# INTERNATIONAL JOURNAL OF INSTRUCTIONAL TECHNOLOGY AND DISTANCE LEARNING

**February 2013**
**Volume 10 Number 2**



**ISSN 1550-6908**

## PUBLISHER'S DECLARATION

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

The Journal is monthly, refereed, and global. Intellectual property rights are retained by the author(s) and a Creative Commons Copyright permits replication of articles and eBooks for education related purposes. Publication is managed by DonEl Learning Inc. supported by a host of volunteer editors, referees and production staff that cross national boundaries.

IJITDL is committed to publish significant writings of high academic stature for worldwide distribution to stakeholders in distance learning and technology.

In its first eight years, the Journal logged over eight million page views and more than one and one half million downloads of Acrobat files of monthly journals and eBooks.

International Journal of
Instructional Technology & Distance Learning

**Vol. 10. No. 2.**

**ISSN 1550-6908**

# Table of Contents – February 2013

**Editorial**

# The role of cheating – part 4

**Donald G. Perrin**

The reason to care about cheating is to be fair to those who don't cheat. It seems to be part of our society in business, politics, sports, education, personal relationships, almost everything people do. And like most people problems, education is part of the solution. After the recent economic meltdown, many business schools increased their emphasis on ethics and best practices. Sports organizations have exposed drug use. Police have been disciplined. Educators have been held accountable. But so long as the cost of being caught is insignificant compared to what is gained, and so long as the chance of being found out is trifling, cheating will continue.

As editor of this journal, the principal problems are stealing intellectual property and plagiarism. We receive periodic complaints from authors, readers and editors of other refereed journals about improper referencing and outright plagiarism. In many instances, there is insufficient evidence to support the concern. For example, an author who claimed to be the originator of an idea that was vital to future business requested an article to be removed. A web survey showed the idea was included in dozens – maybe even hundreds of articles – even prior to the claimant's date of origination. The reverse is also true. We have received articles that were identical except for global word changes. We are pleased when such problem are discovered by our editors prior to publication.

There are tools like Turnitin used by educators to detect plagiarism. And then there is Google! Putting a title, phrase, or sentence into the Google search engine may find the exact reference or some close enough to deserve further investigation. Anyone who is willing to take the risk deserves to be exposed, and this can be death professionally to those who are discovered. If there is any benefit to cheating during the learning process or in the professional world, the habit of cheating will label you, limit you, or even destroy you. There is no substitute for hard honest work!

The way to overcome cheating in education is to change the rules so that cheating harms only the perpetrator. That requires developing a collaborative learning environment where we know and understand each other and help each other, where actual performance is a shared observation and appropriately rewarded. So long as a struggling learner is a number, faceless, with no individual identity or recognition by his teachers, or abandoned by his parents, that person is a candidate for cheating.

So long as we push competition where very few are rewarded, or falsely reward those who have not achieved, we have a flawed system. When rules are set up to reward the top 50% and punish the bottom 50%, we will have teachers and students cheating to receive the rewards of the top 50%. Clearly, as in medicine, it is time to stop treating the symptoms and work with the causes of these problems – poverty, broken homes, cultural differences, irrelevant and boring educational programs, broken infrastructure, and teachers who were trained for a world and a kind of student that no longer exists.

As editor, I have said enough on this subject. I look forward to articles with other points of view.

Return to Table of Contents

Return to Table of Contents

**Editor's Note**: This paper clarifies the connection between Internet 2.0, social media and Connectivism. This is crucial information for those who design, teach and manage distance learning programs.

# Online Learning Environments in Higher Education: Connectivism vs. Dissociation

**Sasha A. Reese**
**USA**

## Abstract

Over the last decade, online education has emerged as a way for students and faculty to collaborate more freely, attain greater flexibility, and utilize new media to learn. The burning debate lies in whether online educational options are harmful to traditional education or offer endless benefits necessary to accommodate a 21st century learner. Supporters of virtual learning environments suggest that 21st century learners require the construction and creation capabilities offered through Web 2.0 to succeed, while critics suggest that asynchronous interactions are not engaging and rigorous enough for higher education. A balanced online environment should provide a blend of both asynchronous and synchronous opportunities, which promote communication and collaboration among classmates and instructors.

**Keyword**s: distance learning, connectivism, hybrid, synchronous, asynchronous, blended learning, Web 2.0, new media, virtual learning, 21st century skills.

## Introduction

In an effort to modernize education, many institutes of higher education have adopted online courses in fully virtual and blended formats. Fully virtual courses allow students to interact with peers and instructors solely through the use of technology, whereas blended courses use online learning as a supplement to face-to-face interactions. The current educational trend toward the development of 21st century skills has made online learning attractive to both basic and tertiary education. Twenty-first century skills include, but are not limited to cultural and global awareness, self-direction, risk-taking and creativity, communication, reflection, and real world applications of knowledge (Green, 2010).

Controversy rests in whether this educational option is viable for both instructors and students. Research that supports the growth of online learning suggests that today's learners need collaboration, freedom to create knowledge, and an authentic audience in order to increase engagement, participation, and activity (Rheingold, 2010). This suggests that instructors in online environments should provide students with an experience, which promotes both autonomy and community.

Conversely, researchers who critic online education mention the dissociative process that can accompany virtual learning environments, and acknowledge a disconnect in the instructor and student relationship, as well as in the ability to build a learning community. Supporters of this perspective exhort that online learning must evolve from a delivery system of knowledge into a constructivist activity where learners engage in building knowledge (Hamilton, 2004, p. 843). This shift could help critics to view online schooling as a viable option.

## Preparing for the future through Connectivism

Online education has emerged at universities across the country because of its ability to connect students to instructors, peers, and course content through flexible and asynchronous environments. Online learning creates a recipe of circumstances that can accommodate learners of the 21st century and their need for collaboration, creation, and construction (Green, 2010).

According to Barbara Hoskin (2011), professor at Clemson University, adult and continuing educators are leading the way from traditional education to Web 2.0 enabled education, which promotes engagement and collaboration (p. 57). A need for a pedagogical shift is evident in the claim that 21st century learners also need to develop skills and competencies that will allow them to decipher and utilize information quickly and efficiently (Siemens, 2004). Current and future university students must learn how social media literacy applies to the real world, and instructors need to begin teaching students how to use this knowledge advantageously.

Although it has been hinted at throughout different eras, under the guise of Activity Theory and Social Learning Theory, Connectivism was coined as "the learning theory for the digital age" by George Siemens and Stephen Downes (2004). Siemens and Downes have developed distinct principles, which imply connectivisms' relevance to modern students. Connectivism is founded on individual ideas and opinions, valuing diversity in the perspectives of others, lifelong learning, building relationships, interdisciplinary connections, current information, and risk taking (Siemens, 2004). These same principles can be found in many current technologies that students use daily such as Facebook, Diigo, Wikis, YouTube, etc. In order for online learning to be successful and meaningful it must provide students with more than the transmission of data. New online environments must offer students the opportunity to become a participant and creator much like they are used to doing in everyday life. Research suggests that online learning should not just be a means of delivering content and course materials, but a catalyst to get students involved in course work with the support of the instructor and the involvement of peers.

Many online learning environments in higher education reflect stagnant, closed systems, and do not take advantage of the read/write web offered by Web 2.0 (Bell, 2011, p.99). Francis Bell (2011), suggests that previous learning theories based solely on traditional classrooms are not adequate models to emulate in digital learning, and that connectivism is a lens through which true reflection can occur. Connectivist theorists suggest that cognitive tasks between people and technology occur in networks, which are connections between "individuals, groups, systems, fields, ideas, or communities" (Siemens, 2004). Even the most basic Blackboard or WebCT learning environment, which does not deal with much more than transmitting data, utilizes discussion boards. Discussion forums fall into the connectivist realm because they create networks and connections between students and instructors.

Perhaps this is the reason for increases in online course enrollment. In 2010, approximately 30% of all higher education enrollments were online (Seaman & Allen, 2010; Moloney, 2010). Online education creates diversity in student populations because it creates opportunities for working parents, adult learners, and return students that traditional classrooms were unable to offer. The relationship between education and the national agenda is also an important part of virtual education's future. President Obama has two goals for education, which include increasing the number of college graduates to 60% by 2020 and closing the achievement gap to ensure student success in college and careers (U.S. Dept. of Ed, 2010). Online learning in higher education is also influenced by "digital natives" currently enrolled in basic education. Research purports that one in four preschool age children are learning skills that some adults have not mastered through the use of the internet. This suggests that online education is important for the success of today's students, and universities should improve programs to meet the needs of learners (Moloney, 2010, p. 66).

For online courses to be successful, instructors and students must change their roles in the learning environment and develop expectations that coincide with the tectonics of blended, traditional, and online courses. Instructors' roles often become more complex and time consuming, while students roles become more flexible and independent (Hoskins, 2011). Instructors spend a significant amount of time building courses, as well as reading and responding to emails, discussion posts, and grading papers. Contact with students is consistent and daily.

However, research informs that online instructors display a lower burn-out rate because they have more time for research, the convenience of working from home, and less travel time to and from the work place (McCann, 2009).

Accessibility and cost also must be given consideration in the appeal on online education. Students who favor online schooling do so because it allows them to focus more closely on knowledge acquisition and course work and less on the logistics associated with bricks and mortar options such as parking, travel time, and fuel costs (Chau, 2010). Online schooling reduces these factors, and also has the ability to significantly decrease costs for students. Two-year and four-year universities also find online education beneficial from a fiscal perspective. Universities are able to offer more courses to an increasing population of students without needing classroom space, parking availability, or the management of the use of other facilities. In addition to these cost saving measures an increasing amount of adjunct faculty members are utilized to teach distance courses, thus saving costs associated with more highly educated and tenured faculty such as higher salary and health care costs. It is suggested that the cost efficiency benefits both the student and the university. Allen and Seaman (2008) suggest that higher education benefits students in difficult economic downturns because it provides them with a way to improve skills and increase training without the burdensome costs that can be associated with attending bricks and mortar universities.

While online courses allow students to fit college into busy work schedules, they also require students to display more self-reliance. In many circumstances students must learn content without the assistance of face-to-face instruction, and must keep track of weekly assignments through the use of virtual tools. This is seen as a benefit of online education because it adds to students' toolbox of 21st century skills. They are learning the power of clear and concise written communication, and developing the skills to collaborate with peers and instructors in a different type of environment.

One cogent factor in online learning is the effect of time on student success. Some evidence suggests that learners in online environments spend more time on task than students attending traditional courses in bricks and mortar environments (Jaschik, 2009). This can be attributed to the fact that students are able to determine when and where to complete coursework at their convenience. Both instructors and students benefit from the "anytime, anywhere" appeal of online learning (Mayadas, 2009, p. 52). They are no longer synchronously tied to specific buildings and schedules, and have the freedom of mobility and fluidity offered by the online educational experiences.

In order for online learning to be widely adopted active learning and new roles for teachers and students are necessary (Zhu, 2010, p. 147). Some research suggests that teacher perspectives and perceptions are also linked to values and culture, and that this could influence the way instructors view their roles. Cultural connections that are most compatible with online learning are individualist cultures and constructivist learning theories (Zhu, 2010, p. 148). Institutes of higher education considering adoption should spend a significant amount of time also examining the demographic of their student population to determine what type of virtual environment would meet learners needs. Zhu suggest that certain cultures respond differently to what he refers to as the "power distance." According to Zhu, the power distance is the willingness of less powerful people in society to accept inequality. To express this Zhu (2010) discusses the fact that in Chinese culture students may not be willing to participate in communicative activities with peers because it does not involve interaction with authority. Another consideration that Zhu (2010) mentions is the competitiveness of some cultures such as Chinese culture, interfering with the collaborative aspect of online learning (p. 148). These concepts should be given significant consideration in the development of new online learning environments, which seek to improve the student experience.

Since online environments are prevalent in the everyday lives of learners research suggests new literacies that can easily be developed through virtual course work such as attention, participation, collaboration, network awareness, and critical consumption (Rheingold, 2010). Network awareness and critical consumption are among the most noteworthy of these literacies because of the impact that they have on student's real world activities and future career endeavors. Being able to engage with new interfaces and learn foreign technologies is imperative to success in the 21st century workforce. Critical consumption can best be defined as the ability to discover resources when needed, but also to decipher valuable information from useless information. While students come to degree programs with the ability to use social media, they often do not possess the skills necessary to use them optimally (Rheingold, 2010). An instructional strategy that has the potential to work well in a virtual setting and could improve students' critical consumption skills is merging technology and assessment. This would permit students to build learning communities where interpretation and analysis could be developed through multiple perspectives (Edwards, 2010). Collaboration and authenticity are key components in successful online courses.

Courses that offer authentic assessments, which are applicable to life after the institution have become an integral part of online learning adoption in higher education. Reductionism was common among online course programs in their infancy and continues to occur today. Courses are reduced to the bare bones of standalone tests and assignments, much like one would see in a university survey course. While many online programs still favor "reductionism," a paradigm shift is beginning to occur, which favors complex course design where authentic tasks are embedded in the curriculum (Herrington, Reeves, & Oliver, 2006, p. 233). Authentic tasks have real-world relevance to the careers that students wish to pursue after completion of college coursework, and serve as practice and preparation for professional employment (Herrington, Reeves, & Oliver, 2006, p. 236).

Online educational experiences have the potential to be interactive environments where students are able to collaborate, communicate, share, and discuss. Growing enrollment suggests that there is a need for universities to revisit current curricula and design of online courses, so that they prove to be challenging and rigorous environments in which students can prepare for the future. National educational goals demand that students are ready for the workforce after completion of college. Virtual learning environments, whether as supplements to traditional courses or completely online, should give students opportunities to take part in authentic assessment, real life experiences with relevance, and critical development of new literacies. The paradigm shift has begun and both students and instructors should be cognizant of changing their roles as learners and teachers.

## Online learning as a dissociative process

Educational technology is at the forefront of educational debates in both K-12 and higher education. A crucial aspect of the controversy surrounding how technologies are used is the suggestion that online learning environments deviate in purpose from the relationships and connections made in traditional classroom environments. Central to this argument is the concept that "educational technology participates in the cultural context and is as much a part of the learning problem to be identified as it is of the solutions implemented" (Belisle, 2001, p. 25). Saugstad (2002), when examining the work of Aristotle, suggested that knowledge is primarily seen as a product rather than a competence which suggests human activity (p. 378). This suggestion contributes to a critical view of the relevance of current online educational systems. Separating the person from the product does not contribute to learning. It also suggests that online learning in higher education, in its current state, does not sufficiently provide students with engaging and rigorous material in preparation for professional careers. Belisle (2001) suggests

that this perspective of learning is flat and focused on learning as opposed to teaching (p. 15). Hamilton (2004) refers to the delivery of knowledge style systems as fast knowledge or 'McKnowledge' (p. 844). Although the socio-cultural aspect of online education has been realized it has not come to fruition.

Online education began in the 1990s when the Internet became widely utilized (Ribsaman, 2000). Ribsaman (2000) implies that there is a difference between distance education and online education, and this difference lies in transmission and interaction. Distance education promotes the autonomy of learners, but online education actually involves students in active participation, socialization, and interaction (Ribsaman, 2000). Distance education is offered by 56% of all 2-4 year institutions, while online education is primarily offered through public institutions and large universities (Waits and Lewis, 2003; Allen & Seaman, 2006). For this reason certain aspects of online learning environments have come into question with the primary concern being the impact on students. This view returns to the concept of dissociation, in that students in fully online programs miss out on campus experiences that would connect them with instructors and students (Bejenaro, 2008, p. 411). This suggests that online atmospheres are devoid of community experiences where students are able to build relationships and construct knowledge based on differences in perspective and background.

Critics of online education argue that virtual environments are not able to provide students with the same quality and caliber of education that traditional, face-to-face courses can. They also suggested that online environments expect too much from students in terms of self-discipline and this expectation can lead new students and students unfamiliar with online education to failure (Bejenaro, 2008, p.412). In order for students to be successful in online courses a different level of support is needed from instructors. It is easy for students to become isolated and completely independent in online course without the facilitation of the instructor. Instructors should provide students with "corrective feedback, encouragement, and motivation" to ensure success in learning (Young, 2006, p. 73).

Sub-standard work is another common concern of critics. Since there are not national standards which outline minimum knowledge and skills that students should develop, it is difficult to discern whether online institutes are diploma mills or legitimate institutions of higher education (Pina, 2010, p. 122). Although there are initiatives to establish commonality among college coursework statewide and nationwide, plans have not been finalized (Pina, 2010, p.122). Although there are many legitimately accredited online educational programs, a lack of sufficient standards, confusing accreditation processes, and research studies makes them difficult to decipher from substandard institutions (Pina 2010, p. 123).

Another debilitating perspective that surfaces in dialogue pertaining to online learning is students as receptacles for knowledge. Participation is removed from autonomous, distance education courses, in which students receive transmitted materials, interpret those materials, and create a product in isolation from peers. Sfard (1998) describes this process in a way that views the student as a consumer of knowledge, rather than a creator of knowledge (p. 5). Another concept related to the idea of consuming knowledge is "dialogue in teaching," which includes the socio-cultural backgrounds of unique learners (Bakhtin, 2011, p. 1111). Some critics would argue that communication and dialogue between students and instructors is missing from distance education, and for this reason higher education administrators should consider a paradigm shift to more participatory and active online educational systems.

Some institutions, such as the University of Phoenix, have been successful in delivering what is considered to be quality online education to a diverse population of students, among them working adults. However, admission requirements have also been examined, and can explain why enrollment in some online colleges is so prevalent. The University of Phoenix requires nothing

more than a high school diploma for admittance, and is also willing to transfer work experience into course credits. While this may seem like an acceptable alternative to traditional schooling, some argue that it perpetuates conditions that are not conducive to academia (Chau, 2010, p. 179). Online education critics concede that institutions like the University of Phoenix constitute a multi-million dollar industry, but are merely diploma mills that cause damage to more reputable institutions. This claim lies in the fact that online universities sometimes have what is considered sub-standard admissions requirements, faculty that have not earned doctoral degrees, or lack consistent accreditation. While tuition at an online university may be more cost effective for both the student and instructor, researchers question who is paying the price (Pina, 2010).

A theory which seeks to explain education's leniency towards educational technology is the concept of memes or 'actively contagious ideas.' Technology is a consistent presence in our lives, which is constantly changing and evolving. Memes in educational technology might include using wikis, youtube videos, social networking, and Skype in the classroom, because it is the current contagion (Lynch, 1996). Although traditional education is working as usual, technology must have its place because it is the active contagion of the twenty-first century. Contingent with this notion is the idea that future professionals will not possess the proper skills necessary for success in society because students are receiving only enough information to be productive and efficient (Lynch, 2006). This concept directly correlates with critics who see higher education's lean towards capitalism through new management regimes and privatization. Chau (2010) argues that schools should not be run or seen as businesses because ultimately the main goal of universities is to educate students and create valuable citizens (p. 183). If education does take on a completely corporate business model, dissociation is inevitable because "teaching and learning will become decontextualized, simplistic, and mechanistic" (Grineski, 2000, p.22).

Faculty also suffer in the wake of online course development and creation. Instructional design and curricula building often times are not seen worthy of promotion or tenure, but are required components of teaching online courses. Giving full attention to instruction of both face-to-face and online classes can become a stressful challenge (Chau, 2010, p. 185). A misconception that students sometimes place on instructors is the constant availability. A shift to asynchronous learning outside of bricks and mortar time constraints creates an expectation in some students that faculty should be readily available at all times (Chau, 2010, p.185). Faculty may also experience a loss of ownership of the course which they created, and it becomes property of the institution for which it was created. This phenomenon contributes to the commodity, production, and consumer schema (Chau, 2010, p. 185).

The present push towards online learning is fueled by the theory that in order for students to compete professionally and globally they must have access to digital literacies and technological advantages. However, the digital divide is not considered in this argument. While access to technology is marketed as the key to the future, consumers in lower socioeconomic circumstances are begin left out of the equation (Chau, 2010, p. 185). If online learning is designed to reach a wider audience of learners and increase accessibility, flexibility, and mobility why is digital division ignored? Another implication of this is the element of privilege, which is suggested to become prevalent as "diploma mills" grow and legitimate institutions struggle to compete. Quality education may become a commodity reserved only for wealthier populations (Chau, 2010; Pina, 2010).

Online education and distance education programs are becoming more prevalent throughout institutions of higher education. However, instructors, administrators, and students should approach online learning environments with caution. Online education, by definition, suggests that students and instructors interact, collaborate, discuss, and share. It also implies that students are critically thinking, problem solving, engaging, and participating. Unfortunately, research suggests that online education, while the wave of the future, is not the norm. Distance education,

which favors consumerism, capitalism, and dissociation is common practice. By these ramifications, success in an online program does not necessarily lead to excellence in a profession or career, or sensational citizenry, but productivity and efficiency.

## Conclusions

For online education to be meaningful for students and instructors universities must question the mission of the institution. Are we in the business of producing workers or educating students? Can both of these activities occur simultaneously? Most importantly, is technology an effective way to teach and learn? These questions must be considered when evaluating the validity and success of online education.

While online education lacks the substance needed for higher education, distance education has the potential to set a high standard for valuable learning experiences in virtual environments. Instructors and students can benefit from an environment that is rich in communication, collaboration, and community. Courses without these imperative components have no true educational value, and should be redesigned to engage students in meaningful learning experiences. Students should be active participants who take part in constructing knowledge and making meaning (Green, 2010).

Distance education also embraces Gardner's (1983) theory of multiple intelligences and creates a space for digital literacies to be developed (Adams, 2004). If done correctly, distance education can meet the unique needs of all students through innovative technological tools such as Elluminate, Echo 360, and advanced options in blackboard. Schools that choose to add these components to their online courses can create opportunities for synchronous and asynchronous instruction, real-time communication, and collaborative course work. Tools that enable these opportunities include live and recorded lessons by instructors, chatting abilities, journal writing and peer review, and wiki sites. All of these learning options have the potential to reach diverse populations of students.

Online education promotes learning that is one-dimensional in scope and does not have the ability to effectively provide students with what they need. It is difficult to learn without the assistance of face-to-face instruction and meeting times, and often times students do not reach out to instructors when they are struggling in an online course. The dissociative process is in full effect when students do not feel that they have a communicable relationship with their instructors (Hamilton, 2004). Unfortunately, this version of online education is prevalent because it is cost effective and promotes a corporate model which creates productive employees for the work force (Chau, 2010).

While it may seem that technology is the wave of the future, some researchers caution this shift. Before distance education is adopted in either a fully virtual or blended environment universities should first decide if this option is an effective way to teach. The term "digital native" is used frequently in research that views educational technology favorably. However, there is has been a limited amount of research conducted, which suggests that students truly are digital natives and that technology is the best way for students to learn (Lea & Jones, 2011).

An essential discussion which needs to be at the center of distance education adoption is its relationship to best practice. Although twenty-first century students might be savvy in the technical uses of smart phones and tablets, are they skilled in using these tools for learning? It seems that technology in education is utilized because of its ability to lower costs for students and institutions, and to increase accessibility, but the conversation on efficacy remains unspoken.

## References


Adams, N. B. (2004). Digital intelligence fostered by technology. *Journal of Technology Studies*, 30(2), 93-97.

Allen, I. E., & Seaman, J. (2006). *Making the grade: Online education in the United States*. Needham, MA: Sloan Consortium.

Allen, I. E. & Seaman, J. (2008). Annual report: The power of learning. Retrieved from http://www.apollogrp.edu/Annual-Reports/2008%20Annual%20Report.pdf.

Bakhtin, M. (1981). *The dialogic imagination*. Austin, TX: University of Texas Press.

Belisle, C., Rawlings, A. & Van Seventer, C. (2001) T*he educational multimedia taskforce 1995-2001: Integrated research effort on multimedia education and training.* Luxembourg: European Commission. Retrieved from: http://www.cordis.lu/ist/ka3/eat/training_publ.htm.

Bell, F. (2011). Connectivism: Its place in theory-informed research and innovation in technology-enabled learning. *International Review of Research in Open and Distance Learning*, 12(3), 98-118.

Bejerano, A. R. (2008). The Genesis and Evolution of Online Degree Programs: Who are they for and what have we lost along the way?. *Communication Education*, 57(3), 408-414.

Chau, P. (2010). Online higher education commodity. *Journal of Computing in Higher Education*, 22(3), 177-191.

Edwards, S. (2010, April). Teaching through assessment: The merging of technology and assessment in teacher education learning contexts. Paper presented at ACE2010:Digital Diversity Conference, Melbourne.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Green, N. C., Edwards, H., Wolodko, B., Stewart, C., Brooks, M., & Littledyke, R. (2010). Reconceptualising higher education pedagogy in online learning. *Distance Education*, 31(3), 257-273.

Grineski, S (2000). I've a feeling we're not in Kansas anymore: The commercialization and commodification of teaching and learning in higher education. *Bulletin of Science,Technology & Society*, 20 (1), 19-28.

Hamilton, D., Dahigren, E., Hult, A., Roos, B., & Söderström, T. (2004). When performance is the product: problems in the analysis of online distance education. *British Educational Research Journal*, 30(6), 842-855.

Herrington, J., Reeves, T. C., & Oliver, R. (2006). Authentic tasks online: A synergy among learner, task, and technology. *Distance Education*, 27(2), 233-247.

Hoskins, B. (2011). Demand, growth, and evolution. *Journal of Continuing Higher Education*, 59(1), 57-60.

Jaschik, S. (2009, June). The evidence on online education. Inside Higher Ed. Retrieved from http://www.insidehighered.com/news/2009/06/29/online

Lea, M. R. & Jones, S. (2011). Digital literacies in higher education: Exploring textual and technological practice. *Studies in Higher Education,* 36(4), 377-393.

Lynch, A. (1996). Thought contagion. New York: Basic Books.

Lynch, K, (2006). Neo-liberalism and marketisation: The implication for higher education. European Educational Research Journal, 5(1), 1-17.

Mayadas, A., Bourne, J., & Bacsich, P. (2009). Online education today. *Journal of Asynchronous Learning Networks*, 13(2), 49-56.

McCann, J., & Holt, R. (2009). An exploration of burnout among online university professors. *Journal of Distance Education*, 23(3), 97-110.

Moloney, J. F., & Oakley, B. (2010). Scaling online education: Increasing access to higher education. *Journal of Asynchronous Learning Networks*, 14(1), 55-70.

Pina, A. A. (2010). Online Diploma Mills: Implications for Legitimate Distance Education. *Distance Education*, 31(1), 121-126.

Ribsaman, M. (2000). What is distance education? Defining the concepts and terms which have characterized the field. Retrieved from http://www.distance-educator.com/index1a101600.phtml.

Rheingold, H. (2010, September/October). Attention and other 21st century social media literacies. *Educause Review,* 45(5), 14-24.

Saugstad, T. (2002) Educational theory and practice in an Aristotelian perspective. *Scandinavian Journal of Educational Research*, 46(4), 373-390.

Seaman, I.E. & Allen, J. (2010). Class differences, online education in the United States, 2010. Babson Park, MA: Babson Survey Research Group.

Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher.* 27(2), 4-13.

Siemens, G. (2004). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*. Retrieved from http://www.elearnspace.org/Articles/connectivism.htm

U.S. Department of Education Office of Educational Technology. (2010). Transforming American education--Learning powered by technology. Retrieved from http://www.ed.gov/sites/default/files/netp2010-execsumm.pdf.

Waites, T., & Lewis, L. (2003). Distance education at degree-granting postsecondary institutions 2000-2001. Washington, DC: U.S. Department of Education, National Center for Educational Statistics.

Young, S. (2006). Student views of effective online teaching in higher education. *American Journal of Distance Education*, 20(2), 65-77.

Zhu, C., Valcke, M., & Schellens, T. (2010). A cross-cultural study of teacher perspectives on teacher roles and adoption of online collaborative learning in higher education. *European Journal of Teacher Education*, 33(2), 147-165.

## About the Author

**Sasha Reese** is a doctoral candidate in Indiana University of Pennsylvania's Curriculum and Instruction program. She is a Learning Support Teacher and Student Support Team Leader at Commonwealth Connections Academy, a cyber charter school. Sasha serves as an adjunct English distance education for Burlington County College in New Jersey. Her research interests include technology in special education , inclusive learning environments, transition to careers for students with disabilities, virtual learning, literacy, and global education.

Email: s.a.connors@iup.edu

**Return to Table of Contents**

Return to Table of Contents

**Editor's Note**: This study addresses administrator, designer, teacher and student with a wealth of practical information supported by research and years of experience as a teacher and trainer.

# Closing the *significant differences* gap between distance and face-to-face instruction

**Joseph L. Holmes**
**USA**

## Abstract

Distance education is growing. Opportunities for distance education continue to grow, the variety and number of students attending distance courses continue to grow, and course offerings continue to grow. However, reports claiming there are no significant differences sit alongside reports claiming there are significant differences between classroom and distance methods, leaving little doubt that not all distance education offerings *measure-up*. The focus of this paper is to help close the *significant differences* gap by providing research insight into creating *equilibrium* so student, faculty, and administration needs can all be met. Creating equilibrium starts with understanding learners and the learning environment. Appropriate levels of interaction are a must. Following a design concept that recognizes and supports synchronous and asynchronous interaction can help create equilibrium. Creating equilibrium starts with understanding learners and the learning environment. From this understanding, designers can include appropriate levels of interaction, while recognizing and supporting both synchronous and asynchronous environments.

**Keywords**: *Blended learning, curriculum design, distance education, e-learning, online learning, online education, significant differences*

## Introduction

John is very excited. Today is the big day. He made a major life decision—to go to college at age 27. Like many others, circumstances prevented John from fulfilling his dream of attending college straight out of high school. Now he is married, and his wife is expecting their third child in six months. The journey leading to his first class actually started about one year ago.

John has advanced as high as he can in his company without a degree. He would like to move into a managerial role, and some of the company's managers have spoken to him about his potential. But company policy prevented John from moving into a leadership position because of his lack of post-secondary education.

John was on-line one night and noticed an advertisement offering a completely online college degree. After further research, discussions with his wife, and the financial aid process, John was ready to begin his journey. He could not believe he could actually complete his degree after all. And then it happened.

From almost minute one, his experience was a disaster. Students were to view video presentations and then *discuss* the content in a thread. The videos were almost impossible to stay awake through—a monotone instructor's face just droning on and on, often jumping from one topic to another, then back again.

Posting to threaded discussions was worse. The prompt instructed students to *discuss the content of the video*. That was it. John was confused. Discuss…how? He made an attempt at a post, but was discouraged that he really had not understood the content, and he really had nothing positive to say. Discouragement rose as he looked at fellow student threads; they also had little to say.

Responding seemed like a herculean effort. Never had he put so much brain power into so little gain. Week two was much the same.

Finally during week three, the grades for week one and two were posted—his first instructor interaction since John received his *welcome* email. John received his first *D* ever. No feedback. No idea what warranted his grade. He had no standard to work toward. He e-mailed his instructor, but a week went by with no response. John came to the quick conclusion that online college was not for him. His only means of success would be in a face-to-face class, but his schedule made that impossible. He withdrew and concluded college was not in his future.

Although John's story is fictional and an extreme example, many have similar experiences. If John and other adult learners like him had positive first impressions of distance education, the end result may be different. What makes one on-line class so different than another? How large are these differences or gaps between distance and traditional class learning experiences?

The focus of this paper is to identify and close gaps between distance and traditional delivery methods from an adult learner perspective. We will begin with a short discussion on distance education terminology, and an understanding some of the differences between distance and face-to-face methods. Then attention will shift to closing the gap by identifying and implementing best practices to create *equilibrium* so student, faculty, and administration needs can all be met.

## Terminology discussion

According to Allen and Seaman (2011), "online courses are those in which at least 80 percent of the course content is delivered online" (p. 7). They define *face-to-face instruction* as "courses in which zero to 29 percent of the content is delivered online…" (p.7). They further describe the mix of online and face-to-face as *blended learning*, where "…instruction has between 30 and 80 percent of the course content delivered online" (p. 7).

Additionally, this discussion will use some industry-standard terminologies. For example, the terms *distance education, distance learning,* and *distance methodologies* will indicate any generic situation where learners and faculty are geographically separated. *Classroom-based*, *traditional classroom,* and *traditional methods* will be used interchangeably with face-to-face instruction.

## Distance education: expanding opportunities

The population of online students appears to be ever-increasing. It is not only at the collegiate level—it has found its way into the K-12, corporate, and free internet access environments (Mayadas, Bourne, & Bacsich, 2009).

Since 2003, Allen and Seaman (2011) have reported that "[the number of] students taking at least one online course has increased at a rate far in excess of the growth for the overall higher education student body" (p. 11), with "a compound annual growth rate of 18.3 percent [from 2002 to 2010]" (p. 11). These numbers may be increasing as more adults take advantage of distance education opportunities because they cannot attend the face-to-face classroom due to "time restraints imposed by work, family, community responsibilities, or lack of proximity to a suitable educational institution" (Mayadas et al, 2009, p. 49).

As the population of distance learners grows, the type of educational opportunities accessed at a distance also grows. Not surprisingly, computer and information sciences top the attendance list in distance degree programs. And there are many other technical fields of study offered at a distance such as health care, social sciences, engineering, and even agriculture (Radford, 2011).

So the opportunities for distance education continue to grow, the varieties and numbers of students attending distance courses continue to grow, and course offerings continue to grow. But does that mean more is better?

## Differences or no differences: that is the question

One does not need to search very hard to find a study, report, or claim describing little or no significant differences between face-to-face instruction and distance education (Allen & Seaman, 2011; Larson & Sung, 2009; Pang, 2009; Weber & Lennon, 2007). And courses applying distance methodologies have been seen as more effective, efficient, and enjoyable than their face-to-face counterparts (Arend, 2009; Larson & Sung, 2009; Lapsley, Kulik, Moody, & Arbaugh, 2008; Sherman, Crum, & Beaty, 2010). Distance methods can promote high levels of instructor interaction and higher levels of student learning through the application of teamwork, high-level problem solving, peer review, debate, individual and group projects, and other similar activities (Arend, 2009; Jackson, Jones, & Rodriguez, 2010; Power & Gould-Morven, 2011, Sherman et al, 2010).

But not all distance education is the same. There are certainly instances where differences or even significant differences between traditional classroom and distance methods occur, and where instructor and student biases lean toward face-to-face methods with higher levels of interaction (Chen, Jones, & Moreland, 2009; Allen & Seaman, 2011; Power & Gould-Morven, 2011; Rolfe, 2007).

Traditional classrooms may have higher levels of student and instructor interaction along with better, richer, and timelier instructor feedback (Chen et al, 2009). Additionally, as courses progress and instructor/student relationships grow, face-to-face classroom feedback may feel more *natural*, and instructors may be able to more readily *adapt* to class situations based on verbal and non-verbal cues (Chen et al, 2009).

## Closing the significant difference gap

### *The need for equivalence*

It is considered a best practice when the objectives of the same course taught either at a distance or in the classroom are "comparable or equivalent" (U.S. Department of Education, 2006). However, the concept of a direct course *transcription* from the classroom to online should be an immediate *red flag* warning, possibly indicating an inadequate consideration of learning at a distance (U.S. Department of Education, 2006). These concepts may seem to contradict themselves, but are actually supported by the equivalency theory (Simonson, Smaldino, Albright, & Zvacek, 2012).

The equivalence theory describes how "equivalent, rather than identical, learning experiences should be provided to each learner whether local or distant" and "equivalent outcomes, rather than identical, should be expected of each learner [whether local or distant]" (Simonson, et al, 2012, p. 52). To ensure equivalency, the course designer must create learning experiences and strategies for providing equivalent experiences and outcomes (Simonson, et al, 2012).

Ensuring learning experiences and outcomes are equivalent is a great start to closing delivery method difference gaps. Yet gaps potentially remain. The question becomes: are differences between online and face-to-face courses due to the *nature* of the delivery method or to the *manner* in which they were delivered?

### *Method versus Manner*

Like John in the earlier scenario, many are likely to perceive the quality of a distance learning experience is directly related to its technology-based delivery. However, based on several years

of research, Clark (1983) argued that "summaries and meta-analyses of media comparison studies clearly suggest that media do not influence learning under any condition" (p 445).

Nearly 30 years later, Simonson et al (2012) describe how many have tried to refute Clark's 50-plus years of research, yet none have succeeded, resulting in a consensus that "media are mere vehicles and that we should give up our enthusiasm that the delivery media for instructional content significantly influences learning" (p. 8). They further conclude that "students of all ages can learn from instruction delivered using technology, and that distance education works" (Simonson et al, 2012, p. 8).

The conclusion is obvious—differences are more likely attributed to the manner in which they were delivered. So how is the highest quality online experience created? Gaining an understanding of the stakeholders is a good place to start—with this knowledge, designers can strive to meet all stakeholder needs.

### *The Need for Equilibrium*

Students are not the only ones that must be satisfied with online education. Power and Gould-Morven (2011) suggest there are three *stakeholder* groups in online education, each with differing stakes. "*Students* are naturally most concerned about *accessibility*…*faculty* are typically defenders of *quality*...[and] *administrators* are tasked with assuring system *cost-effectiveness*" (p. 25). Not only does each group have its own priority, each group "is naturally inclined to promote its own priority" (p. 25), thereby causing potential conflict with each other.

The student priority is accessibility to online education, the faculty priority is to maintain course quality, and the administration priority is acceptable cost. So the concept is to bring all three stakeholders to an acceptable level of satisfaction or balance (Power & Gould-Morven, 2011).

Thus if students desire greater access to more courses, the demand on faculty to produce and develop quality courses increases. However, faculty may not have adequate time and resources to produce. Thus they begin their own *push* to administrators for more resources (additional faculty, better software/hardware, etc.). However, administration pushes back due to budget constraints. This constant push and pull can result in "overtly *non-aligned priorities*" (Power & Gould-Morven, 2011, p. 26) between the stakeholders. Administration pushes back with a lack of funding, faculty pushes back with a resistance to develop more courses, and students push back with a lack of participation (Power & Gould-Morven, 2011).

In order to be effective, the groups' priorities must *equalize*:

Built into this conceptualization is the notion of a threshold, defined here as a theoretical point of equilibrium whereby all three stakeholder groups attain an acceptable level of satisfaction of their priorities. We believe that our conceptualization explains why some attempts at expanding accessibility to [distance education / online learning] in the past have failed (Power & Gould-Morven, 2011, p. 26).

By meeting each stakeholder's needs, the priorities of each group should eventually equalize, resulting in accessible, affordable, and high quality learning opportunities that are sought, attended, and successfully completed by learners (Power & Gould-Morven, 2011). Considering stakeholder needs and trying to foster equilibrium should be an underlying concept that helps drive solid instructional design.

## Best Practices to Create Equilibrium

### *Learners and the Learning Environment*

Understanding the learners and their environment by conducting a front-end analysis is an extremely important instructional design step. Although different design models may be used

depending on the level of effort needed, there is general agreement to conduct learner and learning environment analysis early in the design process (Dick, Carey, & Carey, 2005; Smaldino, Russell, Heinich, & Molenda, 2005).

Malcolm Knowles "has been a pioneer in the field of adult learning and is a strong proponent of the position that adults do not learn like children" (Clawson, n.d., p 3-1). Clawson (n.d.) summarized Knowles' assumptions regarding adult learners and andragogy (how adults learn), and should be used as a guide for understanding adult learners:

> Adults are motivated to learn from being in situations in which they see a need to learn. Consequently, adult learning settings should begin with topics that address the adult audience's current learning needs.
>
> Adults are oriented to the broad range of affairs in life, not to narrow subjects. Thus, adult teaching should be multidisciplinary rather than subject-oriented.
>
> Adults learn from their experience. Therefore, the most productive adult learning comes from the analysis of adult experience.
>
> Adults have a deep need to be self-directing. Therefore, teaching adults should be involved in setting the agenda for their learning.
>
> Individual differences broaden and harden with age. Therefore, adult teaching should make allowance for differences in style, time, place, pace, focus, and method (p. 3-2).

Differences among adult learners are vast. Variances in age, location, employment status, job role, marital status, time between education experiences, and many other factors create a challenging situation for any designer. Considering basic adult learner characteristics will help narrow the focus; however, a more in-depth study and assessment than described here is certainly necessary. Using these characteristics as an underlying foundation for the design process can ensure content is relevant, is presented using a variety of strategies, draws upon real-life experiences, and is adaptable to adult learning situation.

Another relevant design function it to look at both the learning and performance environments. Dick et al (2005) see this as a very important aspect to the design process, and describe it as a concurrent process with learner analysis. They describe how effective design attempts to replicate the performance context (where the application of skills takes place) into the learning context (where the learner *goes* to learn) as much as possible.

This is obviously something that may require designers to think outside the box. For example, courses may require learners to *go into the field* for practical application sessions, enter a *virtual world* to be an active participant in a scenario, or other similar activities to create the most realistic learning environment possible.

### *Interaction*

Interaction is one common thread that links both positive and negative reports regarding distance and classroom methods. Generally, higher interaction levels equate to higher course satisfaction, and lower interaction levels generally equate to lower course satisfaction (Arend, 2009; Chen et al, 2009; Jackson et al, 2010; Larson & Sung, 2009; Lapsley et al, 2008; Power & Gould-Morven, 2011; Rolfe, 2007; Sherman et al, 2010). Thus promoting interaction between learners, learners and content, and learners and instructors is a key component that should be designed into the curriculum (Arend, 2009; Chapman, Storberg-Walker, & Stone, 2007; Chaves, 2009; Simonson et al, 2012; Scagnoli, Buki, & Johnson, 2009). However, Simonson et al (2012) caution that more interaction does not necessarily equate to a better course.

Simonson et al (2012) state "interaction is *needed and should be available*. However, interaction is not the *end all be all* (emphasis added)…[nor is it a] magic potion that miraculously improves distance learning;" "forced interaction can be as strong a detriment to effective learning as its absence" (p. 83).

It only makes sense that levels of interaction may either increase or decrease as the need for interaction increases or decreases. Therefore, curriculum design should seek to promote appropriate interaction levels based on the desired learning experiences and outcomes.

### *Four Levels of Interaction*

The U.S. Department of Defense (DOD) (1999) describes four levels of interactivity associated with multi-media instruction. Interactivity begins at Level 1 (passive) and progresses through Level 4 (real-time participation), and is described solely on the basis of interacting with the learning system (DOD, 1999). Chaves (2009) translates these levels into the interactive distance learning environment through his "On-Line Curriculum Interaction Model" (p. 4).

Chaves' (2009) model brings together "adult learning theory, the various forms of student involvement, and their application within various online course interaction tools to achieve greater learning transfer" (Chaves, 2009, p. 4). The model "can be used to inform and create effective curricular designs within the various learning management platforms" (p. 4).

The DOD (1999) describes *Level 1* interaction as passive, and only requires students to engage with the system to move forward; information is limited to fact and rule learning. Similarly, Chaves (2009) describes Level 1 interactivity as primarily learner focused. The learner is totally self-directed, and passively interacts with basic information such as course requirements and introductory presentations using media such as readings, slide presentations, webcasts, etc. Interaction with the instructor and fellow students is completely asynchronous, and is generally in the form of greetings, announcements, requirements, schedules, and other introductory type information (Chaves, 2009).

In *Level Two*, the DOD (1999) describes interactivity as limited participation where students may interact at basic levels to provide responses to questions and practice simple skills. In Chaves' (2009) model, interaction is also increased, reaching what can be described as a semi-synchronous environment. Here student-student and student-instructor interaction may happen through threads, blogs, and other non-real-time communications. Discussion is in the form of responding to other's posts and e-mails, creating a higher level of learning than Level One (Chaves, 2009).

*Level Three* increases in interactivity and intricacy. The DOD (1999) refers to this as complex participation, where students engage with the system on decision-making activities, branching scenarios, and other complex operations. In the online environment, this translates to a fully synchronous experience (Chaves, 2009). Real-time chat sessions may begin to have a social feel with an increased sense of community. Student teams may work together in chat rooms, and high student-instructor interaction is the norm (Chaves, 2009).

The DOD (1999) describes *Level 4* as real-time participation. Here the participant is fully immersed in real-time simulations in an operational setting. An example of this is a fully-functional flight simulator used for qualification and proficiency checks. This concept transitions well to the online class.

According to Chaves (2009), "Level Four interaction offers the highest form of e-learning community since it is within this virtual environment where learner-content, learner-learner, and learner-instructor can achieve its most intimate level of classroom engagement" (p. 4). This level in many ways mimics the interaction of the live classroom through communication methods including live voice and camera. Lectures are provided where students can see the presentation

materials, ask questions, discuss with fellow students, answer questions posed by the instructor, etc., all while geographically separated (Chaves, 2009).

Considering these levels can be a great guide for selecting activities and strategies that promote appropriate interaction for desired learning experiences and performance outcomes. This is definitely where designers need to consider manner (level) of interactivity then determine how to implement the method.

## Designing for interaction

One way to leverage the four levels of interaction is by thinking *BOLD*, or the "*blended online learning design*" (Power & Gould-Morven, 2011, p. 29). Basically BOLD "implements a fully online, combined synchronous- and asynchronous-based learning environment with advanced knowledge-sharing and -creation tools. This hybrid online environment allows users access to a community learning experience as well as 24/7-accessible resources" (Power & Gould-Morven, 2011, p. 29). In short, BOLD brings the synchronous and asynchronous environments together.

The BOLD approach supports learning management system (LMS)-based activities such as reading and writing assignments, discussion board postings, accessing slide presentation, etc., as well as supporting faculty-based activities such as real-time lectures and discussions. BOLD may seem like the only sensible approach to designing online courses; however, Power and Gould-Morven (2011) caution that BOLD is not necessarily the best solution for all instances.

BOLD should be considered a "trade-off model" because it "allows for spatial freedom…but not temporal freedom" (Power & Gould-Morven, 2011, p. 31). In other words, theoretically all students with the technology means can participate in BOLD courses regardless of their distance from the campus. Yet the same students must be willing and able to commit their schedules for live course sessions.

The BOLD methodology has definite advantages: accessibility for instructors and students, interactive real-time learning environments, and minimal geographic limits. Additionally, Power and Gould-Morven (2011) feel faculty who are just beginning online teaching adventures will likely have an easier transition moving to a BOLD course because of classroom similarities.

One other advantage is the potential for substantial time and cost savings. Because BOLD courses maintain the real-time classroom component, the need for complicated design efforts to create interactivity and equivalent learning experiences in the asynchronous environment is eliminated, saving both time and money. And if development time and costs decrease, course development can increase, instructor availability can increase, and student satisfaction with more course choices can increase (Power & Gould-Morven, 2011). And with happy students, happy faculty, and happy administration, equilibrium is achieved.

## Conclusion

Distance education is definitely growing. Opportunities for distance education continue to grow, the variety and number of students attending distance courses continue to grow, and course offerings continue to grow. Some distance offerings are as good or better their traditional counterparts, but others are lacking. This research sought to help close gaps between classroom and distance delivery by providing insight into creating *equilibrium* so student, faculty, and administration needs can all be met. Start creating equilibrium by understanding learners and the learning environment, and use that understanding to help create appropriate interaction levels. Implement a design concept that recognizes and supports interaction in both the synchronous and asynchronous environment. With sound design geared to stakeholder needs, equilibrium is possible.

## References


Allen, E., & Seaman, L. (2011). *Going the distance: Online education in the United States, 2011*. Retrieved from http://www.onlinelearningsurvey.com/reports/goingthedistance.pdf

Chen, C., Jones, K., & Moreland, K. (2009). Distance education in a cost accounting course: Instruction, interaction, and multiple measures of learning outcomes. *Journal of Educators Online,* 7(2). Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ904074

Chaves, C. (2009). On-line course curricula and interactional strategies: The foundations and extensions to adult e-learning communities. *European Journal of Open, Distance and E-Learning,* n1. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ911758

Chapman, D, Storberg-Walker, J., & Stone, S. (2007, February-March). *Hitting reply: A qualitative study to understand student decisions to respond to online discussion postings*. Paper presented at the International Research Conference in the Americas of the Academy of Human Resource Development, Indianapolis, IN. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED504835

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of Educational Research*, 53(4), 445-459. Retrieved from http://www.jstor.org.ezproxy.liberty.edu:2048/stable/pdfplus/1170217.pdf

Clawson, J. (n.d.). Adult learning theory: it matters. Retrieved from: http://bb7.liberty.edu/bbcswebdav/pid-15134082-dt-content-rid-72714432_1/courses/EDUC701_D02_201220/EDUC701_LUO_8WK_DEV_ImportedContent_20110308040634/Adult%20Learning%20Theory.pdf

Dick, W., Carey, L., & Carey, J.O. (2005). *The systematic design of instruction* (6th ed). Boston: Pearson and AB

Jackson, L., Jones, S., & Rodriguez, R. (2010). Faculty actions that result in student satisfaction in online courses. *Journal of Asynchronous Learning Networks,* 14(4), 78-96. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ909918

Larson, D., & Sung, C. (2009). Comparing student performance: Online versus blended versus face-to-face. *Journal of Asynchronous Learning Networks*, 13(1), 31-42. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ837556

Lapsley, R., Kulik, B., Moody, R., & Arbaugh, J. (2008). Is identical really identical? An investigation of equivalency theory and online learning. *Journal Of Educators Online*, *5*(1), 1-19. Retrieved from http://www.eric.ed.gov/PDFS/EJ904041.pdf

Mayadas, A. F., Bourne, J., & Bacsich, P. (2009). Online education today. *Journal of Asynchronous Learning Networks*, 13(2), 49-56. Retrieved from http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=EJ862347

Pang, K. (2009). Video-driven multimedia, web-based training in the corporate sector: Pedagogical equivalence and component effectiveness. *International Review of Research in Open and Distance Learning*, *10(3)*. Retrieved from http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=EJ847765

Power, M., & Gould-Morven, A. (2011). Head of gold, feet of clay: The online learning paradox. *International Review of Research In Open & Distance Learning*, 12(2), 19-39. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ920732

Radford, A. (2011). Learning at a distance: undergraduate enrollment in distance education courses and degree programs. Stats in brief. NCES 2012-154. *National Center for Education Statistics*. Retrieved from http://www.eric.ed.gov/PDFS/ED524625.pdf

Rolfe, C. J. (2007). Getting the bugs out of the distance learning experience. *College Quarterly* 10(3) 1-35. Retrieved from http://www.eric.ed.gov/ERICWebPortal/contentdelivery/servlet/ERICServlet?accno=EJ813761

Scagnoli, N., Buki, L., & Johnson, S. (2009). The influence of online teaching on face-to-face teaching practices. *Journal of Asynchronous Learning Networks,* 13(2) 115-128. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ862351

Sherman, W., Crum, K., & Beaty, D. (2010). Perspectives on distance technology in leadership education: Transfer, meaning, and change. *Journal of Research on Leadership Education,* 5(13) 589-610. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ913588

Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2012). Teaching and learning at a distance: Foundations of distance education. (5th ed.). Boston, MA: Pearson Education, Inc.

Smaldino, S., Russell, D., Heinich, R., Molenda, M. (2005), Instructional technology and media for learning. (8th ed.). Upper Saddle River, NJ: Pearson Education, Inc.

U.S. Department of Defense. (1999). *Development of interactive multimedia instruction (IMI) (part 3 of 4 parts)*. Retrieved from http://www.au.af.mil/au/awc/awcgate/dod/hbk3.pdf

U.S. Department of Education. (2006). *Evidence of quality in distance education programs drawn from interviews with the accreditation community*. Office of Postsecondary Education. Retrieved from http://www.ysu.edu/accreditation/Resources/Accreditation-Evidence-of-Quality-in-DE-Programs.pdf

Weber, J. M., & Lennon, R. (2007). Multi-course comparison of traditional versus web-based course delivery systems. *The Journal of Educators Online*, *4(2)*. Retrieved from http://www.eric.ed.gov/ERICWebPortal/detail?accno=EJ907748

## About the Author

**Joseph L. Holmes** is a doctoral student in the *Curriculum and Instruction* program at Liberty University. He has been involved in adult education for over 26 years. Joe is a retired Air Force Survival, Evasion, Resistance, and Escape (commonly referred to as SERE) Instructor. As a SERE Instructor, he taught aircrew, special forces, and other high-risk personnel to live off the land, evade captivity, resist interrogation, and effect their own means to return. Since retiring from the Air Force in 2006, he has been supporting the educational endeavors of various government agencies the design, delivery, and evaluation of training. Joe currently lives in Fredericksburg, VA, with his wife of 22 years Amy, and two of his three children—Michael (16) and Sophie (13). His oldest son James is a freshman at Liberty University's School of Engineering. When he is not studying, he and his family enjoy many outdoor activities, including hunting, fishing, skiing, camping, and soccer.

Email: jholmes40@liberty.edu

**Return to Table of Contents**

Return to Table of Contents

**Editor's Note**: Any major change in a system of education deserves careful study to ensure appropriate and timely implementation. Appropriate pedagogy is effective in meeting requirements and expectations at all levels of the academic community, and timely requires that the ground is properly prepared and ready for transition.

# The relation between Iranian EFL teachers' attitude towards ICT and their perception of ICT attributes, cultural perception of ICT, and computer competence

**Fatemeh Alipanahi and Allameh Tabataba'i**
**Iran**

## Abstract

This study explored factors that may influence the attitude of Iranian EFL teachers towards Information and Communication Technology (ICT) and the relation between the teachers' attitude on the one hand and their perception of ICT attributes, cultural perception of ICT, and computer competence on the other. A questionnaire consisting of six sections was administered to 120 EFL teachers in four cities. According to the results: (a) the participants possessed a positive attitude towards ICT; sixty-four per cent of the total variance in the Iranian EFL teachers' attitude towards ICT was accounted for by the independent variables of the study, (b) the respondents reported positive perception of ICT attributes in the following order of strength: observability, relative advantage, complexity, and compatibility, (c) the participants believed that computers should be suitable for the Iranian culture, and (d) most of the teachers reported moderate to high computer competence. Accordingly, for a positive attitude towards ICT, three factors, namely perception of ICT attributes, cultural perception of ICT, and computer competence must be considered. Additionally, given the positive attitude towards ICT on the part of the EFL teachers, computer-directed instruction can be implemented in other EFL contexts where technology is not heeded sufficiently.

**Keywords**: attitude, computer competence, cultural perception of ict, information and communication technology (ICT), ICT attributes

## Introduction

Over the past decade, Information and Communication Technology (ICT) has become better integrated into educational systems. However, previous research has suggested that such technology cannot automatically bring about improved teaching and learning. One variable that has been linked to the effective use of ICT is teacher attitude (Becker, 2000; Braak, 2001; Christensen & Knezek, 2001; Earle, 2002; Kotrlik, Harrison, & Redmann, 2000; Kumar & Kumar, 2003; Murphy, 2000; Turnbull & Lawrence, 2002). For example, there was a computer for every 4.4 students in American public schools in 2003, but the teachers' responses to this technology were less than confident (U.S. Department of Education, 2004). Indeed, only 10% of the public school teachers felt *very well-prepared* for using ICT in their classrooms while the majority felt *somewhat prepared* (53%) or *not at all prepared* (13%).

Rogers (1995) claimed that many factors contribute to whether an individual develops favorable or unfavorable attitude towards an innovation. According to his theory of diffusion of innovation, five main attributes of an innovation influence the attitude of potential adopters: relative advantage, compatibility, complexity (the degree to which an innovation is perceived to be difficult to use), observability (the degree to which the advantages of an innovation are observable), and trialability (the degree to which an innovation can be experimented prior to making a decision about adopting or rejecting it).

According to reasoned action theory (Ajzen & Fishbein, 1980), individual behavior is rational and is based on systematic assessment of information which is available in a certain situation. In addition, attitude towards an object is composed of cognitive, affective, and behavioral components (Ajzen, 1988). Cognitive component refers to the perception of the object, affective component refers to the feelings towards the object, and behavioral component refers to the response to the object.

Although several studies have addressed the relation between teacher attitude and effective use of ICT in the classroom (e.g., Rizza, 2000; Spiegel, 2001), few have investigated this phenomenon in Iran. A study, for example, conducted by Bordbar (2010) showed that lack of time, support, and resources prohibits the use of *computer-assisted language learning* (CALL) activities in some classrooms and that colleagues are the most common resource of new CALL activities outside of formal coursework. The study also suggested that almost all of the teachers had positive attitude towards using computers in the class. Besides, the results pointed to the significance of the following items in shaping teachers' attitude towards computer technology: (1) teachers' vision of technology itself, (2) teachers' experience with it, (3) teachers' level of computer skill and competence, and (4) the cultural environment that surrounds computer introduction into schools. As a pedagogic implication, the researcher proposed that teachers learn better in situated contexts, and technology courses should be designed accordingly.

The present study is an investigation of the relation between Iranian EFL teachers' perception of ICT attributes, cultural perception of ICT, computer competence, computer access, and demographic characteristics on the one hand and their tendency to accept or resist the use of ICT on the other. Thus the following research question has been posed:

Is there any relation between Iranian EFL teachers' perception of ICT attributes, cultural perception of ICT, and computer competence and their tendency to accept or resist the use of ICT?

## Method

### *Participants*

One hundred and twenty Iranian EFL teachers in the cities of Qazvin, Takestan, Abhar, and Zanjan volunteered for the study. All of the teacher participants had teaching experience of one to ten years. There were both male and female participants, 60 male and 60 female EFL teachers. The age range was between 25 and 35 years old, and all of them had at least a B.A. degree in English literature, translation or TEFL.

### *Instruments*

A questionnaire comprised of four sections was developed. One of the sections was intended to elicit information on the EFL teachers' attitude towards ICT (dependent variable) and the three remaining sections targeted the independent variables, namely perception of ICT attributes, cultural perception of ICT, and computer competence. All of the sections are described below.

*Attitude towards ICT.*

This section included 20 statements arranged in three categories following Ajzen (1988): affective (statements 1-6), cognitive (statements 7-15), and behavioral (statements 16-20). Affective statements were about feelings towards ICT in education, cognitive statements dealt with knowledge of ICT, and behavioral statements sought information on the use of ICT. The participants evaluated themselves on a five-point Likert-type scale with the following response choices: 1 (*strongly disagree*), 2 (*disagree*), 3 (*neutral*), 4 (*agree*), and 5 (*strongly agree*). The responses were converted to a mean score, ranging from 1 to 5.

*Perception of ICT attributes.*

This section included 18 statements on a five-point Likert-type scale with the same response choices as in the previous section. The statements were grouped into four categories corresponding to four of the attributes identified by Rogers (1995). The categories are relative advantage (statements 21-25), compatibility (statements 26-30), complexity (statements 31-34), and observability (statements 35-38). One of Rogers' attributes, trialability, was excluded because the majority of the teachers in Iran had no chance of experimenting with computers before computers were introduced into schools. As with the previous section, the responses were converted to a mean score, ranging from 1 to 5. For the sake of systematicity, the negative statements of complexity were reversed; that is, we measured the simplicity degree of ICT in view of the participants.

*Cultural perception of ICT.*

This section consisted of 16 statements on a five-point Likert-type scale described earlier. The statements took into account the respondents' perception of ICT relevance to Iranian culture, especially in academic settings. As with the previous sections, the answers were reduced to a mean score, ranging from 1 to 5.

*Perceived computer competence.*

This section contained 15 statements zeroing in on revealing how competent the respondents considered themselves to use computers for educational purposes. The statements were about software installation (statement 55), basic hardware (statements 56-57), productivity software (e.g., word processing; statements 58-61), telecommunication resources (statements 62-63), basic troubleshooting (statement 64), graphic application (statement 65), grade keeping (statement 66), educational software evaluation (statement 67), organization tools (statement 68), and virus handling (statement 69). Computer competence was quantified on a four-point Likert-type scale, with the response choices being: 1 (*no competence*), 2 (*low competence*), 3 (*moderate competence*), and 4 (*high competence*). Once more the responses were reduced to a mean score, this time ranging from 1 to 4.

### *Data Analysis*

Pearson product moment correlation was employed to describe the relation between attitude towards ICT as dependent variable and perception of ICT attributes, cultural perception of ICT, and perceived computer competence as independent variables. Furthermore, a regression analysis was conducted to determine the extent to which the variance in attitude towards ICT could be accounted for by the independent variables.

### *Procedure*

First, the questionnaire was piloted with 15 volunteer EFL teachers (9 females and 6 males). The participants were asked to complete the questionnaire, reporting any ambiguous or improper wording of the statements and judging the suitability of the questionnaire for the Iranian context. Afterwards, the questionnaire was distributed among 120 EFL teachers in four cities in Iran. All of the questionnaires were returned within 2 weeks.

## Results

In this section, first, full descriptive statistics of the components of the questionnaire (see Method section) are presented in tables. Following each table, the relevant statistics are summarized (in the form of percentage) on the basis of the greatest amount of item agreement, disagreement, and neutrality or the highest and lowest competence depending on the variables examined. Finally,

correlation coefficients of the relation between the independent variables and the teachers' attitude towards ICT and the results of the multiple regression analysis are given.

Cronbach's alpha was calculated to determine the degree of internal consistency of the questionnaire (Table 1). None of the sections had a coefficient value of lower than .60, indicating acceptable levels of reliability.

**Table 1**

***Reliability coefficients of the questionnaire sections***

| Section | Reliability Coefficient |
|---|---|
| Attitude towards ICT | .92 |
| Affective | .79 |
| Cognitive | .84 |
| Behavioral | .85 |
| Perception of ICT attributes | .87 |
| Relative advantage | .77 |
| Compatibility | .61 |
| Complexity | .67 |
| Observability | .70 |
| Cultural perception of ICT | .81 |
| Perceived computer competence | .94 |

Table 2 summarizes the responses to the questions concerning attitude towards ICT and also gives the mean scores for each of the three categories of this section. The participants were found to have an overall positive attitude towards ICT in education, with a mean of 3.98 (SD = .62).

As for the three categories, the highest mean score was observed in the behavioral category. More specifically, the item that was agreed upon to the greatest extent by the teachers (56%) was their being inclined to learn more about computer and the item that was disagreed upon to the greatest extent (67.5%) was the respondents' preference to do things manually rather than by using computers (note that throughout the paper agreement includes *agree* and *strongly agree*, and disagreement includes *disagree* and *strongly disagree*). The item that attracted the largest amount of neutrality was the teachers' avoidance of using computers as much as possible.

Regarding the cognitive category, 91.9% of the respondents agreed that computers are good for getting information and 54% disagreed that learning to use computers is a waste of time. The greatest percentage of neutrality in this category belongs to the teachers' not using computers in their classes.

With regard to attitudes, 57.3% of the respondents found using computers enjoyable. Contentment with the presence of more computers these days was rejected (i.e. disagreed) by 41.8% of the teachers. The greatest percentage of neutrality in the affective category was for hatred of using computers in teaching (44.4%).

**Table 2**
***Attitude towards ICT***

| Items | Responses (%) | | | | |
|---|---|---|---|---|---|
| | SD | D | N | A | SA |
| Affective (Mean: 3.96; SD = .72) | | | | | |
| 1. Computer doesn't scare me at all. | 4.3 | 3.3 | 8.9 | 4.4 | 43 |
| 2. Computer makes me feel uncomfortable. | 3.0 | 37.2 | 41.6 | 6.9 | 11.3 |
| 3. I am glad there are more computers these days. | 37.6 | 4.2 | 4.8 | 7.6 | 45.8 |
| 4. I don't like talking with others about computer. | 4.2 | 24.5 | 43.8 | 7.6 | 4.8 |
| 5. Using computer is enjoyable. | 36.6 | 1.1 | 5.0 | 4.2 | 53.1 |
| 6. I hate using computer in teaching. | 4.1 | 24.5 | 44.4 | 16.8 | 10.2 |
| Cognitive (Mean: 3.96; SD = .62) | | | | | |
| 7. Computer saves time and money. | 41.8 | .8 | 6.2 | 5.4 | 45.8 |
| 8. Schools go well without computer. | 2.2 | 35.8 | 39.1 | 16.3 | 6.6 |
| 9. Students must use computer in all subjects. | 14.6 | 4.8 | 16.0 | 29.4 | 35.3 |
| 10. Learning to use computers is a waste of time. | 1.7 | 52.3 | 36.3 | 7.4 | 1.9 |
| 11. Computer motivates students to study well. | 18.5 | 3.1 | 8.7 | 24.6 | 45.1 |
| 12. Computer is good for getting information. | 1.1 | 3.1 | 3.9 | 41.5 | 50.4 |
| 13. I never use computer in my classroom. | 3.0 | 21.2 | 48.2 | 17.9 | 9.6 |
| 14. Computer can enhance student learning. | 3.7 | 2.2 | 5.0 | 13.9 | 62.6 |
| 15. Computer is more harmful than helpful. | 4.1 | 33.9 | 46.0 | 12.4 | 13.8 |
| Behavioral (Mean: 4.04; SD = .76) | | | | | |
| 16. I prefer to do things by hand rather than with computer. | 14.6 | 52.9 | 14.6 | 13.8 | 4.1 |
| 17. If I had money, I would buy a computer. | 51.4 | 2.2 | 5.3 | 9.0 | 32.0 |
| 18. I avoid using computer as much as possible. | 2.5 | 36.9 | 47.7 | 7.4 | 5.2 |
| 19. I like learning more about computers. | 36.5 | 2.5 | 5.0 | 4.2 | 51.8 |
| 20. I have no intention of using computers in the near future. | 5.0 | 39.1 | 43.0 | 9.9 | 3.0 |

*Note.* SD= strongly disagree; D= disagree; N= neutral; A= agree; SA= strongly agree.

Table 3 presents the responses to the questions regarding the perception of ICT attributes and the mean scores for each category. Generally, the respondents reported positive perception of ICT attributes, with an overall mean of 3.72 (SD = .52). The attributes received positive attitude in the following order of strength: observability, relative advantage, complexity, and compatibility.

**Table 3**
***Perception of ICT Attributes***

| Items | Responses (%) | | | | |
|---|---|---|---|---|---|
| | SD | D | N | A | SA |
| **Relative Advantage (Mean: 3.86; SD = .65)** | | | | | |
| 1. Computers will improve education. | 1.9 | 4.7 | 13.2 | 58.4 | 21.8 |
| 2. Teaching with computer offers real advantages over the traditional methods of instruction. | 18.7 | 3.9 | 6.6 | 22.3 | 48.5 |
| 3. Computer cannot improve learning quality. | 14.3 | 52.9 | 17.4 | 12.1 | 3.3 |
| 4. Computer can be interesting in the classroom. | 1.1 | 3.0 | 10.7 | 59.0 | 26.2 |
| 5. Computer is not useful in language learning. | 1.4 | 28.1 | 53.7 | 9.6 | 7.2 |
| **Compatibility (Mean: 3.44; SD = .57)** | | | | | |
| 6. Computer has no place in schools. | 36.4 | 46.6 | 10.2 | 3.9 | 3.0 |
| 7. Computer has a good place in my curriculum. | 5.5 | 4.1 | 12.4 | 46.6 | 31.4 |
| 8. Class time is too limited to use computer. | 3.9 | 22.3 | 14.0 | 41.0 | 18.7 |
| 9. Computer enhances student preference and their computer knowledge. | 7.7 | 1.7 | 9.9 | 35.0 | 45.7 |
| 10. Using computer is good for many language learning activities. | 15.2 | 8 | 6.3 | 11.3 | 66.4 |
| **Complexity (Mean: 3.58; SD = .69)** | | | | | |
| 11. It was very hard to learn using the computer. | 12.7 | 62.3 | 12.9 | 8.8 | 3.3 |
| 12. I have no difficulty understanding computers. | 3.9 | 24.0 | 14.6 | 49.0 | 8.5 |
| 13. Computer complicates my task in the classroom. | 3.9 | 14.0 | 49.6 | 20.4 | 12.1 |
| 14. Everyone can learn to work with computer. | 14.0 | 2.5 | 9.4 | 20.7 | 53.4 |
| **Observability (Mean: 4.04; SD = .68)** | | | | | |
| 15. I have never seen computer at work. | 1.4 | 46.6 | 39.4 | 7.4 | 5.2 |
| 16. Computer has proved an effective learning tool worldwide. | 32.8 | 2.8 | 4.7 | 10.7 | 49.0 |
| 17. I have never seen computers used as an educational tool. | 30.3 | 47.9 | 8.8 | 10.7 | 2.2 |
| 18. I have seen some Iranian teachers use computers for educational purposes. | 1.7 | 6.9 | 8.8 | 60.3 | 22.3 |

*Note.* Negative items were reversed before scoring.
SD= strongly disagree; D= disagree; N= neutral; A= agree; SA= strongly agree.

Concerning the relative advantages of ICT, 85.2% of the respondents agreed that computers can be interesting in the classroom. That computers cannot improve learning quality was disagreed by 67.2% of the respondents. Utility of computers in language learning was marked neutral by 53.7% of the teachers.

With compatibility, the greatest percentage of agreement (80.7%) was on the point that computers enhance preference for learning and computer knowledge. A disagreement of 83% was achieved on the absence of computers in schools. Fourteen per cent was neutral towards the point that class time is too limited for using computer.

Regarding complexity, 57.5% agreed that understanding computers is not hard, 75% disagreed that using computer is hard, and 49.6% were neutral towards the point that computers complicate tasks in the classroom.

As for ICT observability, 82.6% of the teachers expressed that they had seen other teachers using computers for educational purposes, while 78.2% of them disagreed that they had not seen computers used as educational tools. Not seeing computers at work was marked as neutral by 39.4% of the participants.

Table 4 gives a summary of the responses as to how the EFL teachers perceived cultural implications of ICT. The overall mean in this section was 3.22 (SD = .45). This indicates that the participant teachers believed computers should be suitable in Iranian culture. However, most of them felt there were more important social issues than the use of computers in schools.

**Table 4**

***Cultural Perception of ICT***

| Items | Responses (%) | | | | |
|---|---|---|---|---|---|
| | SD | D | N | A | SA |
| 39. Computers will not make any differences in our classrooms, schools, or lives. | 27.3 | 47.9 | 14.9 | 6.9 | 3.0 |
| 40. Students need to know how to use computers for future jobs. | .8 | 4.1 | 11.6 | 53.2 | 30.3 |
| 41. Students prefer to learn from teachers rather than the computer. | 5.2 | 21.8 | 41.6 | 26.7 | 4.7 |
| 42. Knowing about computer can be facilitative. | 3.9 | 9.6 | 24.2 | 49.0 | 13.2 |
| 43. Computer should be suitable for Iranian culture and identity. | 1.4 | 5.8 | 10.7 | 49.9 | 32.2 |
| 44. Computer will improve our living standards. | 2.8 | 6.9 | 39.4 | 36.4 | 14.6 |
| 45. Using computer doesn't hinder generations from their traditions. | 3.3 | 14.0 | 19.6 | 52.9 | 10.2 |
| 46. Computer is proliferating too fast. | 2.2 | 5.2 | 5.1 | 42.7 | 44.8 |
| 47. People who are skilled in computer have privileges not available to others. | 1.4 | 3.9 | 15.4 | 56.7 | 22.6 |
| 48. Computers will increase our dependence on foreign countries. | 12.9 | 30.6 | 27.3 | 19.6 | 9.6 |
| 49. Other social issues need to be addressed before implementing computer in education. | 1.4 | 8.0 | 19.0 | 51.0 | 20.7 |
| 50. The proliferation of computer will make our lives easier. | 1.7 | 4.7 | 23.1 | 54.0 | 16.5 |
| 51. Computer dehumanizes society. | 11.3 | 47.1 | 21.8 | 14.9 | 5.0 |
| 52. Working with computer does not diminish relations with other people. | 6.9 | 19.0 | 24.8 | 42.7 | 6.6 |
| 53. Computer encourages unethical practices. | 7.2 | 26.7 | 28.4 | 26.2 | 11.6 |
| 54. Computers should be a priority in education. | 2.2 | 12.1 | 15.2 | 55.6 | 14.9 |

*Note.* SD= strongly disagree; D= disagree; N= neutral; A= agree; SA= strongly agree.

As shown in Table 4, what received the greatest percentage of agreement (87.5) was the contention that computers are proliferating fast. That computers do not affect any change in educational and social contexts was disagreed by 75.2% of the respondents. Preference for learning from teachers or computers was what most of the respondents were neutral towards (41.6%).

Table 5 shows how competent the respondents were to handle computer tasks. Generally, most reported moderate to high competence. The mean score for computer competence was 2.99 (SD = .99).

**Table 5**

***Perceived Computer Competence***

| Items | Competence | | | |
|---|---|---|---|---|
| | No | Low | Moderate | High |
| 55. Installing new software | 19.0 | 16.8 | 45.5 | 18.7 |
| 56. Using printer | 6.6 | 7.7 | 33.3 | 52.3 |
| 57. Using computer keyboard | 2.5 | 7.7 | 30.6 | 59.2 |
| 58. Operating word processing programs (e.g., Word) | 6.1 | 9.1 | 25.9 | 58.9 |
| 59. Operating presentation programs (e.g., PowerPoint) | 8.0 | 12.4 | 29.2 | 50.4 |
| 60. Operating spreadsheet programs (e.g., Excel) | 9.4 | 14.9 | 34.8 | 40.9 |
| 61. Operating database program (e.g., Access) | 14.9 | 16.8 | 32.2 | 36.1 |
| 62. Using the Internet for communication | 10.2 | 11.6 | 28.8 | 48.5 |
| 63. Using World Wide Web to access information | 8.5 | 10.7 | 23.1 | 57.6 |
| 64. Solving simple problems in computer use | 12.9 | 24.2 | 41.6 | 21.2 |
| 65. Operating graphic programs (e.g., Photoshop) | 21.5 | 20.9 | 33.6 | 24.0 |
| 66. Using computer for grade keeping | 6.3 | 7.4 | 28.1 | 58.1 |
| 67. Selecting and evaluating educational software | 14.6 | 27.3 | 38.8 | 19.3 |
| 68. Creating and organizing educational software | 13.8 | 21.2 | 34.4 | 30.6 |
| 69. Removing computer viruses | 39.1 | 23.7 | 17.6 | 19.6 |

Ability to use computer keyboard was marked *high* by most of the EFL teachers (59.2%). The item with which most of the respondents reported *no* competence was their ability in removing computer viruses (39.1%). Regarding the selection and evaluation of educational software, 27.3% of the participants reported *low* competence. Finally, 45.5% of the respondents reported *moderate* competence with installing new software.

### *Relation Between the Independent Variables and Attitude Towards ICT*

*Perception of ICT attributes.*

A strong positive correlation was found between the participants' perception of ICT attributes and their attitude towards ICT at $p < .01$ (Table 6). The strongest relation was for perception of relative advantage ($r = .74$). The relation between perception of complexity and attitude ranked second in strength with a correlation coefficient of .62. A moderate positive relation was found for perception of compatibility ($r = .58$) and observability ($r = .53$).

**Table 6**
***Correlation Between Perception of ICT Attributes and Attitude Towards ICT***

| | Attitude | Relative advantage | Compatibility | Complexity | Observability |
|---|---|---|---|---|---|
| Attitude | 1.00 | | | | |
| Relative advantage | .74** | 1.00 | | | |
| Compatibility | .58** | 65** | 1.00 | | |
| Complexity | .62** | .55** | .54** | 1.00 | |
| Observability | .53** | .55** | .46** | .45** | 1.00 |

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

*Cultural perception and computer competence.*

Table 7 presents the correlation coefficients of the relation between cultural perception and computer competence on the one hand and attitude towards ICT on the other at $p < .01$ level of significance. There was a considerable positive relation between the respondents' cultural perception and their attitude towards ICT ($r = .62$). In addition, a sizable correlation was found between perceived level of computer competence and attitude ($r = .50$).

**Table 7**
***Correlation between the other variables and attitude towards ICT***

| | Attitude | Cultural perception | Computer competence | Computer access |
|---|---|---|---|---|
| Attitude | 1.00 | | | |
| Cultural perception | .62** | 1.00 | | |
| Computer competence | .50** | .31** | 1.00 | |
| Computer access | .39** | .27** | .50** | 1.00 |

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

### *Multiple Regression Analysis*

Multiple regression analysis was performed to determine what proportion of variance in the dependent variable (attitude towards ICT) could be explained by the independent variables. Following the steps outlined in Tate (1998), a preliminary analysis was first conducted to identify any missing data. It was found that 5% of the data were missing. Second, a case analysis was performed to identify any outliers. Three apparent outliers, with studentized residuals of -4.52, 3.28, and -3.30, were found. An inspection of case indices reflected the impact of individual observation on regression coefficients ($\Delta \beta$) which indicated no observations, including the three outliers, and exerted excessive influence on the estimated coefficients. As Tate (1998) put it, "The index $\Delta \beta$ is defined as the change in the $j^{th}$ regression coefficient when the $i^{th}$ observation is deleted from the sample" (p. 29).The third step in regression analysis is assessing possible violation of assumptions. To this end, a scatter plot of the studentized residuals versus standardized predicted Y value was used. Different patterns showed possible violation of three assumptions. That is to say, the band of points approximately centered on the horizontal axis and

exhibited a variation of density consistent with the normal distribution of residuals at each IV combination and predicted Y values.

Whereas regression model has multiple IVs, the coefficient of determination $R^2$ represents the strength of relation between dependent variable and all IVs, and it is also interpreted as the proportion of Y variability explained by the model. The $R^2$ model (0.65) which reflects the overall strength of relation between EFL teachers' attitude towards ICT and the perception of ICT attributes, cultural perception of ICT, and the perceived computer competence is statistically significant at 0.05 level ($F = 28.26$, $p < .001$). The adjusted $R^2$, compensating positive bias in $R^2$ with 0.63 range, reflected an overall strong relation that evidenced two-thirds (63%) of variability in attitude (Table 8).

**Table 8**

***Analysis of Variance***

| Source | Sum of squares | df | Mean | F Value | $R^2$ | Adjusted $R^2$ | P |
|---|---|---|---|---|---|---|---|
| Model | 93.19 | 23 | 4.05 | 28.26 | .65 | .63 | <.001 |
| Residual | 48.44 | 338 | .14 | | | | |
| Total | 141.63 | | | | | | |

## Discussion

This study was an endeavour to reach a deeper understanding of how Iranian EFL teachers view ICT with reference to the theoretical framework emerging primarily from Rogers's (1995) theory of diffusion of innovation and Ajzen and Fishbein's (1980) reasoned action theory.

Mixed results regarding attitude towards ICT notwithstanding, the participants were found to have an overall positive attitude towards ICT in education, demonstrating readiness to use computers in the classroom. The highest mean score was observed on the behavioral category. Considering ICT and its cultural perception, it seems that Iranian EFL teachers participating in this study viewed ICT as an advantageous factor improving both the social and educational life. For example, as indicated by the results, ICT could positively impact on knowledge development or employment.

With regard to the perception of ICT attributes, the respondents exhibited positive perception of ICT attributes in this order: Observability, relative advantage, complexity, and compatibility. This observation reaffirms the applicability of Rogers' (1995) theory of diffusion of innovations. First, teachers need to see visible positive benefits of using ICT in their classrooms; second, they need to see the relative advantage of ICT; third, they need to feel that using ICT is not complex and makes their work easier; and finally, they need to believe that ICT is compatible with existing socio-cultural structures. That Iranian EFL teachers' perception of complexity and compatibility was found to be the least positive of the measured attributes of ICT is consistent with a comparable study by Pelgrum (2001).

Correlational analyses between the independent variables and attitude towards ICT evinced "moderate-to-high" positive correlations. Among the categories of ICT attributes perception, it seems that teachers' perception of the relative advantage of ICT was most significantly related to their positive attitude towards ICT ($r = .74$). It is reflective of the fact that computer-mediated language teaching can be deemed as fruitful and practical as there is a positive attitude towards its implementation. Cultural perception and computer competence, too, were found to be positively

correlated with attitude towards ICT. The positive correlation between cultural perception and attitude towards ICT (r = .62) indicated that for ICT to be conducive to pedagogy, holding a positive attitude is essential. In addition, according to the obtained coefficients, the higher an EFL teacher's computer competence is, the more positive they view ICT.

The results of the multiple regression analysis are revealing, too. The analysis showed that approximately 64% of the variance can be explained by the independent variables, namely perception of computer attributes, cultural perception of ICT, and computer competence.

## Conclusion

This research explored the factors that might influence the adoption and implementation of ICT by the EFL teachers in public and private schools. In fact, the question was whether there was any relation between attitude towards ICT on the one hand and cultural perception of ICT, perception of ICT attributes, and computer competence on the other. The results showed that EFL teachers seemed to be effectively employing ICT because of the positive attitude they demonstrated towards ICT. It was also found that ICT was favorably perceived from the cultural perspective of the context of study. Additionally, computer is considered as a valuable educational tool that could save time and money, motivate students, and enhance their learning.

These results can be cautiously generalised to other EFL contexts where ICT is not sufficiently known and not widely accessible to teachers and students. The results imply that educational decision makers should be more informed in their future endeavors about the factors that impede or facilitate the implementation of ICT. In fact, that the EFL teachers were found to be positively inclined towards ICT scaffolds the fact that the necessary infrastructures for implementing computer-centered instruction should be prepared.

However, care must be exercised in generalising the findings. First, the current study is limited in terms of generalisability as attitude towards technology, in particular computer, varies from context to context. Besides, more EFL teachers from other regions could be selected to extend the generalisability power of the findings. Needless to say, thus, that further investigation of teachers' attitude towards ICT in other EFL contexts is warranted. Additionally, to examine the practicality and utility of ICT, EFL learners' attitudes, too, should be considered.

## References

Ajzen, I., 1988. Attitudes, Personality, and Behavior. Chicago, IL: Dorsey Press.

Ajzen, I., Fishbein, M., 1980. Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Becker, H. J., 2000. Pedagogical motivations for student computer use that lead to student engagement. JET. 40, 5-17.

Braak, S. J., 2001. Factors influencing the use of computer mediated communication by teachers in secondary education. J. Comp. Edu. 36, 41-47.

Bordbar, F., 2010. English teachers' attitudes toward computer-assisted language learning. IJLS. 4, 179-206.

Christensen, R., Knezek, G., 2001. Profiles of teachers attitudes for progressive stages of adoption of technology: Laredo, in: Christensen, R., Knezek, G. (Eds.), Equity Diversity and K-12 application of Information Technology: KIDS project findings 2000-2001.

Earle, R., 2002. The integration of instructional technology into public education: Promises and challenges. JET. Jan-Feb, 5-13.

Kotrlik, J., Harrison, B. C., & Redmann, D., 2000. A comparison of information technology training sources, values, knowledge, and skills for Louisiana's Secondary vocational teachers. JVER. 24, 396-444.

Kumar, P., Kumar, A., 2003. Effects of web-based projects on pre-service and inservice teachers' attitudes towards computers and their technology skills. JCTE.19, 87-92.

Murphy, E., 2000. New tools in an old trade: Teachers talk about use of Internet in the teaching of French as a second or foreign language. Can. Mod. Lang. Rev. 59, 215-235.

Pelgrum, W. J., 2001. Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. J. Comp. Edu. 37, 163-178.

Rizza, M., 2000. Perspectives on preservice teachers' attitudes towards technology. The Teacher Educator. 36,132-147.

Rogers, E. M., 1995. Diffusion of Innovations, fourth ed. New York: The Free Press.

Spiegel, J., 2001. The computer ate my grade book: Understanding teachers' attitudes towards technology. Retrieved on June 17, 2003, from http://www.iona.edu/cs/gradpapers/2001spiegelPap.pdf.

Tate, R., 1998. An Introduction to Modeling Outcomes in the Behavioral and Social Sciences, second ed. Minnesota: Burgess International Group.

Turnbull, M., Lawrence, G., 2002. FSL teachers and technology: Findings from a national survey. Retrieved June 17, 006, from http://www.caslt.prg/print/computersp.htm.

## About the Authors

Fatemeh Alipanahi, Ph.D.,
English Language Department, Islamic Azad University, Zanjan Branch
(alipanahi@hotmail.com)

Majid Nikouee, M.A.,
Allameh Tabataba'i University.
MNikouee@gmail.com

**Return to Table of Contents**

**Editor's Note**: As technology develops, we adopt tools where inadequate *ease of use* limits usefulness for some learners. The question resolved in this study is, to what extent does this interfere with teaching and learning. Results are reassuring. Familiarity improves the perceived usefulness and value of such tools.

# Student's perceived satisfaction, e-learning usage and platform characteristics: an empirical investigation by structural equation model

**Emna Ben Romdhane**
**Tunis**

## Abstract

The present study was designed to test the influence of platform characteristics and e-learning usage on learner's satisfaction. Experimentation was conducted on 241 students in three Tunisian universities. We found that perceived ease of use is the most determining factor that influences simultaneously the usage and the satisfaction. We also noted that the perceived usefulness of the platform and its perceived compatibility with the needs and the values of learners are important for the active usage of the platform.

**Keyword**s: E-learning, satisfaction, usage, platform characteristics, structural equation model.

## Introduction

Based on information and communication technologies, e-learning is expected to improve teaching/learning, distance communication and collaboration (Bernardin, 2011). It is massively implemented both in the educational and the professional environment, especially in universities (Lee, 2007). Several experiences were developed in many countries, including Tunisia which launched in 2002 the virtual university of Tunis.

However, the literature review (Fenouillet and Dero, 2006; Bernardin, 2006) shows that the rate of abandon in e-learning is higher than in traditional classes. In addition, the main reason of implementation failure is the lack of learner satisfaction (Malik, 2009). Research shows that perceived platform characteristics are critical factors that influence learners' satisfaction towards e-learning (Sun et al., 2008; Ramayah and Lee, 2012). While usage of the platform is another factor that affects learners' satisfaction and few studies investigate this relationship (Lee et al., 2003).

This research focuses on the factors of the e-learning success (satisfaction, usage and platform characteristics) (Delone and Mclean, 2003) from the point of view of learners in the Tunisian context. These factors must be considered to avoid failure and for successful implementation.

The theoretical and conceptual frameworks to evaluate the e-learning success are presented in the first part of this paper. Methodology and results are presented and discussed in the second part.

## Theoretical framework

Houze and Meissonier noted that the dimensions of the evaluation of e-learning success are not clearly identified. For this reason, the same authors argued that the evaluation can borrow the dimensions established in information systems (efficiency, effectiveness, usage and satisfaction of the users).

As noted by Bernardin (2006), many researches on e-learning have examined effectiveness using difference in outcomes between e-learning and traditional face-to-face learning. This approach was criticized by Mayer (2002) because it can be subjective. According to the same author the use of e-learning implies evaluations (based on linear programming) that don't take in

consideration the thinking of the student. Or in the traditional learning, a wrong answer can be considered correct by the teacher who has understood the way of thinking of the student.

Concerning the efficiency of e-learning, Houze and Meissonier (2004) think it is difficult to evaluate objectively the impact on the costs for three reasons:

1. Certain costs cannot be measured precisely
   (cost per hour for production of e-learning content);
2. Changement in context may occur between the time of the investment and the time the platform can bring its offspring (be launched).
3. The legal aspects of e-learning are not clear.

Restricting the success of e-learning only to learner outcomes and cost reduction, neglects other learner oriented dimensions that are key factors of determining success in online learning. According to the extended model of information systems success (Delone and Mclean, 2003), users satisfaction with the technology, usage and technology characteristics, are the most important predictors of success. Therefore, these dimensions are seen as keys factors in our research model.

## Research model

Based on the extended model of information systems success (Delone and McLean, 2003) and its applications in the field of e-learning (Ramayah and Lee., 2012; Plaisent et al., 2005), a research model was designed including perceived platform characteristics, usage of the platform and learner's satisfaction towards it. The research model is presented in figure 1.

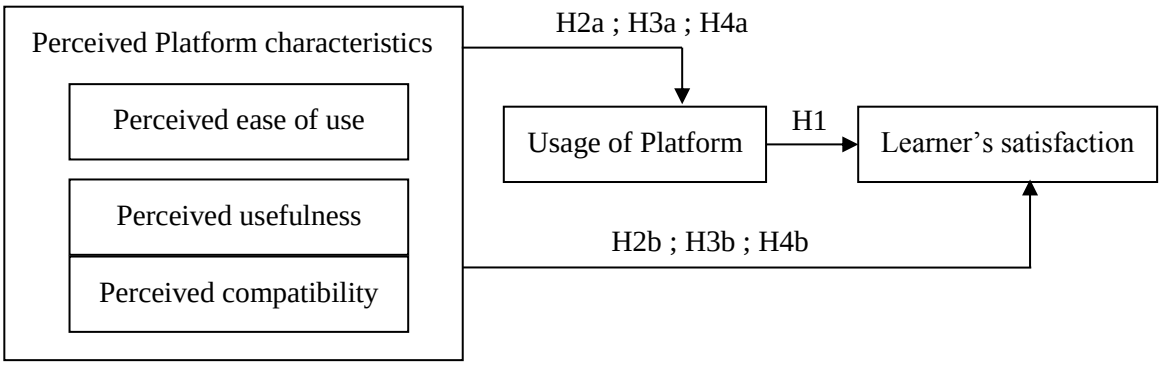


**Figure 1: The conceptual model**

### *Perceived learner satisfaction*

Several studies have investigated the role of learner's satisfaction in e-learning success (Piccoli et al., 2001; Sun et al., 2008; Malik, 2009). DeLone and McLean (2003) argued that satisfaction is an important factor because it is difficult to see the success of a system that users are not satisfied.

According to Wang (2003), measures developed for user's satisfaction in traditional face to face context are not appropriate for e-learning. The satisfaction of e-learner is defined by the same author as an emotional response which differs from intensity due to e-learning activities and which is stimulated by various dimensions such as online content, learner interface, learning communities and personalization.

Ramayah and Lee (2012) noted that measures of successful e-learning implementation are learner's satisfaction and continuance of usage.

### *Elearning usage*

Usage refers to what individuals do effectively with objects and with technology (Breton and Proulx, 2002). It also represents for DeLone and McLean (2003) an important dimension to evaluate the success of information technology. These authors argued that unused technology cannot be associated with success.

However, usage must be voluntary in order to consider it as a dimension for e-learning success (Trice and Treacy, 1988). In fact, according to Deltour (2004) inefficient technology can be widely used if their use is mandatory.

Plaisent et al. (2005) indicate that usage is an important factor in e-learning satisfaction. In fact according to Delone and McLean (2003), the most regular users of an information system are the most satisfied.

Our research is positioned in a context of voluntary usage of e-learning, we can assume a direct and positive relationship between the usage of the platform and learner's satisfaction towards it. Indeed, we believe that the more the platform of e-learning is used by learners the more their satisfaction with it increase. Hypothesis 1 will test this assumption.

**Hypothesis 1**: Usage of e-learning platform is positively associated with learner's satisfaction.

### *Perceived platform characteristics*

The extended model of Delone and McLean (2003) includes system quality (which refers to perceived ease of use), information quality (which refers to perceived usefulness) and services quality (which refers to perceived compatibility of the system with the needs and the values of users) as determinants of the usage of the technology and user's satisfaction.

Perceived ease of use of e-learning refers to "the degree to which a person believes that using a particular system would be free of effort."
(Davis, 1989, p. 320)

Perceived usefulness of e-learning refers to "the degree to which a person believes that using a particular system would enhance his or her job performance."
(Davis, 1989, p. 320)

Perceived compatibility of e-learning refers to "the degree to which an innovation is perceived as consistent with the values, needs and past experiences of potential adopters."
(Rogers, 1995, p. 223)

Prior studies show that each of the three dimensions of the platform characteristics had a significant effect on usage of e-learning and learner's satisfaction.

Brown (2002), Abdennadher (2006) and Ngai et al. (2007) found a positive correlation between perceived ease of use and the usage of e-learning platforms by learners.

Sun et al. (2008), Roca et al. (2006) and Wu et al. (2008) indicate that perceived ease of use of e-learning platform is directly related to learner's satisfaction; when perceived ease of use increases, learner satisfaction also increases.

Hence based on the above researches, this paper proposes the following hypotheses:

**Hypothesis 2(a):** Perceived ease of use of the platform is positively associated to usage of e-learning.

**Hypothesis 2(b):** Perceived ease of use of the platform is positively associated to the learner's satisfaction towards it.

Research indicates that perceived usefulness of the platform and usage of e-learning are positively related. In fact, Miller et al. (2003) and Ngai et al. (2007) point out the importance for learners to perceive the expected performance of e-learning to use the platforms. If the perceived usefulness is significant the usage will be high.

Furthermore, a review of the literature has allowed us to note that Seddon and Kiew (1994) have enriched the model of information systems success of Delone and McLean (1992) establishing a direct influence of perceived usefulness of the system on the user's satisfaction. As Sun et al. (2008) show, perceived usefulness significantly affects the learner's satisfaction in e-learning.

For this study, we assume that the more learners' perceive the usefulness of platform, such as improving learning and interaction activities, the more positive their decisions are towards e-learning usage. In addition, the higher perceived usefulness in an e-learning platform, the higher the learner satisfaction will be. Thus hypotheses 3(a) and 3(b) are stated below:

**Hypothesis 3(a):** Perceived usefulness of the platform is positively associated to usage of e-learning.

**Hypothesis 3(b):** Perceived usefulness of the platform is positively associated to the learner's satisfaction towards it.

Perceived compatibility of the platform with the needs of the learners seems to be another important factor influencing usage and satisfaction in the e-learning context. Based on the model of task-technology fit (Goodhue and Thompson, 1995) it is expected to find a direct relationship between the degree to which a platform provides features that support the requirements of a task of learners and the usage of e-learning.

The relationship between perceived compatibility of the technology with the needs of the users and their satisfaction has not been tested by many researchers in information systems. The same is observed in the field of e-learning. Nevertheless, Bernardin (2006) proposed that the compatibility of the platform contents with the needs of the learners is a valid predictor of satisfaction towards an e-learning system.

In our study we agree with Rogers (1989) and Goodhue and Thompson (1995), that the more the e-learning platform is compatible with the needs of the learners, in terms of contents and tasks, the more the usage of the platform and the learner's satisfaction towards it is higher. We therefore propose to test the following hypotheses:

**Hypothesis 3(a):** Perceived compatibility of the platform with the needs of the learners is positively associated to the usage of e-learning.

**Hypothesis 3(b):** Perceived compatibility of the platform with the needs of the learners is positively associated with the learner's satisfaction towards the e-learning system.

## Methodology

### *Data collection*

empirical data were collected using a questionnaire survey administered over a period of one semester from September to December (14 weeks). Subjects for this study were students that had the opportunity to take courses via elearnology (www.elearnology.com) in three Tunisian universities.

During the month of September, we first gave a demonstration of the elearnology platform and clarified to the students that the usage is not mandatory. After 14 weeks, we administrated a

questionnaire from physical classrooms to 257 students to measure perceived platform characteristics, usage and learner's satisfaction.

Sixteen responses were incomplete and had to be discarded. This left 241 valid responses for the analysis. Among the valid responses, 62 respondents have never used the platform elearnology, resulting in 179 real users. This number is confirmed by the logs files of the platform which identifies the learner's access.

According to Igalens and Roussel (1998, p. 120), our sample size is appropriate because the researcher must respect a rule of at least 5 observations per item.

### *Measures*

The items used to operationalize the constructs of our research model were adapted from previous research and were refined to make them specifically relevant to the present study. For most of the items, respondents are asked about their level of agreement to a statement by a Likert scale of 5 points (from "strongly disagree" to "strongly agree").

To measure the usage, we selected the two dimensions most commonly used in the literature on information systems: first, the volume of use, through the frequency (logs files) and time (Stoel and Lee, 2003) , second, the diversity of usage (Brown, 2002).

The scale of Wang (2003) was used to measure the satisfaction of learners with the interface (SI) and the content (SC) of the platform. We adapted the scale of Davis (1989) to measure the perceived ease of use (PEU) and the perceived usefulness (PU) and that of Moore and Benbasat (1991) to measure the perceived compatibility (PC) of the platform with the needs and the values of the learners.

**Table 1**

**Results of factors analysis and reliability**

| Constructs | | F1 | F2 | F3 | F4 | F5 | Cronbach's Alpha |
|---|---|---|---|---|---|---|---|
| **Learner Satisfaction** | | | | | | | |
| Satisfaction with interface | SI1 | 0,73 | | | | | 0,81 |
| | SI2 | 0,76 | | | | | |
| | SI3 | 0,68 | | | | | |
| | SI4 | 0,69 | | | | | |
| | SI5 | 0,68 | | | | | |
| Satisfaction with content | SC1 | | 0,66 | | | | 0,82 |
| | SC2 | | 0,84 | | | | |
| | SC3 | | 0,78 | | | | |
| | SC4 | | 0,80 | | | | |
| **Technology use** | | | | | | | |
| Passive Use | PAU1 | | | 0,90 | | | 0,78 |
| | PAU2 | | | 0,76 | | | |
| | PAU3 | | | 0,78 | | | |
| Active Use | ACU1 | | | | 0,80 | | 0,75 |
| | ACU2 | | | | 0,83 | | |
| | ACU3 | | | | 0,77 | | |
| Volume of Use | VU1 | | | | | 0,93 | 0,85 |
| | VU2 | | | | | 0,92 | |
| **Constructs** | | **F1** | **F2** | **F3** | | | **Cronbach's Alpha** |
| **Perceived Ease of Use** | | | | | | | |
| | PEU1 | 0,79 | | | | | 0,90 |
| | PEU 2 | 0,78 | | | | | |
| | PEU 3 | 0,81 | | | | | |
| | PEU 4 | 0,79 | | | | | |
| | PEU 5 | 0,85 | | | | | |
| | PEU 6 | 0,87 | | | | | |
| **Perceived Usefulness** | | | | | | | |
| | PU1 | | 0,72 | | | | 0,87 |
| | PU2 | | 0,80 | | | | |
| | PU3 | | 0,73 | | | | |
| | PU4 | | 0,79 | | | | |
| | PU5 | | 0,79 | | | | |
| | PU6 | | 0,78 | | | | |
| **Perceived Compatibility** | | | | | | | |
| | PC1 | | | 0,90 | | | 0,91 |
| | PC2 | | | 0,93 | | | |
| | PC3 | | | 0,92 | | | |

### *Data Analysis*

Principal components analysis (PCA) and reliability analysis were conducted, using SPSS 16.0. The results of PCA, with varimax rotation, allowed us to identify eight factors representing the five constructs of the present analysis. The construct "usage" was divided into three factors: the volume of usage (VU), passive usage (PAU) and active usage (ACU).

Passive usage refers to the usage by learners of features that do not require effort such as downloading the courses, seeing asked questions and useful links.

Active usage, in contrast, refers to the usage by learners of features that require an implication and initiatives such as the insertion of links and participation, through questions and discussions.

To assess the internal consistency of items, we used the Cronbach's alpha. The values obtained are between 0.75 and 0.91 and demonstrate a good reliability as shown in Table 1.

Moreover, confirmatory factor analysis (CFA), with Amos 16.0, was conducted to test convergent validity of scales. Table 2 presents the coefficient Rho whose value must be greater than 0.5.

**Table 2**
**Results of convergent validity of constructs**

| Scales | Coefficient |
|---|---|
| Satisfaction with the interface (SI) | 0.50 |
| Satisfaction with the content (SC) | 0.53 |
| Passive Usage (PAU) | 0.51 |
| Active Usage (ACU) | 0.58 |
| Volume of usage (VU) | 0.92 |
| Perceived ease of use (PE) | 0.67 |
| Perceived usefulness (PU) | 0.57 |
| Perceived compatibility with the learners' needs (PC) | 0.74 |

## Results and discussion

We used the structural equation methods a "second generation methods" that applies multivariate analyses with linear equations. This technique has the advantage of taking into account the simultaneous influence of several independent variables on dependent variables and takes also into account the measurement errors (Roussel et al., 2002). Statistically each relationship can be considered significant when the value of the corresponding Critical Ratio (CR) is greater than 1.96 in absolute value. In Table 3, below, we present results obtained using Amos 16.0.

The model fit indexes are satisfactory. Indeed, the value of Goodness of Fit (0.84), near the critical value of 0.90, can be explained by the sensitivity of this index to the number of parameters to estimate. The Root Mean Square Residual (0.040) is below the limit value of 0.08. Incremental indexes (Non-Normed Fit Index = 0.93, Comparative Fit Index = 0.94) are all acceptable. Despite the Normed Fit Index (0.8), which is less than 0.9, the indexes indicate the good adjustment of the model tested compared to the reference model. The good fit of the model is, moreover, confirmed by the indexes of parsimony. The index $\chi 2$ normed (1.32) and the Parsimony-adjustment Normed Fit Index (0.71) are satisfactory.

Regarding the first hypothesis, table 3 shows that volume of usage has no influence on the learner's satisfaction both with the interface and with the content. Our finding rejoined other

studies (Szajna, 1993) for which the volume of usage is not the best determinant of satisfaction. In fact, the defaults of the platform can be the reason for the high level of usage and vice versa.

As table 3 indicated, passive usage is a significant determinant for both types of satisfaction, namely the interface and the content. In terms of active usage, it appears that the more learners explore the functionalities of the platform, the more satisfaction with the interface increases. Nevertheless, it appears that the active usage has no influence on satisfaction with content provided by the platform. These results lead us to accept partially hypothesis H1.

In fact, active and passive usage of the platform involves manipulation of the functionalities and therefore a subjective evaluation of its technical qualities and interfaces. This confirms the link established by DeLone and McLean (2003) between the usage and the user's satisfaction with the qualities of the system.

**Table 3**
**Results of structural model**

| | Hypothesis | CR |
|---|---|---|
| H1 : usage | VU → SC | 0,43 |
| | VU → SI | 0,24 |
| | PAU → SC | 2,67** |
| | PAU → SI | 3,55*** |
| | ACU → SC | -1,03 |
| | ACU → SI | 2,45** |
| H2 : Perceived ease of use | PEU → VU | 1,52 |
| | PEU → PAU | 2.10** |
| | PEU → ACU | 2.01** |
| | PEU → SI | 2.66** |
| | PEU → SC | 0.86 |
| H3 : Perceived Usefulness | PU → VU | 0.56 |
| | PU → PAU | 0.59 |
| | PU → ACU | 2.61** |
| | PU → SI | -0.17 |
| | PU → SC | -0.39 |
| H4 : Perceived Compatibility | PC → VU | 2.705** |
| | PC → PAU | 1.430 |
| | PC → ACU | 2.898** |
| | PC → SI | -0.794 |
| | PC → SC | 1.336 |

*** p<0,001 ; ** p<0,05%
n.s : non-significant

In addition, we think it is logical to find no significant correlation between the active usage of the platform and the learner's satisfaction with the proposed content. Indeed, functionalities that have been used passively are likely to transmit content to the learner; in contrast those actively used do not offer content because the latter is the result of involvement and initiative of the learner.

The results of table 3 show that perceived ease of use is the single factor that simultaneously affects the usage of the platform and the learner's satisfaction towards it. The perceived usefulness of e-learning and its perceived compatibility with the learner's needs influence the usage of the platform at various levels, but have no influence on the learner's satisfaction. Therefore, hypotheses H2a, H2b, H3a and H4a are partially accepted and hypotheses H3b and H4b are rejected.

The influence of perceived ease of use on usage is significant concerning passive and active usage but is not affecting the volume of usage. Our results are in the same direction as those of Szajna (1993) which showed that the ease of use of a technology does not determine the volume of usage because easy technology can reduce the volume of manipulation by users and vice versa.

Furthermore, the ease of use refers more to the interface (ease of navigation, simplicity and design) of the platform rather than its content. However, hypothesis H2b was partially supported (respectively 2.66** and 0.86).

Concerning the influence of perceived usefulness on usage, the benefits of the platform have been seen only through the active usage of communication and interaction functionality. These features enable the learner, whatever the distance, to interact with the teachers and the other learners. We also believe that in a context of a superposition of face-to-face classes and e-learning, student did not perceive advantages to passive usage of downloading contents because this latter can be otherwise obtained (in face to face class, photocopying, e-mail).

This result confirms the conclusions of Isaac and Kalika (2007) who suggested choice of blended learning devices combining presence and distance to obtain significant advantages from e-learning.

Contrary to our expectations hypothesis H3b concerning the influence of perceived usefulness of the platform on learner satisfaction towards the interfaces and the contents, was rejected (respectively, -0.17 and -0.39).

The hypothesis H4a, concerning the relationship between perceived compatibility of the platform with the learners' needs and usage, has been partially accepted. Our result does not confirm that of Abdennadher (2006) who found no relationship in the Tunisian context.

This difference of results could be explained by the fact that the platform which was the object of empirical investigation of Abdennadher (2006) offered, according to the author, course incompatible with the tasks done by the learner.

In contrast, students who were the subject of our study were taking courses related directly to Internet technologies such as "Electronic commerce and EDI", "Information technology" and "e-Tourism".

The hypothesis H4b concerning the influence of perceived compatibility of the platform with the needs of the learners and their satisfaction was not supported, and hence, does not join the result of Bernardin (2006). In fact, the contents offered by the platform, although in direct relationship with the Internet, were rather theoretical than practical and therefore not compatible with the learners' needs in terms of development skills practices. In addition, the reduced number of communications and collaborative features proposed by the platform in relation to the growing learner's need for exchange and sharing information has a notable influence on the lack of satisfaction through the interfaces.

## Conclusion

The evaluation of e-learning platforms is essential to improve strategies for distance learning, to reduce rates of failure and to enable organizations to have a return on investment.

In our research we have taken into account the evaluation criteria that are oriented learners: the usage of the platform and the satisfaction of the learners towards it. These criteria have long been used to evaluate the information systems success.

The study of the influence of perceived e-learning platform characteristics on the usage and satisfaction allows us to make several practical recommendations.

First, our study showed that the ease of use of platform is the most significant factor in e-learning success. Therefore, the number of functionalities should be limited and it would be appropriate to adopt an incremental approach of installation, starting with the classic functionalities, and once the learner is accustomed to the platform, gradually adds other advanced features. Tools of transmission content, news and discussion can be activated at the beginning and then supplemented by spaces of personalization and collaboration.

Particular attention should be paid to the interfaces of the platform. They must be convivial and interactive to keep the attention of the learner.

Second, we found that the fit between tasks and learners' needs in terms of knowledge development and information is very important for the usage. The message is that

e-learning is not appropriate for all courses (Bellier, 2001). The course designer should pay particular attention to the adequacy of the proposed content and the needs of the learners to obtain information and to perform tasks.

Thirdly, learners may be interested in using the system if they have substantial benefits. For this reason a communication strategy must be made to inform the learners of these benefits. In this regard, it would be interesting to adopt mixed devices alternating distance and group sessions in face-to-face. Indeed, it is this kind of device that is relevant to the learner who has more freedom, flexibility and autonomy while avoiding problems of misunderstanding, isolation and loneliness through the face-to face sessions.

Despite the significant results that we achieved, our research includes some limits. The first is a small sample size of 241 respondents, that didn’t allow us to generalize the results in the Tunisian context. Secondly, our research has been limited on studding the impact of perceived use for use, perceived usefulness, perceived compatibility with the needs of the learner and platform usage on learner satisfaction in online courses.

The results and the limits of our study might open new perspectives of researches in the field of e-learning. Future research might incorporate more variables such as perceived teacher support (Swan, 2002) and e-learning courses dimensions (sun et al., 2008). We believe that a comparative study of e-learning success in two different cultural contexts can make new light in this area. Our conceptual model may be completed by integrating the influence of learner’s satisfaction on individual and organizational impacts.

## References


Abdenadher, D., (2006), *L'adoption du e-learning*, mémoire de mastère, Institut Supérieur de Gestion de Tunis.

Bellier S., (2001), *Le e-learning*, Editions Liaisons, Paris.

Bernardin, E., (2011). Utilisation d'une plateforme pédagogique dans la relation enseignant-étudiant : l'harmonisation des contenus comme facteur d'adoption, *Actes du 16ème colloque de l'AIM*, Ile de la Réunion, France, 25-27 Mai.

Bernardin, E., (2006), *Efficacité de l'e-learning en entreprise: Comparaison de deux environnement d'apprentissage chez Air France*, Thèse de Doctorat en Sciences de Gestion, Faculté des Sciences Economiques et de Gestion, Université de Nantes.

Breton, P., Proulx, S., (2002), *Usage des technologies de l'information et de la communication : L'explosion de la communication à l'aube du XXIème siècle*, Edition la découverte, Paris.

Brown, I. T. J., (2002), Individual and Technological Factors Affecting Perceived Ease of Use of Web-based Learning Technologies in Developing Country, *The Electronic Journal of Information Systems in Developing Countries*, 9 : 5, pp. 1-15.

Davis F.D., (1989), Perceived Usefulness, Perceived Ease of Use, and User Acceptance, *MIS Quarterly*, 3 : 3, pp.319-340.

DeLone, W.H., McLean, E.R., (2003), Information systems success: The quest for the dependant variable, *Information Systems Research*, 3: 1, pp. 60-95.

Deltour, F., (2004), satisfaction, acceptation, impacts: relier trios modalités pour évaluer les intranets auprès des utilisateurs, *actes du 10ème colloque de l'AIM*, Toulouse, 21-23 septembre.

Fenouillet, F., Dero, M., (2006), Le e-learning est-il efficace ? Une analyse de la littérature anglo-saxonne, *Revue Savoirs*, 3 : 12, pp. 88-101.

Goodhue, D. L., Thompson, R. L., (1995), Task-Technology Fit and Individual Performance, *MIS Quarterly*, 19 : 2, pp. 213-232.

Houze, E., Meissonier, R., (2004), Performance du e-learning: un premier retour d'expérience sur les résultats des apprenants, *Actes du 9ème colloque de l'AIM*, Evry, France, 26-28 mai.

Igalens, J., Roussel, P., (1998), *Méthodes de recherche en gestion des ressources humaines*, Economica, Paris.

Isaac, H., Kalika, M., (2007), TIC et enseignement de la gestion, une révolution manquée», *Revue Française de Gestion*, 33 : 178-179, Novembre-Décembre.

Malik, M.W., (2009), Student Satisfaction towards e-learning: Influential role of key factors, *Proceedings 2nd CBRC*, Lahore, Pakistan, November 14.

Moore G.C., Benbasat I., (1991), Development of instrument to measure the perception to adopting an information technology innovation, *Information System Research*, 2 : 3, September, pp: 192-222.

Ngai, E.W.T., Poon, J.K.L., Chang, Y.H.C., (2007), Empirical examination of the adoption of WebCT using TAM , *Computers & Education*, 48, pp. 250-267.

Piccoli, G., Ahmad, R., and Ives, B., (2001), Web-based Virtual Learning Environments: a research framework and a preliminary assessment of effectiveness in basic IT skills training, *MIS Quarterly*, 25 : 4, pp. 401-426.

Plaisent, M., Larhrib, S., Bernard, P., (2005), Facteurs de succès de l'enseignement en ligne et maturité des e-apprenants, actes de la conférence de l'E-Management Consortium, 13-14 septembre, Tunis.

Ramayah, T., Lee, J.W.C., (2012), System characteristics, satisfaction and e-learning usage: A structural equation model, The *Turkish Online Journal of Educational Technology*, 11: 2

Rogers, E.M., (1995), *Diffusion of innovations*, 5ème Edition, The Free Press, Macmillan Publishing Co, New York.

Roussel, P., Durieu, F., Campoy, E., El Akremi, A., (2002), *Méthodes d'équations structurelles : recherche et application en gestion*, Economica, paris.

Seddon, P. B., Kiew, M.Y., (1994), A Partial Test and Development of the DeLone and McLean's Model of Success, *Proceedings of the International Conference on Information Systems*, Vancouver, Canada, pp. 99-110.

Stoel, L., Lee, K. H., (2003), Medelling the effect of experience on student acceptance of Web-based courseware, *Electronic Networking Applications and Policy*, 13 : 5, pp. 364-374.

Sun, P.C., Tsai, R.J., Finger, G., Chen, Y.Y., Yeh, D., (2008), What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction, *Computers and Education*, 50, pp. 1183-1202.

Swan, K., (2002), Building learning communities in online courses: The importance of interaction. Education, Communication & Information, 2: 1, pp. 23–49.

Szajna B., (1993), Determining information system usage: Some issues and examples, *Information & Management*, 25, pp. 147-154.

Trice, A. W., Treacy, M. E., (1986), Utilization as a Dependent Variable in MIS Reaserch, *Proceedings of the Seventh International Conference on Information Systems*, San Diego, December, pp. 227-239.

Wang, Y. S., (2003), Assessment of learner satisfaction with asynchronous electronic learning systems, Information and Management, 41: 1, pp. 75-86.

Wu, J.H., Hsia, T.L., Liao, Y.W., Tennyson, R.D., (2008), What determinates student learning satisfaction in a blended e-learning system environment?, *12th Pacific Asia Conference on Information Systems*, July 3-7, China.

## About the Author

**Emna Ben Romdhane** is Assistant Professor at the business school of Tunis and director of the department of distance education, She obtained a PhD in management from the faculty of Economic and Management Sciences of Tunis.

Her research focuses on information systems, information and communication technologies and e-learning. She is also a consultant in e-learning with national and international companies and organizations (UNDP).

Return to Table of Contents

Return to Table of Contents

**Editor's Note**: Ordinarily we would not publish this article because of the number of secondary references. However, it is a useful compilation of global trends in distance education in many developing nations, and as such deserves our readers' attention.

# The impact of distance learning and e-learning on developing nations

**Sid Alvarado**
**USA**

The implementation of distance learning and e-learning in developing nations opens the door for opportunities for the people of that nation who are seeking a rich educational experience. The results of access to sufficient educational opportunities allow developing countries to maintain the same level of educational saturation as neighboring nations as well as compete with neighboring nations when securing services for economic sustainability. The impact that distance education is having on developing nations can be observed through the information being taught (Konetes, 2010). But not all developing nations are the same as they do not have homogenous characteristics, social problems, and issues. Each nation differs in its political circumstances, the history of its educational development, culture, language, religion, gender issues, population size, and resources (Lewins & Stuart, 1991, cited in Gulati, 2008).

Most countries in Latin America, Middle East, Africa, Southeast Asia, and some parts of southern Europe, are considered 'developing countries' because of their lower rank in the United Nations Development Program (UNDP) Human Development Index (Gulati, 2008). Carrying the label of 'developing country' does not connote that these countries do not make a contribution to education. It is worth noting that countries such as Egypt have rich histories and educational traditions (Gulati, 2008). On the contrary, 'developed' countries include Western Europe, North America, Australia and New Zealand (Gulati, 2008).

According to Hulsmann (2004, cited in DeVary, 2008), there is an ever-increasing demand for distance education in developing countries. However, because of the lack of funding and commitment to educational investments, the quality of education has suffered and has not produced enough trained teachers to meet the demand. Governments have been heavily investing in distance education to help stimulate growth and reach out socially to operate and coordinate academically with nations that are more developed (Post, 2004, cited in Konetes, 2010).

Many believe that education is the means to build human capital (DeVary, 2008). The ability to compete globally is dependent on the innovation, skill, and knowledge of people and their learning organizations (DeVary, 2008). I would like to echo the statement of the British Prime Minister, who stated that "Children cannot be effective in tomorrow's world if they are trained in yesterday's skills." (British Prime Minister quoted in Safavi, 2008). Education takes a very central role and consequently the distribution of education is seen as a major key for development in developing countries (Bada & Madon, 2006; UNDP, 2006; WSIS, 2003 cited in Andersson & Hatakka, 2010). The importance of distance education as a means to increase overall higher education is considered direct and ongoing as human capital is becoming the most important source of economic value in a developing nation (Downey, 2005, Konetes, 2010).

Three significant areas that reflect the influential forces shaping distance education's effect on developing nations are the impact on education issues, societal issues and the impact of obstacles (Konetes, 2010). It is widely suggested that online technologies can help address issues of educational equity and social exclusion, and open up democratic and accessible educational opportunities (Gulati, 2008). The implementation of distance education in developing nations has several significant societal implication and impacts affecting the countries and learners (Konetes, 2010). The increase of learning impacts the quality and quantity of human capital in the nation and consequently pushes the nation forward (Downey, 2005, Konetes, 2010).

The governments of developing nations have a deeply-vested interest in the effectiveness of educational programs because they are looking to further advance their nations human capital and economic potential (Post, 2004 cited in Konetes, 2010). As a result, a large portion of distance education being implemented in developing nations is in the area of higher education. Higher education is in great demand because many nations have hungered for it for generations and were denied the opportunity to grow (Dhanarajan, 2001, cited in Konetes, 2010). The evidence of distance education can be found in many countries and it is being used in higher education all over the developing world from Africa to Asia to Mexico (Moyo, 2003; Baggaley, 2005; Potashnik, 1998 cited in Konetes, 2010)

Some developing nations have shown ingenuity as they implement distance learning in their countries. Development of consortia is an example of this creativity. The consortium is designed to cost-effectively develop and deliver distance education to student populations that might not otherwise be served. Consortia are now being established at regional, state, national and international levels (Beaudoin, 2009).

Beaudoin (2009) defines a consortium as:

> … a partnership among a number of educational institutions or other similar entities that have joined together to collaboratively provide instruction and other services to students that they might not otherwise be adequately equipped or inclined to do independently. These collaborations are designed and intended, at least in theory if not always in practice, to offer a broader range of courses and other products to consumers through the combined resources and expertise of their affiliate members. Distance education consortia is defined as a formal organizational arrangements of educational institutions, primarily at the postsecondary level, that have banded together to address common interests and goals related to advancing and delivering education at a distance, often – although not always – online.

There is some evidence that various consortia, including many in developing areas with resource-challenged institutions, can introduce and infuse new opportunities, energy and excitement into a setting with underserved student populations, especially if those entities are allied for the sole purpose of diffusing distance education (Beaudoin, 2009). This creative idea is not limited to developing nations. Some prestigious institutions have joined their efforts to build non-profit alliances. They are aimed at creating distance-learning programs through information and communication technology. A great example of this joint venture is that made among the Universities of Stanford, Princeton, Yale, and Oxford in 2000. Today, there are more than 700 online universities which touch all continents (Safavi, 2008).

In the excitement about the implementation of distance education in developing countries lie challenges that must be addressed for this form of education to be effective for the people it serves. Some issues that affect implementation of distance education in developing nations are controversial (Konetes, 2010). One commonly known challenge is insufficient infrastructure for communications and internet access, which results in a higher price for individuals who are already struggling to obtain their 'daily bread' (Safavi, 2008). Another challenge faced by developing nations is management and administration; there may be problems on the director's side as well as weak time-management and group working skills on the learner's side (Safavi, 2008). Both educators and students continue to struggle and oppose student centered learning rather than teacher centered learning. Some do not see a need for student collaboration, an asset in distance learning where a teacher is not present face-to-face for a lecture. Other obstacles which hinder the shaping of the implementation of distance education and its effectiveness in developing nations are financial constraints, technological concerns, and personnel issues (Dhanarajan, 2001, Moyo, 2004, Daniel, 2006 cited in Konetes, 2010 ).

Some nations face over involvement of the government which results in instability and uncertainty in rules and regulations (Safavi, 2008). Over involvement by government hinders the progress and sustainability of distance learning programs. If they are lucky enough to move past the implementation stage, developing nations are often criticized for offering low quality education in distance programs (Stella, 2004 cited in Konetes, 2010). If they do offer higher quality education, many times they fail to consider the need to provide basic literacy and computer skills and access to computers to poorer groups before they can begin to engage in higher online learning (Gulati, 2008). An example of this is a government supported project called Vidyakash in India aimed to develop support and training for teachers and provide an infrastructure for Indian institutions to use Internet technologies for education. As a consequence, India now has 4 million technology workers, 700,000 software professionals, and 1,700 technical institutes (Sharma, 2005, cited in Gulati, 2008). These initiatives have been supported by courses demanding high fees and therefore remain the privilege of the elite, educated, and wealthy.

The desire for higher education through distance learning is moving many developing nations to overcome technical difficulties and educate people who would not normally have access to higher education (Oblinger, 2001 cited in Konetes, 2010). As with any new programs, there are challenges like those mentioned above. On the other side of those challenges are stories of accomplishment and victory. Now that distance learning is expanding in developing countries, there are multiple models to compare the effectiveness and saturation of these programs. In Asia, there are two dynamic learning environments where distance education is implemented. The first is in large crowded cities where technology access and quality is high, allowing many students to engage at a high level of learning through many of Asia's large open universities (Baggaley, 2005, cited in Konetes, 2010). According to Marty (2004), Ghana has begun implementing learning centers all over the nation where educational technology is accessible for students to engage in educational programs, watch educational videos and television, and be tutored and mentored. Mexico has taken a similar approach to reach children in remote villages and towns. Through an educational television campaign, it has provided over seven hundred thousand children with a middle school education (Potashnik, 1998, cited in Konetes, 2010). India's technology and distance learning institutions, including the Indira Ghandi National Open University (IGNOU), the Indian Institute of Technology, the Birla Institute of Technology, and the School of Education Technology at Jadavpur University, has led the way in online degree courses and modules (Sharma, 2005 cited in Gulati, 2008).

There are also success stories in South America. In 1968, Mexico launched Telesecundaria, televised lessons in distant classrooms in the presence of a teacher, to extend lower secondary schooling to its rural communities. The system achieved greater educational output as compared to traditional secondary schools. By 1993, the system had reached 15 percent of the lower secondary school learners. Since 1994, the model has used advanced satellite for televised broadcasts and local teachers to encourage interaction in distant classrooms. Telesecundaria continues to provide a fruitful alternative model of schooling (Gulati, 2008). The Brazilian Ministry of Education distance education model called Proformação, a distance teacher certification course designed to train 27,000 uncertified teachers in 15 Brazilian states (Gulati, 2008). Proformação has been identified as the "distance learning program for the 21st century" (Moore, 2001). It is noteworthy that the successes of *Proformação* and *Telesecundaria* are attributed to print and television technologies and not the Internet, which remains inaccessible to most individuals in these countries (Bof, 2004, cited in Gulati, 2008)

Learning with technologies has become a global phenomenon (Gulati, 2008). E-learning is one way students in developing countries can use technology to facilitate learning. E-learning refers to learning that is delivered or enabled via electronic technology (Safavi, 2008). E-learning can be an attractive option for developing countries (Maldonado, Khan, Moon, Rho, 2011), but there are

some things to consider when implementing it. E-learning requires responsibility and self-discipline for the learner to be on-schedule and successful in this open and flexible learning environment (Safavi, 2008). This is something educators must take in consideration when launching such a program.

Multimedia tools have strengthened distance learning and e-learning approaches (Safavi, 2008). Philippine educators have combined radio, print, audio, and video recordings for distance education of learners scattered around the Filipino islands since 1952 (dela Peña-Bandalaria, 2007, cited in Gulati, 2008). It is believed that the newly mobile wave of higher education will increase the competitive edge of many nations' workers and the nation's ability to operate in the global knowledge economy (Naidoo, 2003, Konetes, 2010).

In e-learning a student's motivation plays an important role (Conati, 2002). E-learning recognizes the dawn of a new era in educational provision. It acknowledges the challenges of diversity in programs as well as the diversity of learners (Safavi, 2008). In developing countries are there are a large number of potential candidates for distance learning. Cheaper manpower and lower software and hardware prices help e-learning programs come to fruition. Another advantage of e-learning is that it could be used as an empowerment tool for women, who often are victims of limited educational opportunities (Safavi, 2008).

The more higher education and distance learning models are desired, the harder nations are willing to work to break down previous barriers and problems to facilitate access to quality distance education (Konetes, 2010). Technological advances offer new examples for university training (Safavi, 2008). The national governments and nongovernmental agencies who fund educational endeavors in developing countries have advocated the use of new technologies to reduce the cost of reaching and educating large numbers of children and adults who are currently missing out on education (Gulati, 2008). For many countries, distance education provides the only opportunity for their populations to have access to education and this is especially true for third- and fourth world countries (DeVary, 2008).

Unlike developed countries, developing countries' motives for distance learning are to provide basic education and literacy education to large numbers of poor people (Zhang, 2005 cited in Gulati, 2008). Some would argue that e-learning has the potential to meet the educational needs of masses of poor people in developing countries; however, this potential has yet to be recognized or seen (Gulati, 2008). Consensus among students in different countries contribute to whether or not they believe that e-learning and distance education has had a positive impact on their education. Brophy (2004, cited in Maldonado, Khan, Moon, Rho, 2011) states that motivation to learn is a "student's tendency to find academic activities meaningful and worthwhile and try to derive the intended academic benefits from it". E-learning motivation can play an important role in technology acceptance and conversely technology use will affect a student's e-learning motivation (Kim and Malhotra, 2005, cited in Maldonado, et al, 2011)

A review of 150 distance education programs in sub-Saharan Africa has concluded that traditional, paper-based means of distance learning continues to be more reliable, sustainable, and widely used than online and Web-based methods of learning (Leary & Berge, 2006, cited in Gulati, 2008). On the other hand, a survey of 387 students in their final undergraduate year at the Virtual University of Pakistan concluded that the majority of students (over 90%) found learning over the Internet and via satellite TV beneficial. However, Pakistan had only five internet cafés for every 10,000 people, and most students rely on these locations for access (Hussain, 2007, Syed, 2004 cited in Gulati, 2008). This basic lack of infrastructure in telecommunications continues to define the online learning experience of different groups of learners in developing countries (Gulati, 2008). Connectivity costs, software, hardware, lines and cables, electric and service costs, fees and charges can be an insurmountable burden to many students and even

nations. These costs and issues are the primary problems holding some nations back such as Africa and India from springing forward into a more saturated and pervasive level of distance education (Dhanarajan, 2001, Moyo, 2003, Daniel, 2006, cited in Konetes, 2010).

Social development is not a new concept in the realm of education. The importance of social change education for development has been stressed by the educational reformer, John Dewey (Dewey, 1916 cited in Andersson & Hatakka, 2010), who early on made the connection between education and social development. Dewey saw progressive education as a tool for enabling students to become active and efficient members of a democratic society and he opposed the authoritarian transmission model of education which he believed undermined an equal society (Andersson & Hatakka, 2010). The emergence of "knowledge" as an economy is creating an increasing demand for education (DeVary, 2008). Distance education acts as way of being able to cultivate that human capital and in turn it works as a means to jump-start economic improvement in nations where this resource is highly untapped (Konetes, 2010).

Gulati (2008) says it best when analyzing distance learning developments in developing countries. The results of his research shows that although these developments aim for equitable and extended educational opportunities that extend to disadvantaged and poor populations, the lack of educational and technology infrastructures, lack of trained teachers, negative attitudes towards distance learning, social and cultural restrictions imposed on girls and women, and inappropriate policy and funding decisions, have all resulted in furthering the gap between the rich and poor, rural and urban, and between genders (Gulati, 2008). In order for distance learning and e-learning to be a successful venture in a developing nation, establishing good leadership is key for creating and maintaining any sort of distance education program (Konetes, 2010). Poor leadership leads to a poorly designed infrastructure where even qualified people are not properly managed and used on projects they could be resourceful to (Martey, 2004, cited in Konetes, 2010).

## References

Andersson, A., Hatakka, M. (2010). Increasing activity in distance educations: Case studies in Bangladesh and Sri Lanka. *Information Technology for Development*, 16(1), 16-33

Beaudoin, M. (2009). Consortia - a viable model and medium for distance education in developing countries?. *Open Learning*, 24(2), 113-126

DeVary, S. (2008). International distance education trends and issues: Open and distance learning teacher education in Uganda. *Distance Learning*, 5(2), 25-31

Gulati, S. (2008). Technology-enhanced learning in developing nations: A review. *International Review of Research in Open and Distance Learning*, 9(1), 1-17

Konetes, G. (2010). The impact of distance education on developing nations in terms of learning, society and barriers. *International Journal of Instructional Media, 37(4)*, 333

Maldonado, U., Khan, G., Moon, J., Rho, J. (2011). E-learning motivation and educational portal acceptance in developing countries. *Emerald Insight*, 35(1), 66-85

Safavi, A. (2008). Developing countries and e-learning program development. *Journal of Global Information Technology Management, 11*(3), 47-64

## About the Author

**Sid Alvarado**

email: sid.alvarado@gmail.com

Return to Table of Contents