing information that was readily available with other resources or skill and drill practice that could be done in other modalities. Murray and Olcese determined that the use of touch technology devices were not likely to create a revolution in how students are presented material in the k-12 classroom setting (2011).

Ricci conducted research involving a 5 year old child and a 7 year old child (2011). Ricci looked at how the children used touch technology devices to help them learn literacy and numeracy. The children were given a touch technology device for them to play with and explore. They discovered the stopwatch feature, the alarm and weather updates. The children used these features to time each other while running and playing, which according to Ricci, helped develop numeracy skills (2011). The children then explored the weather updates. While using this built in feature they would discuss what activities they could do during the day based on predicted weather conditions (2011). Ricci theorizes that this helped the children with literacy skills because they were able to read and understand weather information.

Ricci proposes that children and students should be given touch technology devices so they can explore and learn as they choose (2011). He presented an argument that if students are provided freedom with the technology tools, they should have a voice in how they learn and participate in their own education. While this research provides learning opportunities for students it does not provide them with a learning opportunity that could not be found with traditional resources.

Pre-schoolers

Shifflet, Toledo and Mattoon (2012) examined the use of touch technology devices with pre-school children in a classroom setting. The classroom teacher observed four benefits to this technology in the classroom. Students that used the touch technology devices were more likely to cooperate with their peers and demonstrate appropriate social skills. The students did not use the devices in isolation, instead they would independently create groups that would work together to solve a puzzle or complete a task. The students would also collaborate on projects together using the device. The students created pictures and played games as a cohesive group using the devices.

The researchers also observed that the students continued to willingly participate in other classroom activities after the introduction of touch technology devices (Shifflet, Toledo and Mattoon, 2012). The students were initially very interested in the devices and continued to choose to use them but they did not refuse to engage in traditional hands-on activities. The students were able to balance the technology with other activities.

Generalization

Zack, Barr, Gerhardstein, Dickerson and Meltzoff (2009) conducted research involving infants using touch technology devices. The researchers demonstrated different activities for 15-month old children. If the activity was two dimensional the infants were able to replicate it two dimensional. If the activity was three dimensional the infants were also able to replicate that three dimensional. When an adult modeled a two dimensional activity and wanted the infant to create the activity in three dimensions they were unable to complete the task. The same occurred when the adult modeled a three dimensional activity and wanted the infant to demonstrate the activity in two dimensions. This shows a lack of generalization skills in the infants with regards to changing dimensions in activities (Zack, Barr, Gerhardstein, Dickerson and Meltzoff, 2009).

Synthesis

There is conflicting data as to whether touch technology devices are beneficial in a classroom. The regular education classroom teacher must evaluate the web applications that are available and determine whether they are appropriate for the desired learning outcome. A large number of applications available for skills may not involve higher level thinking or desired 21st Century Classroom skills such as collaboration. A classroom teacher may be able to achieve the same learning outcome through traditional means without the school district incurring the cost of purchasing touch technology devices.

The research supports the concept of using touch technology devices for learning literacy skills. Web applications that focus on comprehension and fluency were proven to increase reading levels with continued use. The electronic book function allows students to access multiple reading materials. The text to speech function can be used to help students, particularly English Language Learners, to practice reading skills without the aid of a teacher or teaching assistant.

The use of touch technology devices for nonacademic has not been researched at length. The devices were used with one student that had been identified with Attention Deficit Hyperactivity Disorder. The qualitative study indicated that the student was able to maintain focus and use the touch technology devices to access videos that were used to help the student stay on task. This was a small study and deserves further research. All of the research studies indicate that students were more engaged in learning activities when they used touch technology devices. The current research chose to focus on the academic impact instead of the behavioral impact of such devices.

Research was conducted that evaluated the use of touch technology devices with students that had been identified with emotional disturbances. The technology increased the students' academic achievement but data was not collected on the behavioral aspects of using the devices.

The research conducted that examined infants ability to model activities and generalize that information into a second activity provides results that could have the greatest impact on using touch technology devices with special education students. The infants were not able to generalize the information modeled on a touch technology device into other settings. Students that have been identified with some disabilities have difficulty with generalization of skills. In the special education classroom students learn skills in context for this reason. There has been a lot of interest among teachers and administrators in using these touch technology devices in a special education setting but there has not been much research that provides any data as to whether this is truly beneficial to students that are receiving special education services.

One research study did examine the use of touch technology devices in helping students understand and learn spatial relations. The evidence supported the use of these devices but it must be considered that the participants were university level engineering students. It would require further testing with a larger participant population.

Conclusion

Further research is needed to evaluate the use of touch technology devices. It is unknown why students with difficulty focusing are able to stay on task with these devices. It is unknown whether use of these devices is beneficial for students receiving special education services and whether they lack ability to generalize skills learned on the device. It is unknown whether touch technology devices provide students with fine and gross motor skills, opportunities to participate more fully in their education, or provide a way for them to express their ideas and skill when they have previously been unable to do so.

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Editor's Note: If we can identify a problem, this often points to a solution. For the creative teacher, a challenge can be a learning opportunity. Individual differences, cultural differences, and diversity that make teaching more difficult in a traditional environment can have value. This paper discusses the need for cultural sensitivity and ways to enrich teaching-learning environments that are problematic for many teachers and students.

Cultural awareness in the online classroom: changing the role of the instructor

Stacey Little
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Abstract

In online classes, instructors in higher education interact with a diverse audience. The lack of verbal and non-verbal cues creates educational challenges. In a traditional classroom, nonverbal expressions of confusion, bewilderment or uncertainty might provide the instructor information to enhance the learning opportunities. These cues are not present in the online class. Cibes (2001) suggested that the globalization of education is changing the learning environment in such a way that it is difficult to identify and promote diversity. Lanham and Zhou (2003) proposed that students from different cultures have different approaches to learning that become more apparent in online learning. Along with the challenges diversity brings to online education, potential benefits exist. Online instructors should capitalize on the potential benefits of diversity in the online classroom and identify techniques to enhance and take full advantage of these benefits.

For the purpose of this paper, culture is defined with focus on language and communication components. Hofstede's (1980) model of national cultural characteristics is explored in its relationship to online learning. The purpose of this research is to support the need for increased cultural awareness and sensitivity in the online learning environment to help address the challenges as well as capitalize on the benefits of student diversity.

Keywords: cultural diversity in classroom, culturally responsive classroom, online learning, cultural awareness, cultural sensitivity

Increased cultural diversity in higher education

According to Taras and Rowney (2007), most colleges and universities around the world are experiencing an increase in the cultural diversity of their student population. Results from the Institute of International Education (Institute of International Education, 2012), indicated that there are more than 700,000 international students enrolled in institutions of Higher Education in the United States. This increase in cultural diversity in colleges and universities does not only impact the traditional classroom; the online class is affected as well. Consequently, the number of online class offerings is increasing resulting in the potential for a rise in the diversity of the students enrolled in online courses. Chen, Mashhadi, Ang and Harkrider (1999) claimed it is crucial for educators to critically consider educational practices that assist the varying needs of students from diverse cultural backgrounds (as cited in Smith & Ayers, 2006). It has been argued that online learning has shifted the responsibility of learning from the instructor to the student (Lanham & Zhou, 2003). This shift may increase the chances of student failure in online courses. This possible failure is intensified for an international student who faces additional challenges as a result of cultural differences. The purpose of this paper is to argue that cultural diversity in the online classroom has triggered the need for increased cultural awareness and a redefined role of the online instructor. This paper addresses cultural diversity and online learning and is of relevance to educators, academic administrators and online course designers.

Culture defined

According to Ford and Kea (2009) culture is learned and acquired. For the purpose of this paper culture is defined as beliefs, attitudes, values, habits, customs and traditions shared by a group of people (Ford & Kea, 2009). Although all aspects of culture are important, for the specifics of this writing the focus is on spoken language, and ethnicity. Most important, it is not to be assumed that cultural differences are the cause of every incident of miscommunication and lack of understanding. Ford and Kea (2009) suggested that all humans have many commonalities and are more alike than different. Regardless, cultural differences can bring many benefits as well as challenges to colleges and universities.

Benefits and drawbacks of cultural diversity

Cultural diversity can benefit colleges and universities in a number of ways (Taras & Rowney, 2007). It is evident that accepting applications from international students will increase the pool of students from which to admit. This allows for colleges to attract and retain the best and the brightest students. Another benefit that diversity brings to higher education is the experience of preparing students for a global work environment. Diversity can serve as a catalyst for idea generation and exchange as well as an increasingly enriched discussion. Hughes (2007) stated that there is a need to measure how student diversity is supported in the online classroom. Revising and clarifying the changing role of the online instructor can help capture the many benefits culture and diversity add to the online classroom. If the online instructor is not aware of or sensitive to the varying cultures in the classroom, the challenges might overwhelm the benefits.

Some might argue that the online learning environment is all-inclusive because of the virtual anonymity of the student. In the online classroom one cannot see evidence of race or gender and cannot hear accents of ethnicity as they could in a traditional classroom. Hughes (2007) contended that in online groups where diversity is somewhat hidden, cultural differences could still impose challenges. Hughes (2007) suggested that there is little evidence to support that an online learning group is more welcoming of diversity than a traditional group. Research suggested that cultural differences could, in fact, negatively impact student participation in online courses (X. Liu, S. Liu, Lee & Magjuka, 2010). Shattuck (2005) found that international online learners felt as if they were alienated from the American learners in the online classroom even if there was a highly interactive learning environment (as cited in Liu et al., 2010). If not monitored and managed, cultural differences might hinder the interaction between students.

Examples of cultural differences

Smith and Ayers (2006) debated that educators must recognize the irregular ways in which people from varying cultures perceive and interpret the world around them. According to Sheard and Lynch (2003) students' cultural background can influence their interaction and engagement in the learning environment, hence impacting what they gain from such an environment. Hofstede's model of national characteristics can be used to explore how cultural differences impact students' performance in the online classroom. Specifically, Hofstede found that cultures varied among four dimensions: (a) individualism versus collectivism, (b) power distance (large versus small), (c) uncertainty avoidance (strong versus weak), and (d) masculinity versus femininity (as cited in Neihoff, Turnley, Yen & Sheu, 2001). For instance, those students whose cultural view is that instructors are in a position of high power will be reluctant to interact in class and with the instructor (Wang, 2007). Likewise, power distance can also impact student attendance. In high power distance cultures, students value and respect their instructors and therefore feel attendance is mandatory and respectful. Additionally, some cultures place value on individual efforts, others value the group or community (Neihoff et al., 2001). The nature of the work can appeal or deter a student depending on the level of this characteristic. Hofstede found the United States to be a very individualistic culture (Neihoff et al., 2001). Furthermore, it is suggested in Hofstede's

model that some cultures are more tolerant of uncertainty than others. If uncertainty is tolerated, risk taking is highly accepted and encouraged. In addition, Neihoff et al. (2001) proposed that masculine cultures consider assertiveness, competition and success as strengths, while feminist cultures view the quality of life, relationships and care as success. Thus, cultural characteristics can impact the way students respond and interact with others. Another case of opposing perceptions is that electronic communication is impolite (Wang, 2007). It can be seen how these culturally related factors might impact the classroom and the online learning environment. If fact, even something as simple as a word meaning could lead to miscommunication. For instance, in English ‘mist’ means ‘fog’ or ‘haze’, but in German it means ‘manure’ (Taras & Rowney, 2007). ‘Pan’ translates to bread in French. ‘Ape’ means bee in Italian (Taras & Rowney, 2007).

Although some of these differences are readily apparent and recognized among cultures, it is important to avoid generalizations and value each student as an individual (Lanham & Zhou, 2003). Employing online instruction that facilitates effective learning for everyone in the classroom can address the challenges that are presented.

Recommendations

In the face-to-face classroom there are increasing initiatives to improve the quality of education and potential outcomes for culturally different students (Ford & Kea, 2009). One strongly supported initiative is a culturally responsive classroom. According to Ford and Kea (2009), when teachers are culturally responsive they are student centered removing obstacles in the road to a student’s success. Ford and Kea (2009) later proposed to be culturally responsive means to work proactively to understand, respect, and meet the needs of students from all cultural backgrounds. This same logic of cultural responsiveness can be applied to the online classroom.

Instructors from all cultures need to be aware and sensitive to cultural differences in the online classroom to promote equity and inclusion among all learners. Smith and Ayers (2006) asserted that the “Western world view dominates technologies and therefore electronic messages in technology” (p. 407). Lanham and Zhou (2003) encouraged educators to no longer design courses for local students arguing that one-size does not fit all in the promotion of global learning. According to Ford and Kea (2009), despite the increasing diversity of the student body, instructors continue to use the same methods that were popular and effective for a less diverse audience in terms of culture and language. The authors furthered as a result of the increasing demographic changes in our nation and in our schools, the need to be more sensitive to cultural differences of students is more important now than it has ever been.

If the goal of the online instructor is effective learning for everyone in the classroom, they must work to understand and meet the needs of the students. Increasing cultural awareness and sensitivity in the online classroom requires a proactive, yet reflective instructional approach. Tara and Rowney (2007) suggested that one of the most obvious and frequent obstacles in a culturally diverse classroom is language and communication difference. Ford and Kea (2009) contended that the culturally aware instructor recognizes that groups vary in language and other cultural aspects and that this could cause miscommunication or misunderstanding. Lanham and Zhou (2003) suggested that dissolving cultural boundaries in online learning could only happen if it is first understood what those boundaries are. These same authors wrote, “We have the technology to provide global education; the focus must now be placed on ensuring the educational content and resources we provide can be utilized by all students” (2003, p. 290).

Instructional designers and online instructors must be aware of the cultural dimension of the student base and be equipped to present each student with activities that they can benefit from (Wang, 2007). Lanham and Zhou (2003) agreed that because of the multiple cultures present in college courses, designers should take a more flexible approach so that all students are able to

meet the course objectives. According to McLoughlin (2000), learning experiences should provide students with the flexibility to choose personally and culturally relevant channels to achieve course objectives (as cited in Smith & Ayers, 2006). This will require a new definition of the online instructor and a retooling of the format in which online courses are presented.

In consideration of the improvement of online course delivery to serve a global audience, the following suggestions are recommended. Online instructors should pursue effective instructional strategies that are culturally compatible to the student's learning style. The use of icons and visual puns to symbolize items on a screen as well as metaphors should be avoided (Lanham & Zhou, 2003). When establishing online content, it should take into account that visual icons, such as a finger pointing or a cup of coffee, are often translated into different meanings by people of varying cultures (Lanham & Zhou, 2003). It is essential for the online instructor to provide students with equal opportunities to participate. Online discussions should be monitored for signs of groupthink or student withdraw. Lanham and Zhou (2003) provided the following suggestions to online instructors:

- Provide an environment free of colloquial language and cultural slang.
- Identify items or language that may be offensive to other cultures.
- Identify areas in which cultures learn differently, and
- Provide an environment in which all students are able to understand the material. (p. 286)

Conclusion

According to Taras and Rowney (2007) effective diversity management in academia is of the upmost importance. This paper presents improved strategies to design distance education in relation to cultural diversity, but does not provide a best design (Smith & Ayers, 2006).

According to Mushi (2004), multicultural education implies ways of teaching that makes it possible for learners to experience themselves as unique individuals, yet part of a global society. This will require an increase in cultural awareness and a revised definition of the online instructor in the diverse, global education system.

Implications for practice

Without a redefined role of the online instructor, students from different cultures may suffer. To ensure learning for everyone in the online learning environment, the instructor needs to be aware of his or her own cultural differences as well as those that may exist among the students.

Culturally conscience course design as well as instructor participation and inquiry can lead to improvement in online course material for a diverse audience.

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