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EFFECTS OF E-LEARNING, INFORMATION TECHNOLOGY, AND SUCCESS IN HIGHER EDUCATION

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ABSTRACT

E-learning expands options for teaching and learning using technology. This nomenclature has been solidly in use for the last ten years. The expansive and ever fertile frontier of e-learning—a term used interchangeably with distance and online learning—has become standard fare as an educational delivery solution designed to enhance knowledge and performance. Many educational institutions, corporate enterprises and other entities are utilizing web-based teaching and learning methodologies to deliver education either partially or wholly online using electronic platforms. The learning value chain, including management and delivery, has created multimodal systems, content, and processes to increase accessibility, measurability, and cost effectiveness by infusing advanced learning techniques, such as adaptive learning or communities of practice, among students, employee groups, and lifelong learners. It is interesting to note that e-learning encapsulates internet based courseware and all other asynchronous and synchronous learning, as well as other capabilities for supporting learning experiences.

KEYWORDS: *E-learning*, technology

INTRODUCTION

E-learning is a nomenclature assigned to a field of study and practical application. The term encompasses electronic delivery of teaching and learning as well as the theoretical dimensions of cognition to ensure the effective use of the technological tools (Siemens, 2005). As a prominent sector in educational delivery methods, e-learning utilizes audio streaming video, animation, audio written content in the process of instructional design while considering human behavioral theory to inform effectiveness and efficacy. E-learning can occur in a multitude of environments (Dougiamas, 2001). It can be applied for distance learning and in face-to-face situations as blended or hybrid learning. E-learning can take place synchronously (in real time) or asynchronously (self-paced). As a medium of delivery of learning, there are advantages and disadvantages, like any other medium.

In a business environment, e-learning offers opportunities to educate potential customers, build customer loyalty, reduce customer service costs, cross-sell, and deepen customer relationships. Lauridsen (2010) explored a framework based on Porter's idea on Value Chain Analysis (VCA) to identify factors that leverage activities along a "chain," delivering educational services to self-directed learners. The notion of value chains is useful for documenting and improving a complex life cycle, such as delivering online education to adults (Lauridsen, 2010). Numerous authors, scholars, consultants, and practitioners have adapted the VCA model to guide decisions about allocation of resources.

A value chain for higher education entities is notably different than that for commercial enterprises (Lauridsen, 2010). The higher education landscape has undergone significant changes in the past few years. The notion of a *business approach* to education and the *students as customers* is getting stronger. The external environment presents a changing paradigm, characterized by heightened customer awareness and demands, rising educational costs, increasing competition in the form of new and alternative sources of learning and information (such as technology assisted learning), and an increasing bevy of 21st century

technologies. All of these have made it necessary for colleges and universities to seek new and innovative ways to deliver education and to support all other institution transactions. They have also made it necessary for higher educational universities to acquire alternative models in terms of structure, work organization, and the management of knowledge, information, and course content. In this new reality, it is imperative that institutions of higher learning cease thinking in terms of supplying education to students; rather, these institutions are providing services that their customers are willing to buy, because these services add value to their future potential.

INFORMATION LITERACY AND TECHNOLOGY INTEGRATION IN LEARNING

The role of the computer in the computer lab or classroom focuses on the desired outcome, which is solving an intellectual problem using the best tool at hand, in this case, a computer. To better understand how instructors use computers, it is important to concentrate on several factors that identify the exemplary computer-using instructor. These focal points with regard to computer usage are: the instructor's goals, frequency of the student's computer use, experience level of student computer users, the relevancy of this computer use compared to the desired outcome of the learning activity, and finally, the general functions of the computer in the class or lab setting (Becker, 2000). Instructors considered by their peers to be exemplary computer users themselves encourage their students to exploit these computers as intellectual tools for writing, analyzing data, and solving problems (Becker, 2000).

Similarly, Zuniga (2010) found three factors that influence the effective use of technology. He found that instructors rejected the notion of using technology as a mode of instruction because of inexperience and fear of not knowing what and how to use it, the time they felt it would take them to set it up and plan for it, and inadequate training. Cobb (2010) found that, to effectively differentiate instruction using technology, teachers needed to change teaching practices and have appropriate professional development training.

Jay Sivin-Kachala (1998) reviewed 219 research studies from 1990 to 1997 to assess the effect of technology integration on learning and student success across all learning domains and learner ages. His final analysis of the studies reported the following patterns: Positive findings: Students in technology-rich environments experienced positive effects on achievement in all subject area; Students in technology-rich environments showed increased achievement in preschool through higher education for both regular and special needs children, and; Students' attitudes toward learning and their own self-concept improved consistently when computers were used for instruction. Inconclusively, Sivin-Kachala (1998) found that the level of effectiveness of educational technology is influenced by the specific student population, the software design, the educator's role, and the level of student access to the technology.

THEORETICAL DELIMITATIONS IN E-LEARNING

E-learning refers to using electronic applications and processes to learn. E-learning applications and processes include web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered via the internet, intranet, extranet, satellite TV, and CD-ROM with multimedia capabilities (ISP, 2004). E-learning programs are saved on the internet/intranet and can be accessed anytime, anywhere, regardless of the computer platform, as long as the user has subscribed to an internet service provider (ISP). Lincoln (2008), in discussing the issues with large classes, noted the challenges (a) facing faculty members to get students to attend class, pay attention, and participate; and (b) for faculty to understand where students are at in their learning process and to manage the course effectively. Interactive Technology (also called audience-response systems or clickers) may be one technological tool that can help faculty accomplish these goals (Lincoln; Terreri and Simons, 2005). Kurdziel (2005) noted five reasons for educators to use an audience response system: (a) to address the limitations of traditional lectures, (b) to engage students, (c) to provide feedback to both students and instructors, (d) to effectuate learning gains, and (e) to realize improvements in attitudes. An advantage of using Interactive Technology is that it gives a professor an objective means to track participation. The experts in e-learning in higher education agreed there are contentions about elearning technologies in the following areas: (1) a platform for ideal speech; (2) greater opportunities for interactions;

(3) the extent to which communities of learners can be created; (4) provision of a new kind of learning environment; (5) a platform for discussions; (6) demand for e-learning by students; (7) the degree to which the environment is equal and equitable; and (8) the quality of the learning experience.

ISSUES IN TEACHING AND LEARNING

Thomas Edison once said, “Books will soon be obsolete in the public schools ..., our school system will be completely changed inside of ten years.” Amazingly enough, however, one of our nation’s most important inventors was proven quite wrong. The American education system has a remarkable resistance to innovation, and the classroom experience has changed very little in the 100 years since Edison’s prediction (Brunner, 1992). Online learning is revolutionizing access to education. But if U.S. higher education cannot make this revolution work for millions of disadvantaged learners and the thousands of institutions that serve them, the nation will incur an economic liability from which it will not recover (Adamy & Heinecke, 2005). Already the nation’s education gap contributes to an increasingly polarized society characterized by “haves” and “have-nots.” If this persists, a growing proportion of the population will become terminally unemployable in high wage jobs. The U.S. economy will lose competitiveness even as the workforces of India, China, and other developing nations surge to unprecedented levels of educational attainment (Brunner, 1992). We simply cannot afford to continue on the current path. Inventing a successful model for educating disadvantaged students online is an economic necessity. The imperative now is to enhance student success by providing “anywhere, anytime” access to the 21st-century learning tools and resources our students and faculty require succeeding.

As state and federal policymakers continue to emphasize the importance of increasing rates of college completion, many colleges are beginning to consider the use of technological tools to support students’ progress toward their educational goals. For instance, a growing number of colleges are implementing advising technologies that can help students identify programs of study or courses to take, help students and counselors generate educational plans, and aid faculty and college staff in identifying and reaching out to students at risk of failure. If employed effectively, such technologies have the potential to supplement college student support activities and address a range of student and institutional needs.

Sometimes referred to as Integrated Planning and Advising Services (IPAS), these technologies can contribute to improved student outcomes by fundamentally changing the way students are guided and supported as they make their way through college. The main purpose of IPAS technologies is not to increase administrative efficiency or information technology (IT) compatibility, though this may occur (Leonard, 2004). Rather, it is to help colleges in restructuring the student experience to encourage improved learning, persistence, and completion. For a technology to be widely adopted, end-users must learn how to use the tools, and all the features of a product must be well understood and helpful (Leonard, 2004). Yet there have been observations of college campuses that demonstrate that adoption is not just about the technology. The organizational and departmental cultures of colleges also influence whether individuals make use of new technologies in ways that improve their practice and increase student success. In this regard, institutions must understand how to evaluate their cultures and systems for technological readiness.

TECHNOLOGICAL READINESS

Technological readiness focuses on institutional-level characteristics affecting the deployment of new technology. It refers to the capacity of a college or university as a whole to implement a new technology, make it reliably available for use, and train users to employ it effectively (Ash, 1997). Most discussions of successful technology implementation focus on this capacity and define success as getting a new technology to a point where it can be reliably used by college personnel. Not surprisingly, an institution’s level of technological readiness is critical to the successful implementation of newly acquired technology (Ash, 1997).

Advances in information technology have revolutionized how people communicate and learn in nearly every aspect of modern life except for education. The educational system operates under the antiquated needs of an agrarian and industrial America (Ash, 1997). The short school day and the break in the summer were meant to allow children to work on family farms. Schools have an enduring industrial mentality placing students in arbitrary groups based on their age regardless of their competencies. While an institution may determine in technical terms that the system is ready for technological adoptions, there is still the possibility of barriers that prevent implementation.

USING ONLINE EDUCATION PORTFOLIOS TO EVALUATE STUDENTS

Educators have known about the benefits of paper-based portfolios for generations. Portfolios allow students to express creativity for difficult to assess subjects. Instructors can choose from a variety of online portfolio providers tailored to the needs of their classroom. They also serve as a platform for students to demonstrate growth. Online portfolios have many advantages over paper-based options because they cost less and allow for more robust outreach (Brunner, 1992). Online portfolios are also amenable to a wider variety of formats including video, music, or other interactive features.

THE IMPACT OF TECHNOLOGY ON TEACHING AND LEARNING

Innovations propelled by technology have revolutionized teaching and learning in colleges and universities globally. Information technology has created transformational benefits for collaborative opportunities for research partners around the world (Cooper & Bull, 1997). However, technology remains an expensive disruptive innovation (Fullan & Donnelly, 2013). There is still resistance among faculty members accustomed to teaching using other methods and loathe to expending time to acquire new strategies. Nevertheless, in spite of the existing barriers, technology has had a significant impact and, predicatively, will continue shaping higher education. Online education has gained a firm hold in a multiplicity of higher education institutions worldwide. E-learning has become a core differentiator for recruiting students, and for corporate and community partners (Lauridsen, 2010). Many institutions with a public service mandate have embraced e-learning as a key component for advancing their missions by placing access to higher education within reach of people who might otherwise find advanced education prohibitive (English, 2008). Likewise, attracting corporate-academic partnerships as a means for locating funding in a diminishing cash environment means institutions need to demonstrate a commitment to advancing long range plans for technological strategies (Fullan & Donnelly, 2013).

To override faculty resistance, institutions will be called to overcome operational challenges and create organizational practices that encourage faculty to adopt new technologies and incorporate technology into pedagogy, andragogy, and curriculum planning (Kezar, 2011). Mobile learning is another consideration as more students rely on the smart phones and tablets to access their online courses, especially in third world countries where infrastructure is often primitive or non-existent. Globalization is another factor driving higher education institutions to establish an overseas presence (Kezar, 2011).

THE LEARNING ENVIRONMENT

There is a notion that an eLearning environment offers students an improved learning experience when compared to a more traditional learning environment. Holley (2002) found that student participants on eLearning university courses using techniques such as virtual lectures and bulletin boards, achieved better grades than students who studied in traditional learning settings. Hartley (2000) maintains that the constraints of conventional university teaching practices with regards to group working are removed in eLearning environments, as students can participate in group activities without actually being situated in the same location. Indeed alternative relationships are developed within the context of an online community (O'Donoghue and Singh, 2001). This supports the view that eLearning environments loosen the time and space restrictions associated with traditional university practices.

However, although eLearning environments overcome the traditional time and space constraints, universities must be cautious when deciding if distance learning environments should replace the traditional methods, as students recognize the benefits of the eLearning environments but only when combined with traditional formats (Serwatka 2002).

STUDENT PERFORMANCE

The above suggests that students enrolled on eLearning courses perform better than those on more traditional schemes. It is important to clarify that in the context of this paper student performance considers the level and quality of learning outcomes as well as the student's grades in assessments. Lieberman (2002) explains that in higher education student participation is a primary feature of enhanced performance and in distance learning courses students are more likely to participate in class discussions and group work than in traditional lectures, as they are given more time to prepare questions and responses. O'Connell (2002) argues that quieter students will still be excluded from virtual discussions, as there will always be students who will monopolies conversations, even online! Also, controlling dominant students is far more difficult in eLearning environments when compared to face to face lectures (O'Connell 2002).

There is evidence to suggest that eLearning university students outperform those on traditional courses. Scott (2000) uses the example of Carnegie Mellon University (CMU) in America, where eLearning techniques have not only improved student exam results but have acted as educational bridges between subjects, breaking the ancient boundaries between disciplines. In addition, CMU students participate in eLearning initiatives that allow them to control their own company in a virtual working environment, students analyze competitor's business plans, track the performance of their company and even trade virtual stocks. Students, full time and part time, would not acquire this valuable experience in case studies and traditional lectures (Scott 2000). The inference is that higher education institutions which utilise effective eLearning methods not only enhance the performance of students in assessments but also produce graduates who are theoretically and practically prepared for working in an information age (Holley 2002).

CONCLUSION

In the world of higher education in the 21st century, some faculty teaching these highly literate digital technophiles use the computer as an extension of the typewriter; it is a tool, but not a mode of being. These "digital immigrants" (McGee & Diaz, 2007) experience culture shock as they learn a new language and tools. Many cannot advance to fluency. For students, however, technology is a pedagogical context. They are far more advanced than many of their instructors, for whom technology is an intrusive set of new tasks that infringe on the content learning that is of value to them.

Consequently, the emerging student techno-learning mode is aligned with the lifelong learning and collaboration skill sets that are demanded by our evolving global world. The educational expectations are of transient learning, where expertise in areas that become rapidly obsolete is less valued than the ability to quickly master emerging knowledge (Brunner, 1992). Disciplinary knowledge is also being made irrelevant by the demands for multi- and interdisciplinary skill sets.

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