



DISTANCE LEARNING

... For Educators, Trainers, and Leaders

ARTICLES

- ▲ E-mentoring for K-12 Students:
Support for NASA Virtual Visits
- ▲ Thirty Years Ago, A Watershed Moment
for Higher Education and Distance Learning
- ▲ Who's Who in Distance Education:
Authentication and Academic Integrity
- ▲ Internal and External Indicators of Virtual
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- ▲ Moodle: A District Solution to Online
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DISTANCE LEARNING

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Distance Learning, an official publication of the United States Distance Learning Association (USDLA), is sponsored by the USDLA, by the Fischler School of Education and Human Services at Nova Southeastern University, and by Information Age Publishing. *Distance Learning* is published four times a year for leaders, practitioners, and decision makers in the fields of distance learning, e-learning, telecommunications, and related areas. It is a professional magazine with information for those who provide instruction to all types of learners, of all ages, using telecommunications technologies of all types. Articles are written by practitioners for practitioners with the intent of providing usable information and ideas for readers. Articles are accepted from authors with interesting and important information about the effective practice of distance teaching and learning.

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Distance Learning is for leaders, practitioners, and decision makers in the fields of distance learning, e-learning, telecommunications, and related areas. It is a professional journal with applicable information for those involved in providing instruction of all kinds to learners of all ages using telecommunications technologies of all types. Articles are written by practitioners for practitioners with the intent of providing usable information and ideas. Articles are accepted from authors with interesting and important information about the effective practice of distance teaching and learning. No page costs are charged authors, nor are stipends paid. Two copies of the issue with the author's article will be provided. Reprints will also be available.

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E-mentoring for K-12 Students: Support for NASA Virtual Visits

Caryn Long and Brandy Close

INTRODUCTION

The National Aeronautics and Space Administration (NASA) has been involved in extensive research and exploration of our planet and universe for over 50 years and continues to inspire generations of students all over the world. NASA considers providing a variety of education programs designed to inspire the next generation of explorers a priority. By encouraging students to pursue science, technology, engineering, and mathematics (STEM) fields, these inspired

students would theoretically then enter the pipeline for future NASA employment. One such program is NASA's Digital Learning Network (DLN). This program provides access to STEM lessons presented through NASA missions and goals via video and web conferencing technologies. The DLN's success in reaching large numbers of students throughout the country is well documented. Subsequently, as technology has become more sophisticated and accessible, there is a continued effort by NASA Education to focus on incorpo-



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rating twenty-first century technology into K-12 learning opportunities.

Today's students "demand more than a glorified correspondence course or a televised lecture" (Rogers, 2001, para. 1) and NASA Education meets this demand via the DLN quite economically through its varied technologies. DLN's alignment with NASA Education's dedication to providing K-12 students with inspirational tools and opportunities has initiated a new venture that builds upon what the DLN has already established through "Virtual Visits"; providing mentoring opportunities to these students. While the idea of mentoring and role modeling is not new, research has indicated it is an effective means of inspiring these learners as they strive toward their career goals.

Supporting this idea, Penny and Bolten (2009) state that "Education has long found mentoring effective and with the advent of online tools, comes e-mentoring, sometimes referred to as online mentoring, cyber-mentoring, or even virtual mentoring" (p. 170). Bierema and Merriam (2002) indicated that customarily, popular forms of mentoring are associated with career, academic, and psychosocial development. Mentors are often considered a key component toward achieving personal and professional success. Additionally, the use of technology from the most basic form of e-mail to computer conferencing technology has significant implications for enhancing the potential of the mentoring process (Bierema & Merriam, 2002).

Although mentoring from a distance is most often reliant upon the technological capabilities of school districts and may possibly offer unfair advantages to technology-rich schools, educators have found online mentoring to be effective. Penny and Bolton (2009) further emphasized that "e-mentoring has significant implications for mentoring" (p. 170). They clarify this point by saying that "Successful mentoring involves frequent and regular interaction ... [but] barriers such as time, work respon-

sibilities, geographical distance and lack of trust often reduce, if not halt, interaction" (Penny & Bolton, 2009, p. 170). The purposes of this article are to validate Virtual Visits in the mentoring process and to provide evidence to support the growing importance and necessity for educational organizations to provide unique mentoring opportunities to the K-12 population using web-conferencing technologies.

LITERATURE REVIEW

MENTORING AND E-MENTORING IN K-12

Mentors are regarded as valued contributors to a student's educational experience, significantly guiding and providing positive influence for students as they begin to seriously consider future career options (Gross, 2011). Unfortunately, finding mentors who have the time to work with students face-to-face or schools having the ability to provide field trips for their students to enable them to have first hand career experiences creates difficulties for this essential component of learning to occur. Serving as a mentor before the advent of current technologies, one was forced to be physically present at the school in order to work with a mentees. Large time investments were required, which proved to be an inconvenience, especially if working full time. An additional hindrance was the circumstance surrounding school and mentor location inhibiting equitable mentor distribution. O'Neill (2005) states that development of such relationships have the potential to be entangled by work schedules, office location, or time involved in the mentoring process, which discourages potential mentors. As a result, new ways of offering mentoring relationships must be encouraged and explored. Potential roadblocks for mentoring opportunities are easily lifted through online mentoring programs or e-mentoring.

E-mentoring, according to Penny and Bolton (2009), sometimes referred to as telementoring, cyber-mentoring or virtual mentoring, allows students the opportunity to meet with experts in a wide variety of professional fields via the Internet. Bierema and Merriam offered a comprehensive e-mentoring definition, and defined it as a “computer mediated, mutually beneficial relationship between a mentor and a protégé which provides learning, advising, encouraging, promoting, and modeling, that is often boundary-less, egalitarian, and qualitatively different than traditional face-to-face mentoring” (2002, p. 214). Interestingly, Single and Single stated that “E-mentoring practitioners and researchers have not suggested that e-mentoring replace face-to-face mentoring, but have viewed it as a way to provide mentoring opportunities that otherwise would not exist” (2005, p. 305). As technology has evolved, the chance to meet professionals online in spite of the boundaries of distance, time, and culture, has opened new windows of opportunity for students to gain access to mentors in a variety of academic and professional career fields. Bierema and Merriam (2002) stated that these technological advances, particularly forms that allow mediated communication such as e-mail and chats, enhance the mentoring process.

There are numerous advantages of e-mentoring relationships. Penny and Bolton’s (2010) view is that technology simply erases the barriers to participating in a traditional mentoring relationship. E-mentoring is efficient regarding cost and time and mentors have the ability to share a great deal of information in a smaller more concentrated amount. Additionally, Single and Single explained that,

in addition to the opportunities it provided, some aspects may make e-mentoring even more advantageous than face-to-face mentoring. These aspects include the attenuation of status differences, the ability to participate in mentoring pro-

grams without the fear of being viewed as participating in remediation programs, and the opportunity to be matched with an e-mentor outside of one’s geographical region and established networks. (2005, p. 306)

Overall, researchers identified that e-mentoring serves to take advantage of the benefits of traditional mentoring with 21st century technology.

EFFECTS OF E-MENTORING

Penny and Bolton (2010) assert that e-mentoring allows for mentors and mentees to cross cultural boundaries. For example, disabled, minority, and disadvantaged students in varied environments are given access to any mentor located in the world. Subsequently, there is no longer a need to rely on subject matter experts who are located within a particular geographic location. Additional barriers such as age, gender, and status can also be overcome through the use of e-mentoring. Penny and Bolton (2009) note that through e-mails and chats, mentors and protégés are somewhat anonymous. The anonymity makes social and cultural barriers less important and allows the relationship to develop freely without interference, bringing together people who would not normally interact. Single and Single implied that “impartiality allowed the e-mentoring relationships to develop to the point where there was trust and openness within the e-mentoring pairs” (2005, p. 307), enabling the “development of a relationship that could foster the informational, psychosocial, and instrumental benefits provided by mentoring” (2005, p. 308). Studies show impacts on introverted students. In Hubschman’s study (1996), no significant differences were found between mentored and nonmentored students, but introverted students who had engaged with mentors had higher achievement scores than those who did not have mentors. Therefore, the results of the study suggest

some impact was made on the mentored introvert group (Bierema & Merriam, 2002).

Additionally, there have been studies focusing on the impact of e-mentoring with groups that would be considered high-risk participants such as girls and minorities. The e-mentoring environment encourages these groups to explore non-traditional fields, providing access to role models and advocates that might not necessarily have been available through traditional mentoring (Bierema & Merriam, 2002). In their study on the impact of student's career aspirations, attitudes, and behaviors in science and technology, Bennett et al. (1998) positively correlated the effects of e-mentoring participation with young girls in three ways: sustaining or increasing the desire to pursue studies in STEM fields, increasing understandings of what professionals in these disciplines do, and helping to develop skills for pursuing careers in these academic concentrations. The greatest change occurred in participants' behavioral shift in the group classifying themselves as not likely to pursue a career in STEM fields. Fifteen percent of these female students in particular changed their classification to somewhat or very likely to pursue these careers at the conclusion of the study (Bennett, Tsikalas, Hupert, Meade, & Honey, 1996).

Moreover, the literature suggests both mentees and mentors receive benefits from an established mentoring relationship. Penny and Bolton (2010) affirm that mentors gain a sense of competence and satisfaction promoting good communication skills while mentoring youth. These positive feelings encourage them to promote mentoring to their colleagues. The strengths of the practice notwithstanding, e-mentoring does have its shortcomings. One such limitation is that e-mentoring spreads across all organizational cultures from high school to K-12, and nonprofits to corporations. Taken at face value, this appears to be a positive attribute of e-

mentoring; however, O'Neill et al. (2005) state that the large cultural span can confuse a mentor and limit his or her understanding of how best to communicate their message. In addition, the large pool of mentors can prove to be overwhelming to manage without proper planning. Another potential barrier is highlighted by Bierema and Merriam (2002); they point to a critical fact within the definition of e-mentoring; the concept requires access to the technology. Owning a computer could be cost prohibitive for some individuals and school systems. Combating this barrier, public access is spreading through local coffee shops, libraries, and other localities allowing more of the public that may have limited funds access to these tools.

As with any virtual communicative outlet, miscommunication occurs often, particularly if the electronic medium is the only means with which communication occurs. Poor communication leads to abrupt endings of a virtual relationship or delayed starts in the beginning of the program (Bierema & Merriam, 2002). NASA Education, specifically the DLN, was able to consider both the negative and positive aspects of e-mentoring and develop a program that serves K-12 education.

According to Godshalk, "It is indisputable that computer-mediated communication technology, that is the Internet, e-mail, instant messaging and related technologies, is changing the social landscape and the process of how we communicate with one another" (2009, p. 1617). Utilizing such technologies to provide unique mentoring opportunities is at the heart of e-mentoring. Reflecting upon the research and experience of those who have sought validation for the e-mentoring model, various implications have become apparent. Admittedly, mentors in any capacity provide career development, psychosocial support, and role modeling (Godshalk, 2009). However, e-mentoring increases the ability of mentors to reach beyond their own communities as well as provide

expanded opportunities for students to obtain knowledge and experiences necessary for successful career choice and advancement (Godshalk, 2009).

INNOVATIVE E-MENTORING MODEL

NASA's DLN has introduced a new opportunity for educators to integrate the strengths of e-mentoring through the Virtual Visits (VV) program. VV, introduced to DLN customers in 2011, capitalizes on the strengths of e-mentoring through an organized system that promotes subject matter experts (SME) on the DLN's website. SME's are then made available to students across the country through an established scheduling system working to balance the mentees' needs with the most appropriate SME.

VIRTUAL VISITS AND IMPLICATIONS OF E-MENTORING

VV was created to support NASA Education's overarching goal to "continue the Agency's tradition of investing in the Nation's education programs and supporting the country's educators who play a key role in preparing, inspiring, exciting, encouraging and nurturing the young minds of today who will be the workforce of tomorrow" (NASA Education, 2011). Decreasing funds for school districts has caused the traditional field trip to become as endangered as some species. Likewise, increasing budget cuts on the federal level have necessitated NASA Education to achieve its overarching goal in innovative ways where professionals, scientists, mathematicians, and engineers can still inspire students with NASA's missions without having to be physically present.

In 2003, NASA engaged all 10 of its centers to deliver synchronous presentations centered on STEM concepts to students and educators across the country; and the DLN was established. This static module approach had served the project well

through its use of video conferencing technology required at the school site to connect to the DLN studio. As the years progressed and web conferencing technology has become more refined, the DLN expanded its connectivity alternatives making room for the VV initiative.

VV provides opportunities for fourth-12th-grade teachers who want to connect their students with NASA experts. The SME's address specific areas of student interest in STEM-related concepts to NASA missions and research (DLN Virtual Visits, 2011). Educators access the DLN website (dln.nasa.gov) and select the Special Events link located on the left of the homepage to access VV. The page provides video vignettes of various SME's representing multiple STEM careers allowing educators the opportunity to preview a potential SME's content. Once the teacher has chosen a career area in which to focus, the registration link allows that teacher to request an opportunity to have their students meet a SME. Scheduling a VV is at the educator's convenience, delivered with a variety of conferencing formats that meets the parameter of the school's technology constraints. SME requests come directly to the VV coordinator who matches the most appropriate expert with the class request, facilitating the date and time of connection between the two parties.

As a concept, VV comes at an opportune time. Drexel University researchers have studied a similar e-mentoring program. According to those who conducted the study at Drexel, "Online mentoring can serve as an effective and viable option to the more traditional face-to-face model" the group wrote in the *Journal of Vocational Behavior* after surveying about 1,400 students (Gross, 2011). Success has been immediate, as the VV model had 22 requests within the start of the 2011-2012 school year (DLN Virtual Visits, 2011). As a result, the DLN expects the number of events to grow as the program becomes

more widely known. As Gross (2011) states in his article, the concept of online mentoring is not as popular as one may think, considering the popularity of social networking. VV is a burgeoning example of e-mentoring programs. The potential of growth in opportunities such as this is boundless.

Future directions and aims of e-mentoring in general will play a pivotal role in how VV are received and developed. Knouse (2001) discusses future alternatives to e-mentoring's current understanding claiming that team mentoring could offer unique feedback in a workplace environment as well as provide social support in any setting. Bierema and Hill support Knouse's claims stating that "Virtual mentoring has the potential to better support a multicultural workforce by providing access to mentoring that might otherwise not exist" (2005, p. 565). Furthermore, the use of e-mentoring with specific populations such as students with special needs has great implications. As Shpigelman et al. (2009) indicate,

The mentoring relationship conducted via computer-mediated communication technology deepened over time and appeared to be valuable to enhance personal empowerment of youth with special needs by the learning of communication skills, exposing them to various coping strategies related to living with a disability, and providing them with an opportunity to assist others. (p. 926)

There are implications for career development as well as personal growth as a result of innovative e-mentoring such as the DLN's VV.

CONCLUSION

E-mentoring—and more specifically VV—embrace the conceivability to disseminate knowledge in a twenty-first century tech-

nologically-rich society. With the increasing needs for students to be linked to mentors who provide practical academic connections in various fields of study, VV provides a practical and inexpensive means for which connections can be made and lives changed (Bierema & Hill, 2005). Providing opportunities to meet with role models through video and web conferencing, VV is a significant contribution to the e-mentoring field that allows equal access to all students regardless of their location, social status, and learning levels. Consistent with the literature, NASA's e-mentors have indicated that they have benefited from their involvement in VV events. There is clearly much more to learn and discover about e-mentoring, VV, and the technological advances that will inevitably continue to surface. An increasing need for positive role models throughout K-12 education who would provide relevant and useful connections for students is inevitable. In combination with what we know about the positive correlation of e-mentoring and student attitudes in STEM with the naturally inspiring research happening at NASA on a daily basis, VV has potential to encourage many students to pursue these fields.

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VIRTUAL VISITS (VV) WAS CREATED TO SUPPORT NASA EDUCATION'S OVERARCHING GOAL TO "CONTINUE THE AGENCY'S TRADITION OF INVESTING IN THE NATION'S EDUCATION PROGRAMS AND SUPPORTING THE COUNTRY'S EDUCATORS WHO PLAY A KEY ROLE IN PREPARING, INSPIRING, EXCITING, ENCOURAGING, AND NURTURING THE YOUNG MINDS OF TODAY WHO WILL BE THE WORKFORCE OF TOMORROW."

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RESEARCH THAT GUIDES PRACTICE

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Thirty Years Ago, A Watershed Moment for Higher Education and Distance Learning

Steve McCrea

The growing use of the Internet in both K-12 and higher education might lead current online students think that “learning at distance” equals “web-based schooling.” Over 25% of undergraduate students (nearly 5 million) took at least one online course in 2008, up from 10% (1.6 million students) in 2002 (Allen & Seaman, 2010). Some students under the age of 30 might be aware that

distance education a century and more ago meant sending homework through the post. But they might not know how satellite transmissions, telephones, and air flights laid the foundation for today’s environment of distance education. This article describes how one of the important impediments to the spread of online distance education was removed.

Before the Internet allowed us to learn online, there was a time when universities fought over students in court. The legal conflict emerged because out-of-state, “multicampus” institutions like Nova University changed the paradigm for higher education (Alger, 2001). Brick-and-mortar universities offered graduate level degree programs for educators in the traditional face-to-face classroom on a university campus. For some potential students in larger states (Texas, North Carolina, Nevada), long commutes to get to the nearest campus often meant not enrolling.



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CLASSES IN A RENTED MEETING HALL

Innovative institutions like Nova University met the growing need for graduate-level courses for teachers and principals by adjusting the time and place for the classes. First, coursework that traditional universities offered 1 night a week over 16

weeks could be concentrated into a week-end once a month for three or four meetings. Second, the classroom could be moved closer to the students being served. If the campus was too far from you (the graduate student), the professor could come to a rented space (a meeting room in a local hotel) near you, either by flying to your city or via satellite transmission. As today, consultations at distance between teacher and students took place by telephone.

Looked at through the lens of the twenty-first century, those courses in the 1980s were similar to distance education as we know it today. Four components make up a widely accepted definition of distance education: (a) the program is based in an institution; (b) the teacher and student are separated by distance; (c) technologies are used to connect students and teacher; and (d) resources are shared to create learning experiences (Smaldino, S., Albright, M. & Zvacek, 2012). Certainly the core class meetings 30 years ago involved face-to-face interaction between teacher and student, but the classes met away from the sponsoring institution. The elements of distance education were in place in the 1980s for instruction to occur in part at distance.

NEEDED: LEGAL STANDING

A cluster of inventions is often needed before an innovation can take hold and diffuse widely (Rogers, 2003, p. 162). When we think about the changes that took place in distance education between the 1980s and today, we can list a number of necessary technologies that are now in place: modems, cheaper and faster computers, sophisticated classroom management software, video compression and transmission, widespread fiber optic networks, and broadband speed. But these technologies were not sufficient to create the open environment that embodies distance education today. One final piece was needed: the

legal standing for “borderless” universities to offer courses in locations where they had no physical campus (Farrington, 2001).

In 1979 Nova University applied for a license to offer its graduate programs in North Carolina, like any other in-state university. The Board of Governors for the University of North Carolina denied the license. Nova sought relief in the court system and the issue was argued before the state Supreme Court in the spring term of 1981. The key issue: Could an out-of-state university be regulated through the licensing procedure? The larger (hidden) issue was economic: Would the state’s highest court favor the Board of Governors and protect the University of North Carolina from out-of-state competition?

The 30th anniversary of the court’s decision (issued March 3, 1982) is an opportunity to take stock and appreciate how far the business of e-learning has evolved. Overall, the state of higher education is better in many ways because there is robust competition via distance education. A look back might prompt us to give thanks to those who laid the foundations that we often do not think about. We might use a different classroom management system now compared to 30 years ago, and the telecommunication storage and retrieval capacities of audio and video resources allow for asynchronous teaching and learning, but the elements of distance education remain the same. The legal precedent of *Nova v. Board of Governors* established the right of “cross-border” universities to compete with in-state universities. The result: more choices for students.

What if the case had been decided differently? If state university systems had been allowed to restrict competition, then cross-border universities could have offer online courses to only a selection of states. Even after the North Carolina decision, other states continued to resist “borderless” universities. “Texas did not back off,” recalls Abraham Fischler, who was

president of Nova University in 1982. He added,

Nova and Texas came to a mutual compromise. Our clusters were place bound and we could remain but not move our clusters. When one finished, we could recruit again for another cluster in the same location. We were not able to expand to another area. (Personal communication, July 14, 2011)

THE THIRD OF MARCH: "DE-DAY"

That's the legacy of *Nova v. Board of Governors*: The court's decision was the necessary element in the foundation for free-range distance education. Online coursework was more than 15 years in the future, with full video sharing and capabilities for discussion boards brought by the Internet. But no amount technology would have been sufficient to create the open environment that many of us experience today (outside Iran, North Korea, and other locations that limit Internet access).

Every university that offers online programs ought to observe a day of appreciation (Distance Education Day, or "DE-Day") for the team that argued for open access. The next time you sit in front of

your computer monitor or laptop screen, why not take a moment and think back to the business climate and legal issue that faced those judges 3 decades ago? Without that courtroom decision (or one similar to it), online students would not have the growing number of out-of-state (and international) degree programs to choose from.

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Who's Who in Distance Education

Authentication and Academic Integrity

Francine Adams

INTRODUCTION

The key facet of any profession is the recognition and enforcement of a standard set of ethical practices (Seels & Richey, 1994). The codification and vigorous enforcement of professional ethics promoted by Finn (1953); the six criteria of professional ethics were adopted to establish the current code of ethics for the Association for Educational Communications and Technology. Due to rapid changes in technology, ethical norms are also being changed, confronting the educa-

tional industry with far-reaching issues (Seels & Richey, 1994). Change in educational technology has been accompanied by new attitudes on academic integrity. New technology brings new topics (Seels & Richey, 1994), such as computer based duplication, copyright laws, activities of computer hackers' technologies for gaining illegal entry into databases, and creating and disseminating computer viruses. "These issues are being addressed in the courts, as well as in codes of ethics" (p. 107). The topic of academic integrity ranks high.



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ACADEMIC INTEGRITY

Lambert and Hogan (2004) noted that academic integrity is of grave concern and epidemic across most college campuses. Stronger forms of authentication emerge to offset this crisis. Currently, collaborations between academia and the business sector are finding innovations in authentication that can be implemented to ascertain "who's who in distance education." However, far fewer studies have been undertaken for online academic integrity than for traditional learning. Lanier (2006) attempts to compensate when investigating several studies that address both traditional and online academic integrity. Lanier reported that a study of 1,262 students at a large, state-funded university found a high level of academic dishonesty in online courses.

VALIDATION FOR AUTHENTICATION

LEGISLATION: HEA 2008

Bailie and Jortberg (2008) define authentication as validation the entity offering the identification token is actually the one assigned to use it. The question then to consider; is academic integrity a veracity, conjecture, or is there legitimate requisite to invest in more robust, more sophisticated authentication? The Higher Education Act (HEA) of 1965 was reauthorized in 2008, in response to General Accounting Office testimony before the Senate Committee on Health, Education, Labor, and Pensions to prevent fraud in Title IV programs:

Specifically, the College Opportunity and Affordability Act (H.R. 4137), which was passed by the Committee on Education and Labor in the U.S. House of Representatives on November 15, 2007, corresponds with a bill passed by the U.S. Senate (S. 1642) in July 2007. Both pieces of legislation contain verbiage directing accreditation agencies to “require an institution that offers distance education to have processes through which the institution establishes that the student who registers in a distance education course or program is the same student who participates in and completes the program and receives the academic credit.” (H.R. 4137, 110th Congress, 2007)

The Joint Conference Committee of Congress and the U.S. Department of Education have confirmed; initially institutions may use simple efforts already in place at most institutions to verify identity (Bailie & Jortberg, 2008). Contrary to expectations, most institutions found they need only “verify the identity of a student who participates in class or coursework” by using, at the discretion of the institution, methods such as:

- A secure login and pass code;
- Proctored examinations; and

- New or other technologies and practices that are effective in verifying student identification (Bart, 2009).

Consequently, most institutions were already in compliance. Nevertheless, compliance was just the instigation, as attention to authentication continues to affect sober trepidation.

FEATURES OF AUTHENTICATION

Since 1996, National American University (NAU) has provided a virtual campus to its growing population of students (Bailie & Jortberg, 2008). NAU partnered with Acxiom Corporation, report the authors, to enlist a user verification strategy, consisting of four crucial features for managing a secure system: identification, authentication, authorization, and accountability (IAAA). IAAA is defined as follows:

- *Identification*—the initial establishment of an individual’s factual identity.
- *Authentication*—the validation that the entity offering the identification token is actually the one assigned to use it.
- *Authorization*—the certainty that the entity is granted access only to areas where he/she has been bestowed proper privilege or authority.
- *Accountability*—the assurance that only authorized entities have accessed the secure system.

Accountability is achieved when proper identification, authentication, and authorization has been accomplished (Bailie & Jortberg, as cited in Bruhn, Gettes, & West, 2003).

AUTHENTICATION TECHNOLOGY

SECUREEXAM

Simonson, Smaldino, Albright, and Zvacek (2009) indicated Secureexam is one brand of “cheat proofing” software with features such as: fingerprint analysis, voice

recognition, and video surveillance; however, they also suggest third party test proctors offer a reasonable element of accountability and offset the “insecurity” of the online environment. As the audiences for distance education institutions and programs vary in complexity, their respective needs for authentication technology may be just as diverse and necessitates the need for authentication technology to persist.

OUT-OF-WALLET

Technology for fraud mitigation has matured in sophistication, coining new phrases like data forensics. In their pilot (Bailie & Jortberg, 2008), NAU and Acxiom identified four main premises for identity authentication:

1. Who we are—fingerprints, iris scans, voice recognition, DNA, and so on;
2. What we have—birth certificate, driver’s license, passport, digital tokens, and so on;
3. What we know—in-wallet and out-of-wallet information about our past, such as financial, geographical, and demographic data.

4. Where we are at a specific moment in time—video monitoring, IP address, telephone access, and so on.

In an endeavor to secure its testing procedure through data forensics, NAU sought to capitalize on the massive collection of data at Acxiom compiled for use with banking authentication’s familiar challenge questions (Bailie & Jortberg, 2008). Acxiom researched the distance education domain using ten types of online learning assessments defined by Illinois Community Colleges (Bailie & Jortberg, 2009) (see Table 1).

Challenge questions is a method banks use to access or reset a forgotten password. In a pilot program, NAU and Acxiom merged a two-tier process for authentication: (1) on the university level users login to a learner management system (LMS), such as Blackboard, in the traditional manner; (2) for examinations, the system switches to the Acxiom environment where “out-of-wallet” historical data, stored in Acxiom’s database is presented for second level testing authentication questions (Bailie & Jortberg, 2008). When a learner is asked what street he or she grew up on—A, B, C, D, or E—they will likely be

Table 1. Types of Online Learning Assessments

Responses	Frequency	Percent
Homework assignments	655	20
Online tests and/or quizzes	606	19
Bulletin-board postings	547	17
Projects/papers	494	15
Participation in chat room	313	10
Proctored tests and/or quizzes	234	7
Team projects	149	5
Reflective journal	92	3
Student portfolio	79	2
Other	31	1
Total	3,200	

the only person who can respond accurately. They are then authenticated out-of-wallet for the exam. Out-of-wallet authentication is the method frequently used by financial institutions:

In close collaboration with Acxiom Corporation, the distance learning campus of National American University has piloted a project to further authenticate the identities of online students. The success of this project will advance the credibility of the institution's online delivery options by adding yet another step toward identity verification of online students situated throughout the world. (Bailie & Jortberg, 2008)

Considering this approach in the context of academic necessity, it may one day validate the argument for the sale, collection, and storage of private data. By using authentication methods employed by financial institutions, NAU, in effect, eliminates student concerns for authenticating overtly with a third party (Bailie & Jortberg, 2008). To ease concerns, NAU offers the following in frequently asked questions:

How Do You Verify the Identity of Online Learners?: We pose questions that require the student to answer with information about their demographics such as where they lived in the past or what type of car they have owned. These questions are called "out of wallet" because they are from the past and the data are not usually found in an individual's wallet. The questions are derived from public data sources and managed by a third party, independent of our institution. (Bailie & Jortbert, 2008, Appendix)

From a practical perspective, the union of academia and corporate might present an issue for some. NAU and Acxiom remained carefully within the guidelines of "Family Educational Rights and Privacy Act (FERPA), selecting directory-only data of students who have been properly identified by the university and ... revealed to

Acxiom so that supplemental data can be mined from the company's databases" (Bailie & Jortberg, 2008).

BIO SIG- ID AND CLICK ID

In another pilot, Houston Community College contracted with Biometric Signature ID to run a proof of technology using their dynamic signature/gesture technology to authenticate student identity remotely (BioSigID and Houston Community College,, 2011). The objective was to

test a solution that would allow more computer based exams at home while maintaining the highest integrity levels, Houston Community College contracted with Biometric Signature ID to run a proof of technology using their dynamic signature/gesture technology to authenticate student identity remotely. (p. 2)

The pilot project convinced HCC BioSig-ID and Click-ID met their concept for the ideal solution to: respect student privacy, be delivered at random, periodic points in the delivery of course content, be cost effective and offer the highest deterrent to academic dishonesty. BioSig-ID is not a biometric fingerprint authentication. Levey and Maynard (2011) describe it as follows:

BioSig-ID does not require hardware to be activated. Instead, BioSig-ID is software only and is activated using flash, a component used in all computers. BioSig-ID provides physical authentication of the user by measuring unique characteristics of the individual commonly referred as "something that you are". The user signs or draws their password in the software using just a mouse, stylus or touchpad. The software also incorporates "something that you know" making it a true multi-factor authentication system and ideally suited for remote authentication for students. (p. 3.)

BioSig-ID may encounter little resistance when considering invasive privacy concerns. As evidenced in Figure 1, physi-

Enroll BioSig-ID Profile

Directions:

- Select 3 or more different characters/initials/shapes to use as your personal ID (see example)
- Using your mouse, hold the left mouse button down
- Draw these different characters/initials/shapes in the space provided
- Use the lines as the reference
- Select "Next" after completed

Example:



Success Tips:

Write slow & move your mouse with consistent speed and direction.
 Using your mouse, don't forget to hold the left mouse button down
 Speed and direction should resemble your stored profile
 Try using last 3 or 4 numbers of your cell phone as your secret code. Sometimes numbers are easier than letters.

2			
	9	0	
	2		0

Check box to enable invisible ink
 Uncheck box to remove grid lines

1 2 3

Flash Client Version : 1.1

Clear
Next
Re-enroll

Source: Houston Community College.

Figure 1. BioSig-ID profile example.

cal biometrics is not employed in this technology. A student need only create a profile utilizing a method reminiscent of handwriting analysis employing a tool, such as a mouse or stylus.

In this technology, a student will also authenticate a ClickID, which is simply a matter of clicking a series of images that are used as a second level of validation to create or recover a BioSig-ID. A detailed instructional video on the creation of a BioSig-ID can be viewed on YouTube titled *BioSig-ID Signature Biometrics | ID Verification | How-To Multi-factor Authentication*. The link is available in the References section of this article. Financial institutions regularly utilize these methods in combination with out-of-wallet information and security questions for a virtually, nonbiologically invasive authentication. The less attainable academic dishonesty becomes and the more diligent

institutions become, the greater the value placed on academic integrity.

TRANSITIONING FROM ACADEMIC TO CORPORATE

SHIFTING STUDENT POPULATIONS

Online learners are a distinct subgroup in higher education. They tend to be older and have a higher grade point average than students in traditional programs. For example, Diaz has noted that online students received twice as many As as traditional students and half as many Ds and Fs. This shift to a more mature student population suggests that more students are either already professionals or fewer will enter the workforce as traditional interns.

A CASE FOR ETHICS AND PROFESSIONAL INTEGRITY

CASE STUDY

The Institute for Certification of Computing Professionals (ICCP) is a nonprofit, professional organization with an international member base. When considering the soaring rate of violations reported among undergraduates, it is critical for students to acquire a paradigm suited for entering the workforce. ICCP represents a sound example for preparation.

ICCP BACKGROUND

The Institute for Certification of Computing Professionals (ICCP) is a nonprofit corporation founded in 1973. It covers a broad range of conduct for ICCP Certified Computing Professionals (CCP). Far removed from certification mills or organizations that afford a rapid review process to certification, ICCP certified professionals must meet stringent qualifications and possess a minimum of five years validated industry experience. CCPs are held to or must have:

1. a high standard of skill and knowledge;
2. a confidential relationship with people served;
3. public reliance upon the standards of conduct and established practice; and
4. the observance of an ethical code.

ICCP's multifaceted code of ethics consists of a preamble, code of conduct, code of good practice, and a procedure for revocation of certification, should violations occur.

Kewal Dhariwal, executive director of CCP, I.S.P., comments, "ICCP offers online courses with examinations for each of the 12 modules of learning." ICCP's authentication employs web-cam proctoring, presentation of government issued identification

for both national and international prospects, and in the future we might explore biometric authentication, if integrity becomes a problem. While ICCP shares concerns with the academic community regarding student authentication; ICCP has consistently maintained the ethical leanings it requires for its certified professionals. This may be due to Dhariwal's stringent promotion of professionalism and ethics in parallel with certification. Additionally, a significant factor ranking ICCP high among certifying institutions is the agnostic positioning of ICCP certification. In the scope of certification, an agnostic certification is perhaps boundless, requiring larger responsibility to fulfill the intent of the certification. Agnosticism makes ICCP certification portable across many disciplines within the industry, as well.

ICCP's student certification, the Associated Computing Professional is offered to graduating college students on the local level, at the student conferences and online. Professionalism, ethics, and integrity are all standards in the ICCP agnostic certification programs.

AUTHENTICATION TECHNOLOGY

ADVANCES IN AUTHENTICATION

Advanced technologies are increasingly being offered through partnerships between academia and the business sector. Global authentication has been considered in the interest of facilitating exchanges between research departments of institutions in foreign countries (Haeusser, 2007). Haeusser conceptualized how authentication evolved over time and transited the following stages:

- 1.0) Single Sign on, to
- 1.5) Federated IDs using open source technology named Shibboleth, to
- 2.0) User centric ID, where the user controls the level of privacy

CONCLUSION

Authentication in higher education is critical to academic integrity. New technologies are being employed in the effort to adjust the paradigm on academic dishonesty. These technologies must be nonbiological and noninvasive if they are to be efficiently diffused. It is not a question of whether we can achieve it, we must achieve it.

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Internal and External Indicators of Virtual Learning Success

A Guide to Success in K-12 Virtual Learning

Michelle Lee and Raquel Figueroa

INTRODUCTION

Today, many states offer virtual school options for K-12 students, and enrollment in virtual classes is growing significantly and steadily. The benefits of virtual learning include flexibility of learning from any place at any time. This accommodates students whose schedule, lifestyle, or location may not work well

with traditional, face-to-face schools and schedules. All of this, along with the research indicating that online learning is as effective as face-to-face learning makes virtual learning appealing. However, success in a virtual learning environment is not a given for all K-12 learners. Numerous factors indicate a student's ability to succeed in virtual courses. These success indi-



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cators can be categorized as internal or external to the student. For example, internal indicators include a student's motivation or time management skills. Parent involvement and expectations of the instructor are external to the student. Internal and external indicators of virtual learning success can assist parents and students assess whether virtual learning is a good fit. This article discusses these indicators along with providing an overview of virtual schools and their benefits.

AN OVERVIEW OF VIRTUAL SCHOOLS

Virtual schools use the Internet or other technology, such as video (Barbour, 2006), to offer programs or activities. Virtual education is a form of distance education and the terminology "virtual school" is commonly applied to K-12 learning (Clark, 2001). Virtual schools offer web-based courses and activities either synchronously or asynchronously. Synchronous activities are real time communications between students and teacher. In contrast, an asynchronous approach to distance learning is evident when course content is accessed by students at different times (Cavanaugh, 2007; Simonson, Smaldino, Albright, & Zvacek, 2011).

Virtual schools offer two types of courses: fully online courses or blended courses (Picciano & Seaman, 2009). The difference is how the content is delivered. A course where most or all the content is delivered online is referred to as a fully online course. A blended course mixes the delivery of content with face-to-face delivery and online delivery. However, a greater portion of the course is conducted online (Picciano & Seaman, 2009).

Enrollment in online courses has increased significantly over the past few years (Allen & Seaman, 2010; Weiner, 2003). More specifically, enrollment in K-12 virtual classes grew tenfold between the years 2001 and 2006. In 2008, it was estimated

that over one million students were enrolled in online courses (Picciano & Seaman, 2009).

Virtual school initially began with high schools. Currently, virtual courses are being offered throughout all grades (K-12). More than half of the states in the United States have K-12 distance learning, and the Internet is the main form of course delivery (Cavanaugh, 2007). Today, virtual school is being mandated in some states, including the state of Florida (Cowan, 2009; Simonson, 2008). Simonson (2008) explains that these states now mandate each school district to create a virtual school open to all K-12 students, not just high school students. There are various K-12 virtual schools available: online public schools, online charter schools, and online private schools. Virtual schools provide opportunities for students to take courses from anywhere and at any time.

BENEFITS OF ONLINE LEARNING

The benefits of online learning vary. Online students enjoy benefits of learning at their own pace and the flexibility of learning anytime and anywhere. This allows online students the freedom to arrange their study time to accommodate their social and work commitments (Mupinga, 2005). Twenty-four hour access to virtual courses allows students to learn when they are most ready to learn (Brenner, 2007). For students who are pursuing sports or other extracurricular activities, online learning allows them to devote their days to training and evenings to their coursework.

Online learning also accommodates rural students, disabled students (Mupinga, 2005), and home school students. It is also beneficial for those students who are sick or hospitalized. When traveling to school is prohibitive or costly, virtual schooling offers the flexibility of learning from the learner's home or from the hospital room.

Additionally, virtual classes also provide alternative options to students who need or want to take a course outside of their face-to-face course schedule. For example, sometimes a student needs to make up a class that he or she failed. An online version of the course can be taken for credit recovery. In other cases, a student may want to take classes not offered at their school, like an Advanced Placement course, or may require additional tutoring for a class. In these cases, virtual schooling can be an option for the K-12 student. Overall, for students who require non-traditional school schedules, virtual schooling can be a good option.

EFFECTIVENESS OF DISTANCE LEARNING

Distance learning effectiveness is comparable to traditional face-to-face learning (Simonson, Smaldino, Albright, & Zvacek, 2011). However, not all learners are successful in a virtual learning environment. Some students who are new to a virtual learning environment may find it overwhelming. This is because of their lack of experience in an online environment and not having the attributes to be successful online. Learning can be impeded, and a feeling of separation can increase as new students lack experience in forming their online identity (Stein, Wanstreet, & Calvin, 2009). This can create a feeling of isolation for new online learners. One crucial factor in a virtual course is the physical separation between the learner and the teacher. In essence, effectiveness of distance education is inextricably tied to the readiness and ability of the student to overcome the distance and successfully learn and complete assignments using technology. With this in mind, indicators for success in virtual learning are discussed further beginning with indicators that are internal to the student.

LEARNER MOTIVATION

For adolescents, motivation is a key to success not only in a face-to-face learning environment, but also in online courses (Weiner, 2003). When students are committed to their academic goals, learner motivation develops (Azaiza, 2011). Motivation is a crucial factor to the other success components in distance education, such as time management and active participation. In addition, when students independently and voluntarily choose to enroll in a virtual course, the completion rate is higher than those who are forced to take that course (Ronsisvalle & Watkins, 2005). Unfortunately, adolescents may not have a choice in their course enrollment (Simonson et al., 2011). Therefore, their self-motivation needs to be taken into consideration prior to enrolling in a virtual course. Commitment and support are important for motivation. Those students needing motivation will require support and encouragement to build or sustain their motivation as they venture into their new world of virtual learning.

Interaction among peers, support of technology, and support of the teacher heavily influences learner's motivation (Weiner, 2003). According to Azaiza (2011), motivation also happens naturally when one's basic needs of health, food, sleep, confidence, and having self-esteem are met. Weiner's (2003) study revealed that motivational factors are the main ingredients to online learning, which can help determine, with a great degree, a learner's success.

TIME MANAGEMENT

One of the benefits of virtual learning is flexibility. Students are able to access course content, collaborate, and work at their own time and location of preference. However, this can be detrimental to those students who have not developed effective time management skills. Students must take responsibility and learn how to bal-

ance their other priorities (Stein et al., 2009). Creating a schedule and setting goals is the first step in time management.

Students are encouraged to remember that due dates are closer than they appear. Additionally, virtual courses require more time and commitment than traditional face-to-face courses. Therefore, it is recommended that students dedicate between 6-10 hours per week for each course. A schedule is useful to track when assignments are due. Once a schedule is created, the student should use their study time effectively. Adhering to a schedule is crucial for timely completion and submission of assignments.

Goal setting is also useful in time management. Following directions and understanding teacher expectations will aid in setting goals. Directions for the course, assignments, and activities will be provided in the course syllabus, and expectations should also be found there. Parents can assist students by reviewing directions, rubrics, and assignment expectations with students. From here, students can set goals. By setting goals, one should start with the end in mind. Short-term goals and long-term goals should also be included in the schedule.

INDEPENDENT LEARNING

The separation between the teacher and learner in a virtual course requires students to be more self-directed. In an online environment, learners do not have the benefit of a teacher over their shoulder encouraging or reminding them to complete assignments. Instead, an online learner must plan for study time, referring to the course syllabus or their schedule to stay on track. The must also initiate conversations with peers and the instructor for clarification on assignments or completion of activities. Students in an online learning environment should be encouraged to be more independent and resourceful (Palloff & Pratt, 2007). Weiner

(2003) stated, "online education has the power to teach students to become independent learners" (p. 47). Anderson (2007) mentioned that autonomy has been found to increase for distance learners over time. In effect, independent learning influences a learner's successful completion of a course.

LEARNER RESPONSIBILITY

A learner in a virtual learning environment accesses the course content, communicates, and completes assignments on his or her own time. Learners are in charge of their own learning and participation. The virtual learner is responsible for taking ownership of time management, being an independent learner, actively participating, staying motivated, and learning the technology skills necessary to be successful in a virtual environment. Parents can assist learners in fostering some of these habits, but in the end, it is the responsibility of virtual learners to take ownership of their own educational success.

ACTIVE PARTICIPATION

Active participation is important to a virtual learning environment. Successful students are active and involved in building their own knowledge in an online environment (Palloff & Pratt, 2007). Active online discussion helps students learn from each other. Social interaction between peers in an online environment is as important as in a face-to-face environment (Weiner, 2003). Stein and colleagues' (2009) review of the literature revealed that as online discussion increases, the feeling of separation decreases. Since learners are unable to see visual cues, having dialogues helps learners express themselves in discussions (Brenner, 2007). The online learner's active participation can lessen the perceived distance by communicating with peers and teachers frequently. This also helps to overcome the feeling of isolation.

Communication can be done via online discussion boards, e-mail, telephone, Skype, instant messaging, and any other forms of communication tools available. Students should take full advantage of the various types of communication tools, and effectively use them to create their presence in a virtual environment. As students become more comfortable with the communication tools, their need for support from peers increases, and the amount of support they require from their instructor decreases (Stein et al., 2009). Communication between others in a virtual course is viewed as the main component for reducing chances of misunderstanding (Stein et al., 2009), and builds relationships.

ACADEMIC INTEGRITY

It is very important that parents encourage their children to develop academic integrity through use of their own effort. It is only natural that parents would want their child to be successful. However, parents must remember that their child is the one who is enrolled in the course. Assignments and work must be the student's own effort.

Plagiarism and cheating are the two forms of academic integrity violations (Florida Virtual School Academic Integrity [FLVS], n.d.). Cheating and plagiarism are a growing problem, especially with readily available access to content online (Simonson et al., 2011). Cheating is being deceitful and dishonest. Plagiarism is using someone else's work as one's own or using someone else's work without crediting the author (FLVS, n.d.; Simonson et al., 2011).

When using technology and media, students should know and understand the copyright guidelines and any ramifications. Because retrieving information from the Internet is easy, students may be tempted to copy and paste the information found online and submit an assignment that is not their own words (Smaldino,

Lowther, & Russell, 2008). Information on U.S. Copyright Law can be accessed at <http://www.copyright.gov/title17/>. Parents and students should also review their virtual program's policy on academic integrity or academic misconduct.

TECHNOLOGY SKILLS, ACCESS, AND NAVIGATING THE INTERNET

Roblyer and Marshall (2003) stated that students in online courses should have adequate access to computers and online resources along with the skills to use those resources. Access to the Internet is crucial as many courses are accessed via the Internet. In addition, students often need access to the Internet to perform research for projects and papers. While some virtual schools loan computers to their students and subsidize Internet access when needed, others do not. Therefore, understanding the technology requirements of a virtual course and the technology resources that a virtual school can offer will be critical to a student's ability to successfully access the course and course materials. An example of technology requirements for virtual schooling can be viewed at the Florida Virtual School's website: <http://www.flvs.net/areas/flvscourses/Pages/HardwareRequirements.aspx>.

Once a student's access to the necessary technology is assessed, the student's ability to use the technology and navigate the Internet should be evaluated. Virtual learners may experience difficulty and frustration if they lack strong technical skills needed in a web-based learning environment. Hence, students need to have or build those skills necessary to be successful in a virtual course (Mupinga, 2005). Many assessment tools that determine a student's readiness for virtual classes often include questions about computer access and skill level.

ASSESSMENT OF ONLINE LEARNING SKILLS

According to Ronsisvalle and Watkins (2005), assessing a student for evidence of the skills necessary to succeed in distance learning should be a parent's first step. Diagnostic tools like the Learning and Study Strategies Inventory (Wang & Newlin, 2002), the Online Student Readiness Self-assessment (Watkins, Leigh, & Triner, 2004) and the Educational Success Prediction Instrument (Roblyer & Marshall, 2003) are all examples of questionnaires that have been developed to gauge these skills. These assessments help to determine a student's technical skills, learning style, level of autonomy, locus of control, and other skills necessary for distance learning. Some online programs like the Florida Virtual School, Kentucky Virtual School, and Illinois Virtual School offer questionnaires to help parents and students determine a student's readiness for online learning (Ronsisvalle & Watkins, 2005).

PARENT INVOLVEMENT

Parents are the most important teachers to students. Students are more likely to benefit from a virtual course if their parents are active in their virtual learning process. Parents should support them by committing time and effort to help in their success (Cowan, 2009) and can support students in understanding directions for completing assignments and by providing feedback. In virtual courses, parents are able to view their child's progress in the course, and view the teacher's comments to the child. Parents can expect to spend between 3-5 hours each day to provide support towards their child's education, especially in the lower grades (K-6). As students grow older and develop maturity and independence, the time parents spend supporting students generally decreases, and eventually dissipates once students reach high school.

INSTRUCTOR EXPECTATIONS

Students should be aware of their teacher's expectations. To do this, students should become familiar with the course syllabus, how the course is structured, assignment deadlines, and how assignments are graded. Learners also expected to create a dialogue, not only with their teacher, but also with their peers. This is crucial since there is little or no face-to-face interaction. Instructors rely on communication tools and technologies to build personal relationships. They also expect students to ask questions and gain clarification on the material and assignments. Overall, a student's knowledge of how often an instructor expects a student to be online, post discussions, and turn in assignments is important for a student's success.

EFFECTIVE ONLINE COURSES

The way a course is organized, planned, and delivered can be examined for alignment with the needs of young learners. Parents should look for courses that build in frequent communications with the teacher for both parents and students. Courses should be divided into very short modules that lead to mastery of a skill. Furthermore, acknowledgements for student success should be built into the course (Bedard & Pipes, 2006).

Effective virtual learning environments require a student-centered atmosphere where learners collaborate to explore course content (Palloff & Pratt, 2007). Therefore, activities that build a community of learners should be present in virtual courses. Activities such as discussion posts, online study groups, and collaborative projects are considered to lead to successful work in an online course. Palloff and Pratt (2007) emphasize the inclusion of collaborative activities and those that build a community of learners as significantly important for an effective online course. Additionally, a course should be meaning-

ful and have a structured learning environment that gives students the opportunity to become independent. A structured virtual course should include clearly stated teacher expectations, a syllabus that outlines the course, a study guide, due dates of homework and assignments, and activities that promote critical and higher-order thinking (Weiner, 2003).

CONCLUSION

K-12 virtual schools have grown significantly over the past 10 years (Picciano & Seaman, 2009) with no significant differences in student achievement compared to traditional brick and mortar schools (Simonson et al., 2011). Although the literature shows continued growth in virtual learning (Allen & Seaman, 2010), distance education is not for everyone. However, some indicators are attributed to student success in virtual courses. Some indicators are internal to the students, while others are external to the student. Internal indicators include learner motivation, time management, independent learning, learner responsibility active participation, and academic integrity. Another main indicator of success in a virtual environment is a student's access to and comfort with technology.

Many K-12 learners use the Internet and have experiences with technology. However, a successful virtual learner must have access to distance education technologies and be able to actively participate online. Students should feel comfortable communicating using various technologies, and be assertive in seeking help when needed. Most virtual school websites provide a readiness check to help parents and students make a decision about whether to take a virtual course (Simonson et al., 2011). Although the various readiness assessments are not the same, they share some areas of focus: "technical skill, study skills and motivation, and learning styles" (Simonson et al., 2011, p. 341). This assess-

ment assists in identifying not only a student's technical skill level, but also his or her overall ability to succeed as a virtual student. While comfort with technology is internal to the student, access to technology and the Internet is external. Other external indicators to a student's virtual learning success include parent involvement, instructor expectations, and effective course design.

Parent involvement, the instructor's expectations, and effective course design are also important indicators to a student's success with virtual classes. Students' virtual learning process is more likely to be positive when parents are actively involved with their virtual education. Before a student enrolls in a virtual course for the first time, it is recommended that the parents and student obtain information about virtual learning and attend an orientation if available. In this way, parents and students will understand what is expected by the instructor. It is also advisable for parents and students to evaluate the level of teacher support by knowing how often instructors will be available to students. Along with this, effective course design and collaborative activities are crucial to an online learner's success and in building independent learning skills. Parents and students can examine course design for these elements, especially if virtual schools offer a trial period to check out a course.

Student achievement in virtual classes is dependent on the student being self-motivated, exercising good time management, and other skills discussed here. The presence of these skills represents internal indicators that lead to success in virtual learning. However, there are external factors that also impact the success of the learner. These include parent involvement, access to technology, and effective course design. All together, knowledge of both internal and external success indicators can assist parents and students in deciding if virtual learning is an appropriate choice.

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Virtual Art Education

Is it Possible?

Mahizer Hamzah and Adnan Abd Aziz

INTRODUCTION

Instructional delivery methods used in education have undergone many changes over the past few years. The traditional approach of using blackboards, models, and transparencies has evolved to include more advanced technology, such as smart boards, computers, and the Internet. The emergence of the Internet and Web has opened the doors to the possibility of a new age of learning (Yeh & Lahman, 2007). In the last 10 years, the Internet has changed how educators and students find, manage, and use information, transforming social interactions and posing new challenges both in and out of

the classroom (Colman, 2004; Mayo, 2007; Richardson, 2004; Sweeney, 2004). These changes have an impact not only on courses related to technology, but also on courses related to art. Mayo (2007) notes that art teachers and researchers, as well as artists, have an opportunity to utilize the new landscape of digital technology to develop the art researchers of tomorrow. This article provides an overview of web-based technology's role in art education.

WHY INTERNET?

The Internet is a network of physical infrastructure and short-lived interactions. It includes text- and image-oriented web



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pages, communication-based exchanges of e-mail and instant messages, and diary-like blogs and RSS (Real Simple Syndication) feeds (Buffington, 2008; Erickson, 2005; Richardson, 2004; Sweeney, 2004). Buffington (2008) notes that the most recent incarnation of the Web is Web 2.0. Generally speaking, the technologies of the Web 2.0 movement have changed the power structure of the Internet, altering who can create content for the Web and making it particularly well-suited for art education by enabling the creation of content and social networking.

Web 2.0 has created new educational opportunities. Art education, in particular, has continually evolved in response to art-technology integration. Gaimster (2008) and Mayo (2007) suggest that art educators have a unique opportunity to integrate studio practice with technology. Doing this could create an environment that supports a wide range of creative media and could be applied to most disciplines in art and design, from architecture to cultural studies, fashion to product design, and graphics to film making. In addition, Gaimster and Mayo have (separately) speculated that the integration of studio practice and technology could pave the way for teaching with technology, crossing boundaries between real-world materials and digital media.

Developments in Internet technology have redefined how students and teachers use the Internet, changing them from mere readers into writers, as well as making it easier for them to filter and track the ever-growing number of resources online. Liao (2008) and Richardson (2004) agree that social networking technologies and online virtual communities are popular among youth. They have also noted that, in fast-growing numbers, educators across the country and throughout the world are discovering just how powerful this new, interactive Internet can be and are taking advantage of youth interest in it.

Colman (2004) and Gaimster (2008) argue that the Internet has also created a new type of academic environment. Virtual environments are places where students can engage in discussions that deconstruct a site's appearance, content, navigation, usability, and work-based learning. They can use the Internet to work collaboratively, exchange pleasantries and arguments, engage in intellectual discourse, conduct commerce, exchange knowledge, support one another emotionally, make plans, brainstorm, solve problems, manage projects, reflect upon the strengths and weaknesses of their solutions, and engage with practitioners from the wider art and design community.

ART EDUCATION AND WEB-BASED TECHNOLOGY

The Internet is a collaborative and decentralized network, and the development of Internet-based art, art education, and digital technologies represents an important step in art learning (Richardson, 2004; Sweeney 2004). As Mayo (2007) notes, artists and art educators might be on to something with the inherent constructivism of their practices. Mayo also suggests that, whether using pencils, brushes, or welding irons, artists can use new media to create imaginative solutions to open-ended problems.

Colman (2004), Liao (2008), and Sweeney (2004) also argue that new media art uses digital technologies and the Internet as media. However, they add that new media art is a hybrid production and requires interplay between art, technology, and humans. Furthermore, new media is not just a tool, but also a medium—a cultural interface connecting humans and containing their experiences. In addition, Colman, Liao, and Sweeney have each speculated that the combination of art and technologies often leaves little time in art educators' curricula for engaging students in critical explorations of digital technol-

ogy, though it does challenge the dominance of the traditional art-education curricular model.

Sweeney (2004) notes that the use of new media or web-based technologies in art education might lead to the emergence of a form of digital visual-culture pedagogy. Colman (2004) asserts that educators should use web-based technologies to create new forms of art-education curricula and instructional design. Colman claims that Internet art "makes strange" the web environment to which students are accustomed and notes that students will not know what to do with this strangeness without art educators' guidance. Without guidance, students will most likely reject Internet art and create web pages resembling those with which they are familiar. Colman also urges art educators to encourage students to critically contemplate the Internet, especially if they have difficulty going beyond web authoring and have little experience with art criticism.

New forms of expression, such as digital painting, eco-art, net-art, robotics, and artificial intelligence, certainly may be helpful in pushing students to use unfamiliar art forms and to extend the limits of their aesthetics, as well as their understandings of the cultural functions of art and technology (Colman, 2004; Mayo, 2007). Colman (2004) has found that engaging students in a series of art-criticism activities could facilitate their transition from conceiving the Web as an information repository to conceiving of it as an expressive medium.

On the other hand, Richardson (2004) speculates that educators have been slow to adopt blogs for a variety of reasons, including access, privacy, and security. However, he suggests that as more people catch on to the blog phenomenon, more educators will start to experiment with blogs as a way of communicating with students and parents, archiving and publishing student work, learning with collaborators, and managing knowledge that school communities create.

What is more, throughout the year, teacher and students could continually add to their blogs sites (del.icio.us, weblogs, Face book, MySpace, etc.) that relate to what they are studying in class. Because everyone involved with a blog could access and alter it at any point, each blog could become a shared knowledge base of relevant websites. Thus, social networking accounts could become records of a class's learning process (Buffington, 2008; Churchill, 2009; Doe, 2004; Erickson, 2001).

In addition to being accessible, web-based technologies are powerful tools that can be used to develop creative approaches to teaching (Erickson, 2005; Gaimster, 2008). Erickson (2005) and Gaimster (2008) have found that, compared to traditional instruction, websites offer access to much more information, as well as images that illustrate procedural steps. Erickson and Gaimster have also observed that online interactive reviews can provide immediate, individualized feedback to students on their understanding of the sequence of those steps. What is more, Lee and Tseng (2008) have advocated that other forms of digital-learning instruments be designed, such as e-learning, virtual reality, network services, computer animation, digital audiovisual, digital archives, mobile application, and content processing software.

While the advantages of the Internet are undeniable, Colman (2004) has showed that there are difficulties inherent in using the Internet to conduct critical pedagogy, particularly when students are completely unfamiliar with Internet art and take web-design conventions for granted. Furthermore, Colman notes that instead of being able to draw on their knowledge of the web to create a context for Internet art, students sometimes find that their existing knowledge, at least in the beginning, is a barrier to exploration and acceptance. It may also make it difficult for them to reevaluate their perceptions of computers,

the Internet, and the Web as tools for information gathering.

IMPLEMENTATION

Recent studies have asserted that artists and educators should cultivate the creation of art-education curricula, pedagogical practices, and models that integrate art-technology experimentation (Colman, 2004; Liao, 2008; Mayo, 2007; Sweeney, 2004). Colman (2004), Erikson (2001), and Mayo (2007) have suggested that art educators create new terms (e.g., Art Net) for their methodological or educational purposes. According to them, "Art on the Net" is a term that could be used to describe an image that is created in a nontechnology based medium, scanned to a computer, and displayed on the Web. For instance, if an oil painting was photographed and the photograph scanned to create a digitized image that was then uploaded to a webpage, this would be considered Art on the Net. Colman, Erikson, and Mayo have also (separately) claimed that the concept of Art on the Net treats the Internet as a virtual gallery where digitized artwork is "hung" and viewed by clicking on a hyperlink. In addition, Internet reproductions of artwork may appear on multiple websites. An enormous amount of art is reproduced on the Internet, due to the ease with which computers can replicate any medium.

Colman (2004) argues that as digital media is integrated into art curricula, art educators should encourage student to use computers and other digital technologies for personal and collective self-expression. He has also found that because the learning curve can be steep for sophisticated computer-graphics software and other digital technologies, many art educators may find it necessary to spend most of their instructional time acclimating students to software environments. However, Sweeney (2004) has stated that use of computers should not substitute for work with art materials in art classrooms. Sweeney has

also suggested that beginning lessons with a preproduction phase provides opportunities for integrating painting, drawing, and writing into digital media-based projects.

Mayo (2007) asserts that art educators should not focus on teaching software and says that it is not essential for students to learn every feature of a software package, as software and its complexity can easily dominate lessons. What is more important, Mayo suggests, is that a lesson be project driven. Mayo is implying that students will easily lose interest in learning a software package when such learning is not connected to the creation or realization of a project. Understanding the goals of a project and software's value in achieving those goals is most important.

Buffington (2008) and Mayo (2007) identify user-friendly tools as an advantage of web-based technologies. Such technologies have many interprograms that are similar and repeat functions, making it easy for new users to update web-based content frequently and easily. Colman (2004) has found that it is useful to draw attention to these features and has demonstrated how students can repurpose skills and understand software on their own. In addition, educators should know that Internet art could be confusing when users do not know where to go or what to look for. Erickson (2005) suggests that art educators refer to the Who Cares for Art (WCFA) program as a source of ideas when developing art-education curricula, as WCFA identifies inquiry as an explicit strategy in curriculum development. The program's introduction spells out the benefits of skilled questioning, and all of the tracked assignments it recommends challenge students to use concepts by articulating original questions that guide their own art making and investigation.

Buffington (2008) observes that students can use various web-based technologies to track their progress, store their digital portfolios, and engage in academic discussions.

For example, students might make MySpace pages for artists after conducting research on their lives and works. They would need to consider such issues as how an artist would want to represent her/himself online, what artworks the artist would want to include images of, what types of music the artist might have enjoyed, and which books might have influenced the artist.

According to Gaimster (2008), certain areas of good practice in the teaching of art and design are easily transferable to virtual environments. Art educators aim to develop students who can engage in critical thinking and reflection. However, many secondary art teachers struggle to help students both appreciate others' art and make meaningful artworks of their own (Erickson, 2001). What is more, in addition to keeping in mind the technical requirements needed to view artwork online, educators must reconsider their criteria for selecting works for art-criticism activities. They should consider a work's approachability, strengths, and themes, as well as the relevance of those themes to students' lives (Colman, 2004). They should also have confidence and experience using web-based technologies to participate in virtual communication, and they should not be afraid of using these technologies in their lessons (Gaimster, 2008; Richardson, 2004; Lee & Tseng, 2008).

ASSESSMENT

Assessments are important in motivating students to engage in blogging (Churchill, 2009). Art educators may make use of such assessment tools as Tech Literacy Assessment, mCLASS: Reading, Inc., Acuity Diagnostic Assessment System, PLATO eduTest Assessment, and Pearson Benchmark (Doe, 2006). Besides these formal assessment tools, Blogs, MySpace, Friendster, and Facebook are examples of simple and efficient ways to keep portfolios and record learning progress (Buffington,

2008). A blog is a website that is updated frequently. It usually includes some degree of interactivity that allows readers to post comments, feedback, and report options. Educators have the tools to create protected environments where participants are known to one another and outsiders can be excluded (Buffington, 2008; Doe, 2006).

Internet programming offers opportunities not only to present information within a general conceptual structure, but also to develop systems of efficient, individualized feedback (Erickson, 2005). Furthermore, the commenting capabilities of many blogging software packages allow for easy peer review by students and teachers and make it easy to bring in experts or mentors from outside the classroom (Richardson, 2008). Through blogs, students, parents, and teachers can post comments about artwork or offer constructive feedback about artwork and ask questions (Buffington, 2008).

Besides allowing for comments and feedback, blogs can display pictures and video, including audio and flash, and even store files for PowerPoint presentations or Excel spreadsheets (Richardson, 2004). In addition, students can make their own blogs for free, post digital images of their work, and write about their work as it progresses. Thus, their thoughts during the artistic process may be easily recorded and made available for future access. Blogs are yet another way to maintain electronic and digital portfolios and file images (Buffington, 2008; Richardson, 2004).

ACHIEVEMENT

Recent studies have found that students can successfully and easily create final projects using digital-content instruments (Colman, 2004; Lee & Tseng, 2008). Because such tools are easy to use, content on the Web can be updated quickly and simply. For instance, a person can easily update his or her MySpace or Flickr [supTV] page

with new text, images, or videos on a daily basis (Buffington, 2008). Some students attribute their increasing receptiveness to Internet art to their acquisition of web-authoring skills like comprehension, transferring, reading, and writing (Erickson, 2005; Lee & Tseng, 2008). Students have also explained that they are able to look at a work of Internet art and feel like they understand how the artist put it together, making the work less intimidating (Colman, 2004).

The foregoing reinforces the notion that web-based technologies are positive tools for students and educators. Computer-based curricula and web-based assessments can make it easier for teachers to meet the needs of diverse student populations (Doe, 2006). What is more, Internet art promotes critical thinking (Coleman, 2004). A caveat, however, is that some students are unwilling to continue blogging when not required to do so by a course or a facilitator (Churchill, 2009).

SUMMARY, IMPLICATIONS, AND DISCUSSION

Some days, it seems like everything is becoming web-based. As connection speeds improve, the Internet's flexibility; accessibility; potential to reduce paper use; potential to be used for data collection, analysis, and reporting; and potential to reduce costs make it very attractive (Doe, 2004).

In an era that demands educational accountability, many art teachers feel an increasing need for credible evidence of the long-term effectiveness of art instruction (Erickson, 2005; Lee & Tseng, 2008). Moreover, Shavelson, Phillips, Towne, and Feuer (2003) have suggested that design-based research "seeks to trace the evolution of learning in complex, messy classrooms and schools, test and build theories of teaching and learning, and produce instructional tools that service the challenges of everyday practice" (p. 25). In

addition, the researchers have advised that instructors focus on one unit at a time, include technology in their curricula, and evaluate performance.

The integration of technology into art education will open new opportunities to students and art educators, enhancing their abilities and knowledge. Challenges to how we interact with artwork are opening new pathways for talking about work and learning. If technological networks continue to be viewed from new angles and connected with previous approaches to teaching and familiar forms of vision, new forms of digital visual-culture pedagogy may emerge (Sweeney, 2004). In addition, students will continue to challenge art, making and creating forms of expression never before envisioned (Mayo, 2007). Colman (2004) has found that students who unequivocally perceive Internet art as "art" feel this way because such art "contains pictures without an explanation" (page number needed), along with an open-endedness that makes them think.

In fact, many are seeing web-based technology as a cheaper alternative to course management systems. It is now relatively inexpensive and simple for anyone with Internet access to create and disseminate students' ideas online. The emergence of technologies associated with Web 2.0 has made it significantly easier to create content for the Web and has changed the types of content available on the Web. Many applications are freely available to anyone with the Internet (Buffington, 2008; Liao, 2008; Richardson, 2004). In addition, web-based technology is accessible; for instance, Del.icio.us, blogs, RSS, etc. are tools that allow one to subscribe to information and access the latest posts or news from one place. These technologies make information extremely accessible by providing access to sites at any time and from anywhere (Buffington, 2008; Churchill, 2009; Doe, 2004; Erickson, 2001).

Buffington (2008) and Mayo (2007) agree that it is certainly not realistic to

expect teachers to reinvent entire curricula just to include web-based technologies. However, as we become accustomed to using web-based tools in our lives, it may become natural to use them in our teaching. This would create an environment to which art educators must respond. Our field has reached an exciting point, where a wide range of tools are available to help us address the world in which our students live and to connect what we do in school to what our students do outside of school.

Gaimster (2008) suggests a need for more empirical research on how educators and students interact in virtual worlds and how their interactions influence the educational process. This article will increase our understanding of virtual interactions, help us gain a deeper understanding of the mediated learning process, and apply our understanding to art and design.

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Using Multimedia in Lab-Based Online Classes

Todd Meadors

THE GROWTH RATE OF ONLINE EDUCATION

There has been a rapid growth rate of online education classes offered at college institutions in the United States (Liu, Magjuka, Bonk, & Lee, 2007). During the fall 2009 term, online enrollment in the United States experienced a 21.1% growth rate compared with just a 1.2% rate of growth for the overall growth rate of higher education (Allen & Seaman, 2010). For fall 2009, 66% of the academic

leaders and faculty surveyed indicated that online education was critical to the success of the institution (Allen & Seaman, 2010). At public institutions, 74% of the academic leaders and faculty agreed that online education was critical to their institution's long-term success. At private institutions, 51% of administration and faculty agreed that online education was important to their success (Allen & Seaman, 2009).

Many private and public institutions are enrollment driven (Funk, 2007). Thus, in order to increase revenue, educational administrators seek ways to increase enrollment. One area where administrators look to increase enrollment is through the online environment (Allen & Seaman, 2010). Advances in telecommunication technology have allowed students to use a computer and the Internet to take courses online from anywhere in the world (Pelton, 2004; Simonson, Smaldino, Albright, & Zvacek, 2009). Also, students want online course offerings because they can save money and time, particularly during poor economic times (Funk, 2007; Pall-off & Pratt, 2003). Thus, administrators have an incentive to encourage faculty to provide more online offerings.

The U.S. Congress overturned the 50% rule that was part of the Higher Education Reconciliation Act, or HERA (Lederman, 2005). Prior to the repeal, students could not qualify for Title IV financial assistance



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if they attended universities that offered more than one half of their courses in an online format (Croix, n.d.; Lederman, 2005). With the repeal of HERA, universities can now offer more than half of their courses in an online format to students who receive federal financial aid. As an example, degree-granting institutions, such as Nova Southeastern University, Strayer University, and the University of Phoenix offer associate and bachelor's degrees, completely online.

THE CONCERN: SKILL TRANSFERABILITY

However, the literature shows a growing concern among faculty that not all academic and technical programs are suitable to being offered completely online (Ainsley & Brown, 2009; Picciano, 2006; Strickland & Butler, 2005). How can lab-based courses be taught effectively in a fully online format? Online learning may not be suitable for all types of instruction, such as those requiring hands-on lab activities (Picciano, 2006; Strickland & Butler, 2005). Lab-based courses relying on physical skills, like automotive mechanics, information technology (IT), or welding, may not be appropriate for a 100% online format (Picciano, 2006; Strickland & Butler, 2005). The concern is over skill transferability, or applying the learned knowledge (Adams, 2008). Can a student who is taking a class taught 100% online gain the necessary knowledge to apply a lab-based skill?

Adams (2008), Adams and Defleur (2006), and Jackson and Helms (2008) conducted research of hiring managers about the acceptability of hiring graduates with degrees obtained in a 100% online format. It was found that most employers were reluctant to hire graduates of fully online programs (Adams, 2008; Adams and Defleur, 2006; Jackson and Helms, 2008). As an example, Adams and Defleur (2006) conducted a study of 269 hiring managers from 10 hiring sectors and discovered that

only 4% of the hiring managers would hire graduates of fully online programs; however, 98% of the managers indicated they would hire graduates from a traditional degree program. The hiring managers expressed concern about the lack of hands-on knowledge offered by online programs (Adams & Defleur, 2006). Hiring managers from technology-related fields, such as IT, state that hands-on lab experience was critical to proper training (Adams & Defleur, 2006).

Instructors teaching a fully online class may not be able to show students how to perform a lab in the physical classroom. Educators should look at how a particular teaching tool impact achievement and increase the ability to transfer knowledge from in the classroom to the job (Clark, 2001). Therefore, an instructor must rely on other means to demonstrate hands-on material. Adams (2008) suggested using multimedia technologies in online classes as a way of providing students with those necessary skills needed by employers.

USING MULTIMEDIA IN THE ONLINE CLASSROOM: A REVIEW OF THE LITERATURE

The literature supports the use of multimedia and using recorded lectures to enhance the online experience (Ainsley & Brown, 2009; Ko & Rossen, 2004; Mayer, 2008a). Teaching course material that involves hands-on skills can be a problem in the online environment (Ainsley & Brown, 2009; Ko & Rossen, 2004; Taylor, 2002). However, the use of audiovisual technology can increase learning by allowing students to replay recorded lectures and lessons (Ainsley & Brown, 2009; Ko & Rossen, 2004; Taylor, 2002).

Motion can increase learning if it is a critical aspect of the concept being presented Anglin, Vaez, and Cunningham (2004). That motion can increase learning of a complex procedural task Anglin et al.

(2004). The nature of any lab-based activity involves motion.

Lee and Tseng (2008) did find a difference in student achievement when using multimedia in a college class. The question was whether or not a multimedia module produced a significant difference in achievement for a sculpture unit in an art class. In their study, Lee and Tseng created three-dimensional multimedia content for the experimental group ($n = 36$) and traditional lectures to the control group ($n = 40$). The posttest mean was 80% for the experimental group and 56% for the control group. An analysis of variance indicated that the use of a three-dimensional multimedia module produced a significant effect on achievement (Lee & Tseng, 2008).

Junaidu (2008) conducted a 5-year, experimental research study of 700 undergraduate computer science and engineering students in a data-structure programming course offered 100% online. Students were provided lectures covering how to program data-structure algorithms. Students in the experimental group were provided multimedia animations (text, graphics, voice narration) and a self-check exercise. The multimedia animations were created using Macromedia products. Students in the control group were provided no animations but text-based lectures only. Junaidu (2008) found the use of multimedia animations in the experimental group to be significant, $p < .05$, $t = -13.828$. A t value of less than .05 indicates significance (Gall, Gall, & Borg, 2006). Junaidu (2008) concluded that students in the experimental group outperformed the students in the control group.

Wang (2006) conducted a study of 27 graduate-level, instructional-technology students in a multimedia-authoring course. In the study, students were enrolled in either a 100% online course or a traditional course. Students in the traditional course were taught using demonstrated hands-on activities in person. Students in the online course were pro-

vided lectures, with interactive quizzes that were created using Macromedia Captivate software, a screen-capturing software tool. Screen-capturing software combines both audio and visual format to create lectures and is in effect a "motion picture" of your steps on your screen. With the lectures, Wang (2006) used audio, visual, and student interaction to demonstrate the hands-on skills necessary to create multimedia presentations. Wang (2006) found that both groups believed the demonstrations of the material and concluded that the use of interactive multimedia demonstrations had a positive effect on learning hands-on skills in the online environment.

Ellis (2004) conducted a research study of the effectiveness of multimedia animations in noncredit classes of a private, 2-year college. Ellis (2004) gave the experimental group tutorial-based, visual animations on how to use Boolean logic in a search engine to find information on the Internet. The control group was given a written tutorial.

Ellis (2004) compared the results of a pretest and posttest of the two groups and found that the results were statistically significant. The tests measured skill transferability (Ellis, 2004). Ellis (2004) concluded that the use of multimedia animations facilitated a greater degree of learning when applying knowledge over text-only tutorials.

MEDIA EFFECTS DEBATE

There is a controversial debate between Clark (2001) and Kozma (1994) about the effect of media in instruction. Clark (2001) takes the standpoint that the type of media does not affect learning. Kozma (1994) seeks to understand the ways media can influence learning. Clark (2001) suggested researchers explore how the capabilities of media influence learning for particular situations.

Clark (2001) advocates cognitive research approaches to how multimedia can be employed. He suggests educators investigate how multimedia instruction capabilities such as color, animation, format, and sound affect learning.

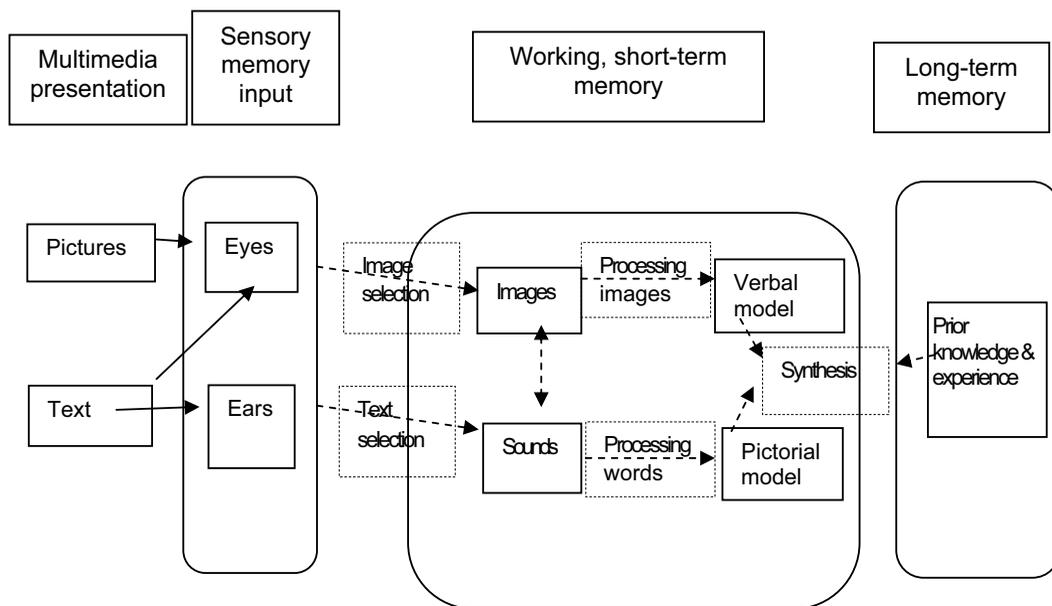
**THEORETICAL FOUNDATION:
COGNITIVE THEORY OF MULTIMEDIA
LEARNING (CTML)**

Essentially a branch of cognitive information processing, CTML was developed by Mayer, Heiser, and Lonn (2001) specifically for multimedia instruction. The CTML model is shown in Figure 1. With multimedia, two or more media, such as animation, audio, pictures, and text are used to convey information (Dykman & Davis, 2008; Ko & Rossen, 2004; Simonson et al., 2009). Mayer (2008a) stated that multimedia learning is the act of building mental representations, from text and pictures, and presenting it to support the learning process (Mayer, 2008a).

In the CTML model in Figure 1, each box represents a type of memory and an arrow shows the cognitive processing flow (Mayer, 2008a). As we move from left to right in the figure, the multimedia message begins as words and pictures. Then, in sensory memory, words are processed via the ears and are briefly represented in auditory sensory memory (Mayer, 2008b). Pictures and text are processed via the eyes and are briefly represented in visual sensory memory (Mayer, 2008a).

As information enters short-term memory, the learner processes sound in the verbal channel and images in the visual channel (Mayer, 2008a). As the information moves through working memory, the learner organizes sounds into a verbal model and images are organized into a pictorial model (Mayer, 2008a).

Finally, the learner integrates prior knowledge and assimilates it with the verbal and pictorial models (Mayer, 2008a). The acquired knowledge is then transferred to short-term memory with the



Source: Based on Mayer, Heiser, and Lonn (2001).

Figure 1. The cognitive theory of multimedia learning model.

result being stored in long-term memory as newly acquired knowledge. Learners will chunk related information into categories in order to retain it in long-term memory (Driscoll, 2005). Studies have found that images can be effective as a way enhancing the integration process for learners (Driscoll, 2005).

CTML is comprised of many other principles (Mayer, 2008b; Mayer & Moreno, 1999; Reed, 2006). These principles can be used by educators to effectively utilize multimedia in learning environments, both online and traditional (Mayer, 2008b). The primary principle of CTML is the multimedia principle. The multimedia principle states that students learn a topic on a deeper cognitive level when text and pictures are used rather than from when only text is used (Mayer, 2008b). The worked-example principle states that students will learn more when shown a similar demonstrated example of a worked-out problem (Mayer, 2008b).

An important goal with CTML is determining if learning actually occurred. Two of the most common methods for assessing learning are: (a) retention and (b) transfer tests (Mayer, 2008a). A retention test assesses knowledge that a learner has memorized (Mayer, 2008a). An example of a retention test would be an objective-based test with multiple-choice or true-false questions. A transfer test is an assessment that focuses on testing the knowledge a learner has gained (Mayer, 2008a). An example would be a subjective-based test where the student uses the material in a new way, such as a case study or in a lab-based project. Skill transfer can be assessed by testing the student's ability to solve new problems after being presented with information (Mayer, 2008b). With CTML, the focus is on skill transfer assessments because researchers want to determine how material presented visually and verbally translates into understanding (Mayer, 2008b).

A CASE STUDY: GEORGIA PIEDMONT TECHNICAL COLLEGE

Georgia Piedmont Technical College offers technical diplomas and associate degrees. It has been offering online courses since 2000 (T. McCamish, personal communication, August 10, 2011). Traditionally, the college teaches in a quarter format. However, in fall 2011, the college transitioned to the semester format. In order to make the transition, the college offered a 5-week miniterm that is half of the normal 10 weeks offered.

There was a real concern over whether or not students would be able to pass the shortened classes. Additionally, most of the courses offered at the college have a lab-based component. Courses were offered in an online, hybrid, and traditional format. How could students not only learn but apply those skills (transferability) in a compressed form? At least one IT instructor had developed demonstration lectures using multimedia screen-capturing software that showed worked-examples. Additionally, there were interactive self-check quizzes embedded within the lectures. Students would watch the lectures for a worked-example and then apply that knowledge on an actual assessment. Students could watch the lectures repeatedly at any time and at any place. Students indicated that the lecture helped them succeed in the lab-based online courses. Even though the initial concern had been over a large possible failure rate, it was found that the pass rate was the same as in the 10-week term for some IT courses. Therefore, it was concluded that using multimedia lectures showing worked-examples enhanced the learning experience and increased skill.

CONCLUSION

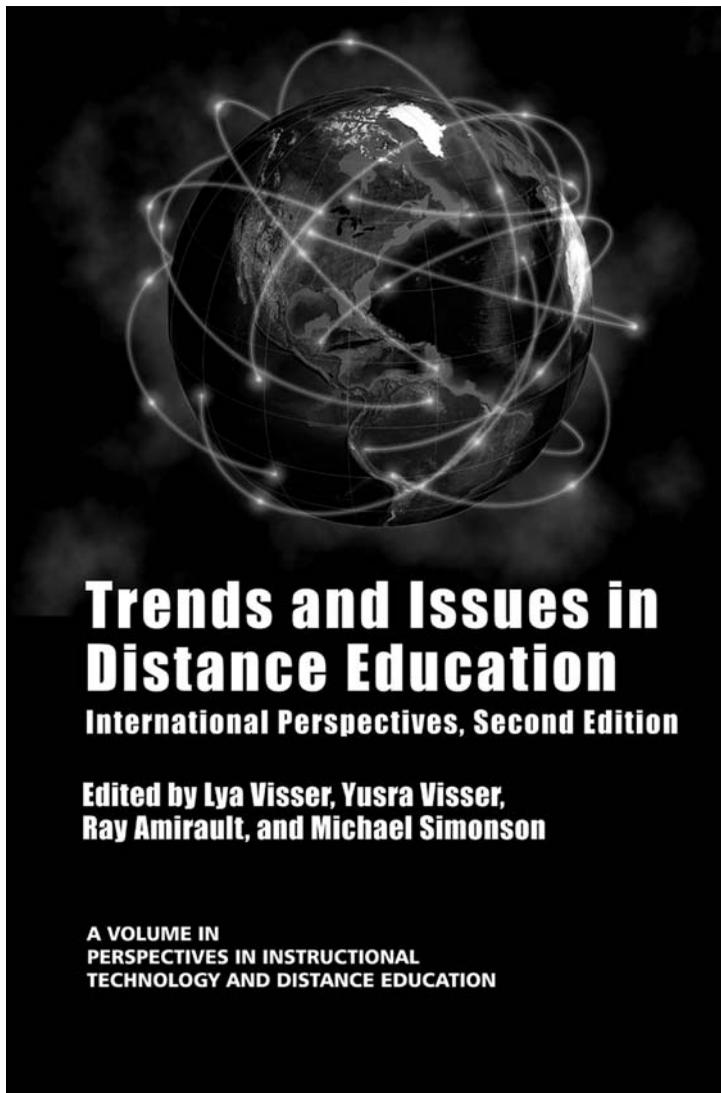
The use of multimedia, such as screen-capturing software, can be used to create worked-example demonstrations for learners taking online lab-based classes. Instruc-

tors and designers can use multimedia screen-capturing software to produce a lectures that using visual and verbal cues to increase in the transfer of knowledge for learners. Then, the students can transfer that newly acquired skill to the job.

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Moodle

A District Solution to Online Learning

Sarah Truelson

INTRODUCTION

Imagine a classroom where conversations go beyond the dismissal bell, a classroom where multimedia is shared and students work to construct their own learning, an environment where district personnel can learn and share resources at their own pace from the comfort of their own homes. This concept exists not only in the imaginings of the future, but exists now and is happening in districts like the writer's in the sunny state of Florida. Creating an opportunity for anytime, anywhere instruction establishes the need for learning management systems to house content and other resources while at the

same time being user-friendly enough that a highly advanced technical skill set is not required. With limited financial and human resources, districts need to adopt learning management systems that can meet multiple needs. Systems are needed that can meet the needs for professional development, traditional classroom sites for students and a place for growing district-run virtual schools. What can districts use to meet these diverse needs? Moodle.

With increasing demand for online solutions, Brandl (2005) states that this "places high demands on design, programming skills, and time. An alternative to using such applications is the deployment of course or learning management systems" (p. 16). With 70,282 registered sites in approximately 222 countries and 1,292,081 registered teachers from its inception, one can argue that Moodle is gaining in its use all over the world as a solution to this need ("Moodle Statistics," 2011). Martin Dougiamas created Moodle, which stands for modular object-oriented dynamic learning environment, in 1999. As a youth, Dougiamas attended one of Australia's "schools of the air," where students learned through shortwave radio communication while getting materials and most feedback through the mail, so the idea of learning from a distance was not new to him (Hargadon, 2006). Moodle's design and components are based on the constructivist theory of learning; "its goal is to provide a set of tools that support an inquiry-and-discovery-based approach to online learning" (Brandl, 2005, p. 16). Moodle is not, how-



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ever, limited to the distance classroom; it can be used in traditional classrooms or for blended instruction (Hargadon, 2006).

Moodle is a “free, open-source software program that not only provides a set of features similar to those of its proprietary competitors but is often easier to use” (Perkins & Pfaffman, 2006, p. 34). Installations of Moodle can be as large as an entire school district or as small as one classroom. Although the initial download of the program is free of charge, it does need to be hosted on a server to get the most flexibility from its use. In the writer’s district, outside providers host the various installations of Moodle.

Many teachers and schools today have access to websites, free blogging sites and wikis, and even sites dedicated to provide teachers with online assessment tools to use with students. What sets Moodle apart from these is its ability to provide all of these options in one place and in a secure environment. Districts must be aware of who is interacting with its students and in many districts must be able to retrieve communications between students and teachers if needed. Sending students to multiple places can be confusing for both student and teacher and adds more time, as one must navigate or bookmark multiple sites. Many of these sites also require users to register and establish a user name and password, but these must be maintained by the individual providers and are not accessible for reset or monitoring by teachers or district staff. Moodle, however, provides two layers of security to its users, both of which can be managed entirely by the district and not an outside system. Before getting into any courses, users must log into the system itself. Moodle easily integrates into district active directories making it possible to use preexisting user names and passwords instead of establishing new combinations to maintain. As a second layer of protection, course teachers have the ability to set up a course enrollment key that students must provide to

gain access to the course and its content. Districts can allow guests to enter courses on a course-by-course basis or not at all. Parents have commented that they appreciate this security as it adds to a sense of safety knowing the general public cannot interact in the same forums, blogs and discussions their children are in.

A Moodle course is an empty shell when it is created, waiting for the teacher to add resources and information. It is organized into three columns; the main column down the center of the course is where all the activities and content of the course will appear. The two side columns contain tool blocks. Teachers can decide which blocks they wish to show to users. A variety of tool blocks are available. Blocks for a calendar, html editing, current participants, lists of recent activity, and many others are available and easy to add. Teachers, or course creators, add various pages to their course as they build it out for their students (teachers are the ones who are in charge of the course; students are anyone taking the course including adult learners).

The two main categories of pages that can be added to the center column are resources and activities. When the course creator clicks on the “turn editing on” button located in the upper right-hand corner of the course, two drop-down menus appear in each topic box. One lists all of the resources available and the other all of the activities. Combinations of these work together to build a course. Resources provide the foundation or support in the course and generally do not require student interaction. Resources include labels, web pages, links for displaying documents or linking to an external website and the ability to create a link to a directory of files within the course. According to McCall (2009), the activities available in Moodle can fall into “two categories of activities: social and individual” (p. 62). McCall (2009) further breaks them down into activities that are collaborative in nature and those that are completed individually. Under

activities, there are assignments that can be used to create places for students to upload files to the course, places for students to compose online text and a placeholder for offline activities. These assignments create a place in the Moodle grade book automatically. Course creators can also create forums, quizzes, glossaries, databases, lessons, and wikis. Administrators can also add additional plugins in both categories to customize the Moodle options for their particular version of Moodle.

With the initial launch of the district e-learning center, the Moodle administration team created courses for teachers upon completion of an online training in Moodle and the submission of a request approved by the school principal. Establishing new sites in Moodle can be done in less than four steps from adding the site, naming it, giving it an enrollment key and assigning the role of teacher. This makes managing new courses in the program easy.

The Pinellas county school district is the seventh largest in the state and the 24th largest in the country, serving 142 elementary, middle and high schools and over 101,000 students and 17,000 teachers (Pinellas County Schools, 2011). The writer works as a district distance learning and referendum coordinator. With such a large number of teachers and students to serve, in addition to other district personnel, the need for effective and efficient systems was a must. In 2007, the Pinellas county school district decided to begin using Moodle. It began with a small pilot group of teachers creating courses for use with their students. While that began, professional development courses; ESOL training specifically; were being created using Moodle. From then until today, the district now has over 71,000 plus registered users in the original eLearning Center instance and has three additional instances of Moodle, each having their own unique focus.

Professional development for such a large district is a struggle to achieve. With limited time available to provide much

needed development, districts must look to other ways of presenting this training. Online learning has the potential to meet those needs. Dillon, Dworkin, Gengler, and Olson (2008) found that online professional development could be just as effective as face to face. Learner discussion is cited as enriched in online courses as it offers "a valuable form of reflection, and the quasi-anonymity of the online environment makes it easier to be honest and ask questions" (Hiser, 2008, p. 29). Moodle is one of these solutions. Limited budgets are also making the Pinellas county school district find ways to reach its teachers without the need for numerous trainers and learning coaches. The writer's office consists of a director, a secretary, and three coordinators. The team is tasked to offer technology related professional development to the entire district. Early in the adoption of Moodle, the office began to create opportunities for teachers to complete professional development 100% online. Currently, the writer's office offers training in Elluminate Live!, SMART tools, Moodle course design, iMobile devices, digital storytelling, facilitating an online course and trainings for several other software applications. Teachers enroll in the courses and complete them at their own pace. Hiser (2008) states that this "online format is ideal for new faculty. It's convenient and provides a '24-7' outlet that new faculty can use for their questions, frustrations and elations" (p. 29). The state of Florida recently changed the teacher appraisal system. Districts must monitor the trainings teachers take and how they relate to each individual professional development plan. Online training has become a staple for every office in the writer's district, in an effort to better support professional development in the tracking of teacher training. The district has established a version of Moodle dedicated to professional development named MoodleLMS. The district has utilized a program called ELIS for Moodle, an add-on to Moodle that can "provide the

administrative, business intelligence, data mining, learning management, content management, and longitudinal record keeping functions that standard Moodle does not provide" (Remote-learner, Introduction to ELIS section, para. 1, n.d.). When the professional development department opens a new course, regardless of its delivery format, the system automatically creates a Moodle course for the training. Every professional development course that is created in the system automatically has a Moodle instance. The district has also moved away from using paper-based training evaluations. Participants must log into MoodleLMS to fill out their evaluation form so they get credit for the component. With this new effort the district is working to encourage all trainers to use Moodle as a spot for either blended instruction or a repository where they can post training notes, copies of PowerPoint presentations, or other helpful materials they would have otherwise had to print for participants to have a copy. Other trainings are 100% online in the system. By providing this opportunity, personnel who do not adopt Moodle early on are given the chance to see how it works which may encourage them and provide the spark needed for them to create a Moodle course for their own classroom or office. Maikish (2006) found "that when teachers see how other teachers are using Moodle, they will be moved to figure out how they can use it effectively in their own classes" (p. 27).

Willard (2010) predicts, "the shift to [twenty-first] century education, enriched with Web 2.0 technologies, will result in incredible opportunities. This shift will, however, present challenges" (p. 23). The need for more secure environments where teachers can introduce students to Web 2.0 application is vital. The writer's district introduced Moodle as a solution to this problem. As teachers began to see the possibilities for Moodle's use in their classrooms, more applications for classroom sites were submitted. Teachers who used

Web 2.0 tools like wikis, blogs, and threaded discussions were able to create these same tools in a safe, secure, district approved space. Within this space, educators can work to ensure students learn and "gain competencies in the safe and responsible use of digital media technologies and resources (Willard, 2010, p. 22). At first, many early adopters of Moodle courses used them as repositories of sorts. They posted links to class documents and web resources for students. Others created Moodle quizzes taking advantage of Moodle's ability to automatically grade most types of questions. As Brooks-Young (2008) discovered, new users of Moodle "rely primarily on features that enable them to automate traditional tasks, such as test giving or assigning and collecting work" (p. 28). Simple tasks like posting homework calendars and PDF versions of homework sheets in the course can help to provide support to parents when students forget what they were supposed to do or lose that much-needed resource.

Still others began to branch out and use Moodle as a tool for collaboration. Using the forum activity, teachers are able to create threaded discussions in their courses moving conversations beyond simply taking turns and raising hands and into opportunities for all students to have meaningful discussion about a topic beyond the time allotted for class. In one scenario, a high school English class in the district was reading *Romeo and Juliet*. The teacher assigned students to small groups and created a discussion forum for each group. The students were then assigned to act as different characters in the book. The teacher posed a question to the group and they had to discuss it in the forum from their character's perspective. Not only did this class have the opportunity to look at a scenario from another point of view, but as Maikish (2006) notes, the use of Moodle "also fulfills many of the ISTE NETS standards for students, teachers, and administrators" (p. 27).

Moodle wikis also provide the opportunity to teach students while keeping technology standards in mind. In another scenario, one of the early adopters of Moodle, a fourth grade teacher, used wikis with students as a way to increase collaboration and teamwork. For a reading assignment, students were assigned the task of picking a topic to research. This was part of a celebration exercise at the end of a reading unit of study focused on nonfiction. Groups of three or four were assigned a wiki space that they used to build a short write up telling all about their student-chosen topic. The students used the wiki to plan each person's role and responsibility in relation to the project. Moodle wikis work in much the same way as other options available, but also allow the teacher to see every change an individual user makes. The teacher can see if student x added information and can trace the wiki page back to each saved instance; this is helpful when working with young students who may realize too late they have deleted something they did not mean to. As the students worked independently to add information to their wiki page, they were also able to see the information other members of their group had added in and worked together to complete the assignment. Creating activities like this in Moodle "allows students to use technology to enhance learning" (Maikish, 2006, p. 27).

Some of the very early adopters in the district have begun using Moodle for blended learning in their classrooms. Students in these classrooms, several of which are able to have one-to-one laptop labs, use Moodle to receive a bulk of their instruction working with the teacher in small groups as needed. Many users have begun to add embedded videos or talking avatars to their courses to help provide directions about the tasks for the day, and as a way to reach auditory learners.

As more users adopted Moodle as an integral tool in their classrooms, the district and the writer's office was working to

build its own district-run virtual school. Beginning in 2008, all Florida school districts had to provide options for full-time virtual school to their students. Knowing what a wonderful tool it had in Moodle, the district decided to create their own middle school using courses written by district teachers. A group of 12 teachers was brought in and each one was tasked to write a course. Each of the teachers was already using Moodle in their classrooms and was eager to create a complete course. By the next school year, the district brought in a second group of high school teachers tasked to write courses for grades nine through ten as they would be introduced in the 2010-2011 school year. The writer's job was to work with and train the teachers writing the courses. With the International Association for K-12 Online Learning national standards for quality online courses in hand they organized Moodle's topic boxes into weeks of content. Labels were used to organize content and present the standards and purpose for each week and individual activity. Resources were used to present information and content. One such resource was used often—the book. Writers were able to create mini lessons broken down into manageable chunks. Using the chapters of the book, links were made to resources provided by BrainPOP, SAS Curriculum Pathways and Learn360. After each piece of information, students had independent activities and collaborative activities to complete for each week. Threaded discussions were a vital part of each week's content, since the students in the program would be participating 100% of the day virtually. In one activity, students in the Algebra class would participate in a forum dedicated to algebraic properties. Each one had to research an assigned property and provide information and helpful online resources to assist their peers learn the property. Moodle forums allow posters to add links to documents and websites so students had to post a link to their presen-

tation. They were then directed to review a presentation from a classmate for each of the five properties that were assigned and to leave feedback about the presentation. Prior to this the teacher discussed what makes good feedback. Students were able to take a part in the building of their own learning and that of their peers. With the help of additional plugins to Moodle, teachers are able to post grades for student work, interact with them via e-mail, and keep track of other data and attendance.

Moodle manages to meet numerous needs in the Pinellas county school district by creating an option for housing online professional development, a secure environment for classroom teachers and other staff and the portal by which the district launched its own virtual school. It is a vehicle worth the time and investment put into it as it gives districts back so much more than they have to put in.

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Beyond “Comparability”

Stephen C. Ehrmann and Patricia Low Dinneen

Comparability: An institutional strategy for assuring quality in online and hybrid courses by insisting that the content and, sometimes, the assessments be “comparable” to courses already offered on campus.

As a standard, “comparability” sounds reasonable enough. After all, this sameness makes it possible to compare the quality of learning outcomes without regard to delivery method. So long as the distant learners get test scores that are comparable to the students

on campus, all is well and no further thinking or oversight are needed.

In a similar vein, Richard Clark argued in a classic article that the quality of learning is unrelated to the technology used for teaching. For example, Clark summarized previous meta-analyses of huge numbers of studies of ‘presentation’ (i.e., information from a single source is made available to many students). These studies showed that students who are taught by presentation all learn about the same amount, no matter what the medium of presentation.



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It does not matter whether they get the presentation via live lecture, videotape, streaming video over the Internet, or textbook. Clark also pointed out that the activity of self-paced instruction (SPI) produces substantial learning gains over the activity of presentation. But SPI implemented using paper produces almost as much learning as SPI using computers. According to Clark, using technology for teaching is analogous to a vehicle delivering your groceries to your home. The quality of milk is the same, whether the delivery truck is made by GM or Ford. Technology and quality are completely unrelated, he argued (Clark, 1983).

But Clark's analogy is misleading, and his conclusion is the problem with the standard of comparability as well. It is true that any teaching/learning activity can be implemented with a variety of technologies or facilities. However, for any particular teaching/learning activity, some facilities or technologies are a better fit than others. For example, SPI can be done far more easily and inexpensively with digital technology than with paper; that is why such tutorials have become more common as computers have become more common and why paper versions of SPI have become almost extinct. The process approach to writing, a pedagogy, spread once computers became common because rewriting is easier with computers. Course activities involving analysis of video (e.g., video recordings of science experiments in action; film clips) became more common when individual manipulation of video became inexpensive and easy.

Once the medium or tools of learning change, it also becomes easier to change *who* is involved in the course. Obviously distance learning makes it possible to involve not only more students but also students with specific kinds of backgrounds or needs. Equally important, the institution can make different choices about who to use as instructors, or assess-

sors of student work, when those activities can be done online.

Changes in learning spaces and tools can also enable improvements in assessment: self-grading assessments can be administered more readily online, for example.

And the dominos keep falling. When changes in learning spaces and tools enable improvements in the activities, assessment and people, the content and goals of the course, or course of study, can be improved, too. In the early 1980s, for example, Professor Marvin Marcus of the University of California Santa Barbara, was able to use a new computer lab in mathematics to begin offering the math department's first minor in applied mathematics, consisting of several on-campus courses and an off-campus internship program in which students applied their skills to solving problems faced by community agencies. A more recent example: the Internet and cheaper international communications have helped Worcester Polytechnic Institute make research abroad become so easy, inexpensive, and common that applications research abroad has become a signature activity of that institution.

When universities change technologies and/or facilities (e.g., from campus-bound to hybrid), faculty ought to take a fresh look at learning goals, content, teaching/learning activities, and assessment. The change of facilities will make some goals harder to pursue than before, others easier; some teaching/learning activities easier, others harder; and so on. The problem with comparability as a standard is that it discourages faculty from thinking about how they might take advantage of new learning spaces and tools in order to offer more valuable hybrid or online courses of study.

Remember the old tale about the tiger that had been caged since birth. It would roam its cage ceaselessly. One morning it awoke. The bars had been removed. But for a long time, the pacing tiger did not

notice. It continued to pace within the boundaries of its vanished prison.

Where should we look to find opportunities to make courses of study more valuable by taking advantage of the distinctive strengths of hybrid and online learning? Here are nine directions for breaking out of the box of campus-bound thinking:

CONTENT AND RESOURCES

1. *Curricular options or tracks, instead of forcing all students to learn the same things at the same time.* Students in the same class may have different interests or preparation. Ideally, a faculty member might want to engage them by giving them somewhat different readings, assignments, and topics for discussion. In a campus classroom, this is virtually impossible: the instructor can't lecture on two topics at once, or monitor several discussions simultaneously. In contrast, in an online space, it is much easier for an instructor to divide time among two or more groups of students. Note: in order to develop multiple options or tracks, it can make sense for faculty to team up, even across institutional boundaries, to split the work of developing materials.
2. *Incorporating more direct, off-campus experience into the course.* Courses may assign students to different internships or community experiences (e.g., rotations in a medical course) off-campus, while also gathering students and an instructor face-to-face to analyze their experiences. When students are working off-campus in clinical assignments or internships, online media can help them interact with others in their community and even take courses or modules as needed.

Increase the specialization of the program. Because a hybrid or online program can reach out for staff with unusual specialties and to students with unusual interests, the program can potentially offer much more specialized programs than would be possible if restricted

only to local faculty and students to specialized content than would be possible if only local faculty were teaching and if the program were marketing only to local students. Note: by "specialized" we do not mean narrow or constricting. Students can focus their learning mainly on highly specialized topics while also developing skills that enable them to respond to future changes in their focus.

DISCUSSION

3. *Expanding the visual dimension of interpersonal interaction.* Imagine you are teaching a class of 40 students who have each been studying a wide range of images (e.g., X-rays, paintings, engineering drawings, etc.) or videos (e.g., in a film course or in science courses studying videos of experiments). It might occur to you to have students each select a pair of images (or video clips) and discuss them in a small group, pointing to elements of the image as they compare and contrast. However, if you were teaching in a campus classroom, you would probably stop that line of thought instantly: after all, how could students call up such images and talk about them in your classroom? In contrast, this sort of selection, discussion, and annotation of images is easier and often cheaper if students meet online using conferencing software such as Adobe Connect Pro, Blackboard Collaborate (formerly Elluminate Live) or VoiceThread.
4. *More thoughtful pace of discussion.* Traditional classrooms for large classes offer few opportunities to ask or answer questions, or to discuss issues. In contrast, online discussion (e.g., threaded discussions on Blackboard) gives all students a chance to talk, both with each other, and with faculty. The time delay gives students a chance to think about what has been said, and to think about what they want to say. (Smith, 1990).

5. *A more level playing field for instructor(s) and students with different native languages.* Text-based, asynchronous conversation makes it easier for people to cross language barriers—there is time to think about (or even translate) what has been said to you and to compose a reply (Hiltz, 1988).
6. *Including outsiders in course discussions:* Online discussions are more easily expanded to include significant others outside that group: outside experts, students who differ from those in class, members of the public. This facet of hybrid or online courses can enable faculty to alter the content of a course by bringing in experts who are not available on campus.

ASSESSMENT

7. *Online assessment and ePortfolios.* Faculty can offer individualized online quizzes that feedback to students and help them from becoming stuck. Online discussions provide faculty with more evidence of student understanding. Students can create ePortfolios that exhibit their work, and include discussions of how that work provides evidence of what they can do; these ePortfolios can be assessed online by other students, by outside experts, and by the instructor: once again, the location and schedule of the assessor is not an issue. Note: while ePortfolios can also be used in campus-bound courses, digital tools are, by definition, almost always at hand for students in hybrid and online programs.
8. *Just in Time Teaching (JITT).* These kinds of online assessment make it easier for faculty to get insight about what students understand and do not understand—and where they agree or disagree—and use those insights to plan class sessions that build on student mastery and target topics or skills

that students have not mastered through their work outside the classroom (Novak, Christian, Gavrin, & Patterson, 1999).

To sum up: when planning hybrid or online courses, faculty ought to consider rethinking the goals and teaching/learning activities. With the new possibilities offered by online and hybrid learning, what are the most valuable goals now within reach? The best teaching/learning activities and resources to help all students attain those goals? Are there any older goals or activities that are harder to do in hybrid or online activities? Should they be deemphasized (perhaps to free time for work on more important things?)

If comparability should not be used to provide a quick and easy method of quality assurance, what should we do instead?

Our answer is simple: we should evaluate online and hybrid offerings in the same way we ought to assess campus-bound offerings:

1. Are we doing the right thing? Use internal and external points of reference to discuss whether the goals are valuable. This will almost always involve comparing “apples and oranges,” so it is important to think carefully about what points of reference to use.
2. Are we doing the thing right? Ask whether there is a good alignment between that goal, the teaching/learning activities proposed, and the facilities and technologies to be used to support those activities.

Does your institution use the standard of comparability for quality assurance of online or hybrid courses? If so, should you abandon that standard? Would you alter or add to our list of examples of teaching/learning activities that are often taught more readily or effectively in hybrid or online environments? How would you evaluate

and compare the impact of these various activities? Please send your comments to us at *Distance Learning*. If we hear from enough of you, we will summarize your ideas in an addendum to a future column.

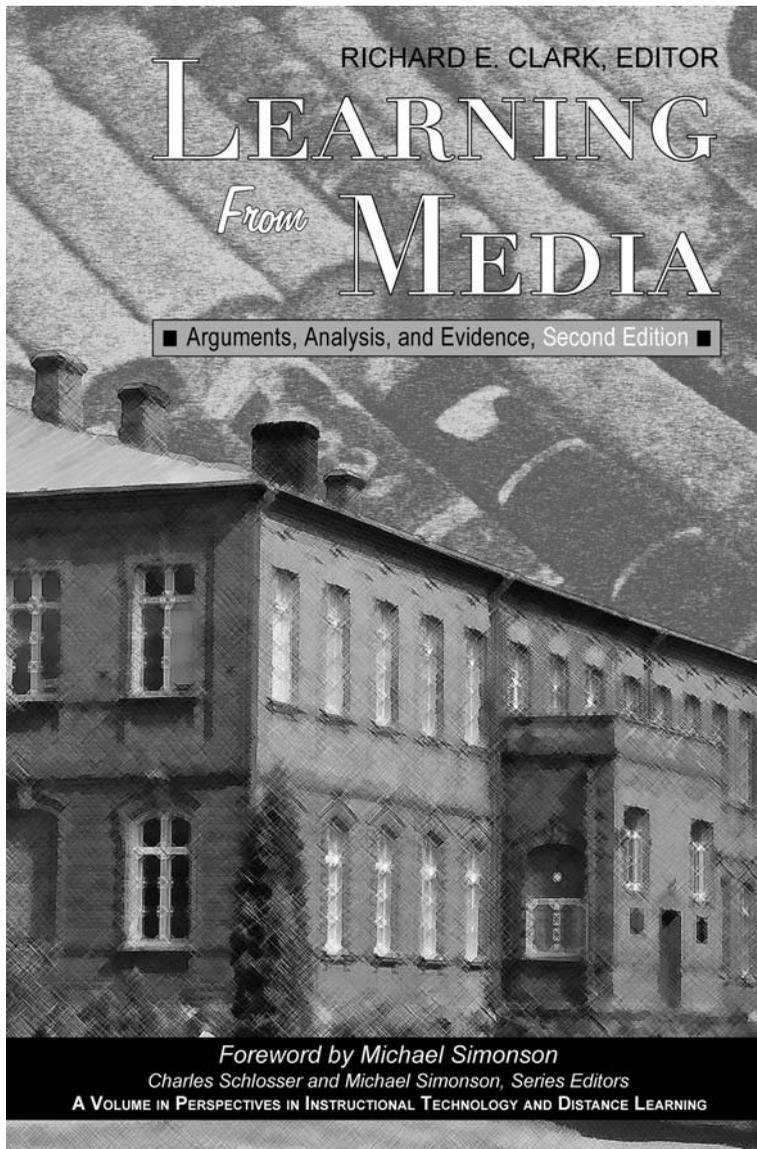
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The Hot Topics for 2012— and How to Keep Them Cool!

Errol Craig Sull

As I write this it is the beginning of 2012, and thus many new possibilities and opportunities exist for all of us—and this extends to the distance learning classroom. In the coming year we are going to meet obstacles in our classroom we had not anticipated, new procedures and software introduced by our schools, opportunities to improve our teaching we had not

considered, and complexities of our lives not yet known but that can impact our online teaching efforts. This column is written to help you over, around, and through all of these ... a guide to the most pressing topics in distance education for the coming year—and how you can best embrace, tame, and own them on your terms:

STUDENT ENGAGEMENT REMAINS THE MOST IMPORTANT FOCUS OF DISTANCE LEARNING

I am going into my 18th year of teaching online, and in those many years I have seen more articles, experienced more discussions, and responded to more e-mails on student engagement in the online classroom than any other topic in distance learning. And it is a no-brainer as to why: if the students are not engaged they are not going to learn, they will lose interest in the course, there is a good chance they might be a negative stat in student retention, and your school might lose the need for some distance learning instructors—not good for folks who make their living doing this! So ... put your best effort yet into student retention: one of my earlier columns for *Distance Learning*, in the fall of 2009, offers many suggestions on how to best keep your students engaged. But



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beyond that info I know you have your own approaches, and your school has no doubt offered ideas—use many, for once you have your students engaged on a regular basis you have conquered the number one concern in distance learning.

IT IS CRUCIAL DISTANCE EDUCATORS HAVE A CONSTANT PRESENCE IN THE CLASSROOM

Since you do not have a physical presence in the classroom—that is, a face-to-face classroom—where students will often pay attention to your teaching simply because you are there, you must be sure students know you are interested in the course, care about their efforts, and are around when you are needed. Without question, the biggest complaint of students is of faculty who are slow in responding to their questions/e-mails and who do not seem to be very involved in the class. Remember that your computer is like an umbilical cord that links you with the students; to keep that lifeblood of excitement, motivation, and engagement at a high level you must consistently “feed” that cord with your presence. Do this and your class will be a vibrant place the students want to be—and your stock as an instructor will steadily rise.

BEING ORGANIZED AND HAVING A GOOD SENSE OF TIME MANAGEMENT WILL KEEP YOUR STRESS DOWN AND CLASSES GOING SMOOTHLY

While a new year often brings many resolutions—including being better organized and a better manager of time—many of these resolutions fall by the wayside after a month or so. But staying organized and improving your use of time will greatly keep you on top of your distance learning teaching in a manner that is not by the seat of your pants, last minute, back against the wall, and any other such cliché that comes

to mind. Teaching online should be fun, yet when we allow our organization and time management skills to spiral out of control, the fun is gone—and such a scattered approach also often leads to assignments returned to students late or not at all, deadlines missed, e-mails neglected that need responses, and an overall poor teaching performance. You do not want, you do not need, any of this ... so do what you need to do for an organized and time-mastered approach to your distance teaching.

GIVE YOUR STUDENTS, YOUR SUPERVISOR, YOUR SUPPORT STAFF, AND YOUR SCHOOL WHAT THEY NEED AND WHEN THEY NEED IT

On the surface, this seems simple—but there is so much involved. When you start listing all that you need give your students, all that your supervisor requires, and all requirements your school requires, you will have quite the list. Added to this will be intangibles that really cannot be quantified, such as your presence in the classroom, motivating students, linking the course to employment, increasing your engagement with students—the list goes on. But the idea of a list is a good one, no matter if teaching one course for one school, multiple courses for one school, or courses for more than one school: it becomes your guide to doing all things right in your online classroom. And remember that feeling we have all experienced in forgetting one or two items that should have been done: “Oh, no!!” We will never again have to have that.

GO OVER ALL EVALUATIONS FROM THE PAST YEAR, AS WELL AS ANY OTHER SUGGESTIONS FROM STUDENTS AND STAFF—AND LOOK AT THEM SERIOUSLY

If there is one area more than any other that distance instructors ignore, it is their

evaluations from past classes: sometimes they are read, and when so they are looked at, then forgotten; and many online instructors do not read their evals, believing as long as they have a new contract for the coming session all is right with them and their schools. (Only when an ominous e-mail from a supervisor comes down that reads, "I want to talk with you about your evaluation" do we suddenly take notice—but you never want an after-the-fact read like this!) Look over all evals, and make an ongoing list of positives listed—and pay especial attention to any negatives—from both supervisors and students. Items can be pointed out to make us better, to remind of an area we overlooked, to introduce new approaches we had not considered—all of this can only result in one effect: we as better distance instructors.

STAY CURRENT ON TECHNOLOGY THAT CAN HELP YOU DELIVER YOUR COURSE INFORMATION AND IMPROVE STUDENT INTERACTION

The distance instructor remains the linchpin to keep a class alive, to teach students, and to make the online learning experience a positive one for students. Yet it is technology that allows the field of distance learning to exist, and thus we must pay ongoing homage to its importance by staying on top of new software releases, social media options, and hardware updates that can improve all areas of our online classroom. Often, this begins with the course delivery platform used by the schools, as well as software the schools incorporate for live chats, course material presentation, and faculty meetings—it is important you know all facets of these so you can incorporate the tech facets of your course and school to their fullest. But do not stop here: there are many free downloads of software that can help with your teaching...be sure your computer (in whatever form it takes) is at its best ... and look for updates of software you constantly use (and the school

does not supply). Do all this, and your teaching efforts will be more fun, efficient, and productive.

BE SURE FEEDBACK ON STUDENT ASSIGNMENTS IS DETAILED AND STAYS POSITIVE

One of the beautiful benefits of online teaching is we can offer our students so much more feedback than if we had to write comments by hand on each student's assignment (not to mention no problems with students discerning our comments!). And when students receive feedback that is detailed—and by detailed I mean it always contains three parts: pointing out when something is incorrect, telling the student why it is incorrect, and offering advice on how to get it right—they have, in essence, individualized minitextbooks that truly help them learn. These comments can be made easier to do if you develop a "bank" of comments from which you can choose for each student assignment; you have the option of copying and pasting these as is or altering each one for a more personal touch. And do not forget to point out positives in student assignments and always leave an overall summation comment that ends on a positive note: our comments should, in the end, encourage a student, never depress or discourage a student.

ALWAYS HAVE THE ONLINE CLASS FUNCTION WITH REALITY-BASED EDUCATION IN MIND

As we know, our students take our courses so they can improve their knowledge for use in the "real world" of work. However, students often look at the course subject and material with limited or no thought to how it can be implemented beyond the bits and bytes of the distance learning classroom. Yet when we remind students of how this can be incorporated (e.g., the use of examples, videos of folks in the field

talking about the importance of the subject, and posting of articles relating the subject's importance on the job), we have taken that critical step into reality-based education (i.e., showing the practical, everyday importance of what they are learning). There is a nice bonus to this: it helps students stay engaged, gets students to discuss more about their own lives, and motivates them to give more effort into assignments.

ONGOING MOTIVATION IN ALL AREAS OF THE COURSE IS IMPERATIVE

It is common for students to have problems keeping themselves motivated in the distance learning classroom: poor grades, personal problems getting in the way of their efforts, an increased workload on the job eating into their school time, family responsibilities, anxiety about the distance learning environment, and other situations can take shark chops out of students' motivation in the course. Thus, we must be constant cheerleaders for our students, from assignments to general e-mail/announcement postings to live chats to responses to student postings to us. And when need be (and allowed by your school), phone calls to students can be one of the best forms of motivation. Put these all together and you can keep students enthused about their efforts and lift up students who have run into problems.

YOUR PROFESSIONAL DEVELOPMENT IS IMPORTANT FOR YOU, YOUR STUDENTS, YOUR SCHOOL

We have been hired to teach by our schools partially because of our expertise in one or more subjects. Too, we have been deemed as having "the right stuff" to deliver the

course material, to be a good presence in the classroom—in two words, to teach. Yet we must never sit on what we first brought to the school, but rather always look to improve our subject knowledge, abilities as teachers, adeptness in the online classroom, knowledge of our school. So—take advantage of any professional development webinars or chats your school offers, seek out new info on your areas of specialty, and constantly reads what is new in teaching strategies and approaches, with a focus on the online classroom. This will keep you a strong asset to your school—and your students can always be sure of getting the best from you.

CONTINUALLY POST NEW RESOURCES IN YOUR COURSE TO ENHANCE STUDENT LEARNING

Our schools provide us with lectures and/or texts and/or audiovisual resources in the initial classroom setup. Much thought has gone into these, and the students gain much from what they offer. Yet there is so much more available we can bring to students relating directly or indirectly to our subject: articles, videos, interviews, cartoons, quotes, newspaper and magazine stories, documentaries, an almost endless list that offer so many plusses—underscoring and spotlighting of course material, a transition to the outside world, enhanced student engagement, and increased student excitement about being in your class. Certainly, do not overdose your students with this—too much and they will turn away from it; using it wisely, however, can take your distance learning classroom to exciting and interesting heights.

Remember: Superman has amazing powers, Batman has Robin, and King Kong has size; however, the distance educator has the greatest aid of all—knowledge.

Ask Errol!

Errol Craig Sull

Ah, a new year! How invigorating with the possibilities for distance learning experiences—and our constant striving to be the best distance learning instructor possible. To help you I have included another batch of questions from my readers, and each of these was asked (in different fashions) by at least five other instructors, so I deem them especially important. Happy New Year—and good teaching in the months ahead!



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Thanks for your columns! You write in an easy, down-to-earth style, and seem to believe that no question related to distance learning is too basic to answer. That's good for me, as what I want to ask may seem like a "duh" question, but I will ask it anyway as I really need some help. I teach courses in the sciences, and my students must present papers and other assignments that include correct APA [American Psychological Association] citations. Unlike courses such as English where textbooks offer much on this type of formatting, our science books pay scant attention to APA. Can you recommend any websites or other materials I can post in my classes?

This question is far from a "duh" question, especially because the need to properly cite sources has gained added importance since the corporate spotlight on this was turned on a few years ago as a result of egregious cases of plagiarizing. And you are fortunate in the area of available resources: the Internet has anything you need regarding how to cite, when to cite, and proper formatting of citation. While there are many great sites available—type in "APA citations" in the subject line, and you'll find many websites willing to help you—three are especially helpful:

1. the American Psychological Association (APA) site on APA style, <http://www.apastyle.org/index.aspx>;

2. the APA blog, where there is ongoing info, questions, and answers on APA from students and faculty, <http://blog.apastyle.org/>;
3. and what is really a compendium of sites for what are called citation builders—websites that will properly format APA, MLA, CMS, et cetera in-text citations and the References page—simply type in “citation builders” in the subject line. Note: for MLA citations the best all-around site is <http://owl.english.purdue.edu/owl/resource/747/01/>

Two additional suggestions: (1) Be sure to stress the importance of proper citation, and it would help to post examples (again, easily found on the Internet) as to what can happen when one does not properly cite sources; (2) Develop one “How to Correctly Cite Your Sources—and Why” fact sheet for posting in the class—and continually remind your students to consult it.

I have noticed many of my students are asking me to become their “friend” on Facebook and do something similar in an online campus community my school offers its students. Your thoughts on this?

As social media/networking grows so will invitations from students; seldom do they mean any harm or have ulterior motives (at least when these invites come after a class has ended, when most of them appear). Yet the students are not looking at what is professionally correct and ethical for you; they just think you have been a pretty cool professor and want to “hang” with you in cyberspace. Don’t. And I use the one-word sentence fragment to give “Don’t” the emphasis it needs. There is an old adage that remains true: be friendly to your students, but never a friend. Your relationship with your students is strictly a professional one, that is, they are students, you are their teacher. Sure, that relationship officially ends once class is over, but the Internet allows for any word, image, or

sound posted on any social networking site to be distributed to whomever and wherever one chooses—and it can be too easy to relax one’s professional demeanor in these sites. And even if that does not happen you do not want a former student telling his or her friend currently in your class that you and the former student are “buds”—just not very professional looking. So ... either ignore these invitations or graciously decline them.

Although I post a “Welcome to the course”-type of announcement to greet students on their first day of admittance to my online classes and have my classes well stocked with materials, is there anything else I can or should be doing on this all-important first day?

Remember that old saying that you only get one chance to make a first impression? Well, this is especially true—and so important—in the distance learning classroom, as students seek out your words to get a feel of the class that lies ahead, for initial injections of motivation, and to put them at ease in an online environment. So, let us start with what you are already doing: the welcome letter. The first and closing paragraphs of these are most important, as in-between is peppered with the nitty-gritty of the class—procedures, policies, deadlines, et cetera. Have all of your letter upbeat, and begin with much enthusiasm, indicating you look forward to working with your students; end by emphasizing you are always available and, again, you are eager to help them grow in the subject area. As for additional items, resources beyond what comes with the course—think of it as adding whistles and bells to the standard model!—can give the students an indication of how helpful the course can be, of the transition of course material to the professional world, and of your attempt to make the course enjoyable (cartoons, puzzles, quotes, interesting articles relating to your subject can do this). Of course, before posting anything check it for

proofreading, grammar, punctuation, and spelling: you are held to a higher standard, and thus you want nothing to detract from your messages or professionalism.

I straddle two worlds, so to speak, in my teaching subjects, English and criminal justice. It is because of these two subjects I write you: I really am a bit unsure as how to judge to writing of my non-English course against that of the course where writing is what is being taught. Should I have two standards? Or should I judge all students' writing the same, no matter which course I teach?

This question gets batted about so often! On one side it can be subjective, i.e., the distance learning instructor with an interest in and schooled in English will pay closer attention to the writing of his/her students, while others may have the major focus on the content, with scant attention paid to the quality of writing. What we must remember is students use two life skills more than any others throughout their lives, writing and public speaking, as these are what allow us to get information across to others—and that information must be clear and easy to understand. While one may be teaching criminal justice or chemistry or finance the students will be submitting the majority, if not all, of their assignments in a written form; thus, it is important for all educators (online or face to face) to place a strong emphasis on the students' writing abilities. Certainly, in an English/writing course more of the nooks and crannies of writing will be considered as the primary focus is on all things writing—but to dismiss writing to little importance in a non-English class is forgetting students will always need to write ... and they will always be judged by others based on their ability to write.

Should I be entertaining in my teaching? My personality, admittedly, is somewhat on the quiet side, and when I taught in a face-to-face classroom the one complaint my supervisor had was that my teaching style was a bit dry. I thought this would not make a difference in online teaching, but lately I have been seeing some suggestions that being humorous, or at least being a bit entertaining, is a plus in the classroom. What do I do?

There is one word that succinctly answers your question: balance. You must strive for a balance between a “just the-facts, ma’am” approach and a class clown approach to teaching online. The students see and read info in your class; there is not much there to make it truly come alive, save you—your approach, style, and personality to and of teaching. For most of us, the teachers we remember most fondly from our days as students are those who knew how to get the information across yet showed a bit of humor, had an outgoing or easygoing personality, and were willing to incorporate some unusual or “out-of-the-box” approaches to teaching. We can do and be the same—and it is easier than you might think! By always being positive, incorporating unusual or fun facts related to your subject (but stay away from jokes—they can easily backfire!), making minivideos or audios to kick off each week, and keeping your language in posts serious yet upbeat will all kick you into the category of one who is highly professional and entertaining—a great recipe for being an effective distance educator.

Remember: *A person is only best when striving to be better—and asking questions is a great start.*



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such a concern to professors and teachers). At any rate, if distance education is to be accepted, and not just tolerated, it is important that rigorous, high-quality teaching and learning systems must be in place—and ethical behavior is at the core of rigor and quality.

Two options that promote ethical behavior, mutually supportive, might be considered by distance education leaders. First is the study of what is right and wrong when participating in online classes—a study of ethical behavior. A taxonomy of study includes:

1. knowledge of what is ethical and what is not;
2. understanding of proper actions of students; and
3. application of ethical behaviors to the teaching and learning process.

Next, distance education policy manuals should include sections dealing with ethical behavior, including:

1. development of an institutional code of ethical behavior;
2. explanation of student responsibilities related to the categories of unethical behavior, including:

- plagiarism,
 - cheating,
 - disruptive behaviors, and
 - deceptive actions;
3. establishment of a process of enforcement, including sanctions for violations of ethical behavior; and
 4. implementation of training and remediation systems for instructors and students.

While it is unclear if cheating and plagiarism are more widespread in online courses than traditional ones, it is obvious that the perception held by many is that distance education courses and programs seem more likely to provide opportunities for unethical behavior. Distance educators should face this issue head-on.

And finally, as Proust said centuries ago, when “we cheat other people, we exist alone.”

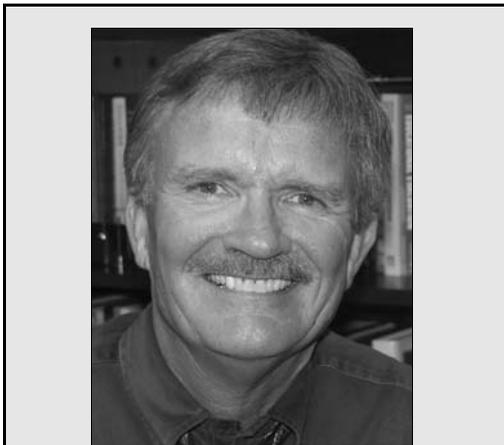
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Ethics and Distance Education

Michael Simonson

Ethics—right and wrong! Most students think they are ethical, yet a very high number admit they have cheated. Most know that it is improper to copy the work of others, yet plagiarism is reported to be widespread. And, one often heard criticism of distance education is the fear that “it is too easy for students to cheat! How do you know who is taking the test?”



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Ethical behavior has long been a concern of educators. The United States Bureau of Education published the “Cardinal Principles of Secondary Education” in 1928 in an attempt to clarify right and wrong in teaching and learning, and to promote ethical behavior. More recently, the Markkula Center for Applied Ethics at Santa Clara University (n.d.) has provided extensive information about ethical behavior and the meaning of right versus wrong.

As distance education has become a mainstream approach in schools and colleges, there has been an increased concern about cheating, plagiarism, disruptive behavior, respect of others, and proper use of resources—online and local. These concerns have generally not been faced head-on by distance education leaders. Rather, right and wrong behaviors have been delegated to the background, pushed aside by more exotic concepts such as bandwidth, learning management systems, and operating systems.

Studying ethics for most would require a return to college to attend one of the core classes in philosophy that used to be required of all students (but which apparently have been replaced more recently by classes in business—which may explain in part why ethical behavior of students is of

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