The Evolution of Distance Education:
Implications for Instructional Design on the Potential of the Web

By Jason Huett, Leslie Moller, Wellesley R Foshay, and Craig Coleman

This article is the last of a three-part series on distance education. Part 1 focused on Training and Development; Part 2 on Higher Education.

Although the training and development and higher education environments lead K-12 schools in embracing distance learning technologies there is modest growth in distance education efforts in the K-12 environment, and the steady rate at which distance learners are enrolling emphasizes the importance of this population (Saba, 2005). In many ways, this uncharted territory offers some of the most exciting challenges to be found in distance education today.

Part 3: K-12

While online learning in K-12 schools is addressing previously unmet needs, it is also making headlines. Policy issues include funding of online learning programs and general resistance to distance learning. Online learning is often not understood by policymakers resulting in the application of policies developed for physical schools to online programs (Rice, 2006). State governments typically establish virtual K-12 schools directly or provide funding to traditional schools to create online programs. Equivalent funding of online and face-to-face courses implies the instruction delivered is equally effective—an invalid comparison and potentially dangerous assumption as rapid changes in the field of online learning may not result in high quality programs (Conceição & Drummond, 2005). Quality indicators used to measure the success of online programs are similar to those used with traditional K-12 programs including academic performance, retention, academic achievement, and satisfaction (Ronsisvalle & Watkins, 2005). However, Rice (2006) suggested that the effectiveness of distance education has more to do with who is teaching, who is learning, and how that learning is accomplished and less to do with the medium.

Distance education in the K-12 arena is often referred to as "virtual schooling" and learning through virtual schooling is one of the fastest growing areas for K-12 schools (Roblyer, 2006). Virtual schools offer distance education courses in basically two formats: site-based—part of a traditional brick and mortar school—and virtual high school/charter schools—typically non-site based.

Site-based Distance Education

The No Child Left Behind Act requires states to offer alternative schooling options to students attending schools that fail to make adequate yearly progress. Some states, school districts, and local administrators see site-based distance education as a viable option for choice. Mupinga (2005) identified current teacher shortages and overcrowded schools as two motivational factors for the rise in site-based distance education. Rather than hire new teachers, some rural schools offer online courses, allowing highly qualified teachers to instruct students in locations where teaching shortages exist. With student populations increasing faster than new facilities can be built, distance education classes are one option states are using to serve students without the capital expenses required to build new schools (Ronsisvalle & Watkins, 2005).

In addition to teacher shortages, O'Dwyer, Carey, and Kleiman (2007) suggested the need to broaden the variety of courses offered by schools as a reason schools implement online courses. Expanding curricular offerings through online courses may include advanced, remedial, elective, or credit-recovery courses. Ideally, by offering online courses, a small school can provide rich and varied options normally available only at larger schools (Pape, 2005).

There are other benefits to site-based distance education. Benefits for administrators include the option of ensuring course content is aligned to standards and providing resources to high-risk students. Teachers benefit by having potentially greater contact with students who are not normally communicative in a face-to-face classroom. Benefits for parents include being able to see assignments, resources, and readings available to their child. Learners benefit by having access to all the tools for success available in one setting, being able to review and

practice as needed, and going at their own pace (Abram, 2005).

Virtual Schools

Most of the emphasis on virtual schooling is at the high school level (Mupinga, 2005). Online high schools are often state-centered initiatives established to expand course offerings and meet the needs of certain student populations. Some online high schools allow students to take courses from home while others require students to take courses in monitored computer labs supervised by teachers or facilitators.

A more controversial example of K-12 online learning is virtual charter schools, which offer distance education to public school students while operating independently of local school districts. Huerta, d'Entremont, and González (2006) identify two forms of virtual charter schools that have developed: home-school and cyber-charter. Home-school charter schools require parents to serve as the primary educator while cyber-charter schools offer computer-based learning either synchronously or asynchronously with teachers filling the role of educational facilitator. In some instances, online programs are now enabling home-schooled students to receive a publicly-funded education in the home environment. Both forms have attracted large numbers of students, impacting the budgets of local districts.

Implications for Instructional Design

The trends discussed above have at least four potentially profound impacts on the field of ID. These effects concern the student or learner population, research-based approaches, lack of trained professionals, and organizational change.

Student/Learning Population

Perhaps the biggest concern is the student. Distance education initiatives may serve the least homogenous group of learners of any other modality or learning environment. We fear that distance education may become little more than a "dumping ground" for credit recovery as well as a re-pository for those unable or unwilling to function in the more traditional classroom environment (Ronsisvalle & Watkins, 2005). This represents a vast underutilization of an incredibly promising educational medium; it is also the exact opposite population the research says tends to thrive in the distance environment (Kachel, Henry, & Keller, 2005; Sharp & Huett, 2006).

K-12 distance education learners include students who have social commitments, are being home-schooled, live in rural areas, are hospitalized, are homebound, who require flexible hours for employment, are incarcerated, who want to enrich their education, are traveling, have difficulty in regular classrooms, or are in need of courses not offered during the regular school day (Mupinga, 2005; Rice, 2006; Ronsisvalle & Watkins, 2005). This brings with it a host of issues that have to be taken into account when considering instructional design parameters for this audience.

Although K-12 students can benefit from the independence offered by virtual schooling, this same independence has the potential for negative impact. While synchronous courses offer real-time interaction with the teacher and, potentially, with peers, a course taught predominantly through asynchronous instruction may offer few opportunities for personal interaction. Like classroom schooling, virtual schooling must address student-related issues including a feeling of isolation and concerns about social development that may exceed classroom-based instruction (Cavanaugh, Gillian, Kromrey, Hess, & Blomeyer, 2004). In addition, virtual learning potentially has some specific audience issues.

Personal and psychological characteristics of successful online learners include autonomy, metacognition, self-regulatory skills, positive self-efficacy, motivation, and internal locus of control (Cavanaugh et al., 2004; Ronsisvalle & Watkins, 2005). The development of many of these characteristics is age-dependent, raising the possibility that younger students may be less successful online learners. Cavanaugh et al. (2004) stated that younger students require more supervision, simpler instructions, and a more extensive reinforcement system than older students. The question of how effective distance learning can be with younger students has yet to be addressed. The amount of independence given to younger students, the use of synchronous versus asynchronous instruction, the characteristics required of a successful young distance learner, and the technology best used to deliver materials to younger learners are all areas that need further research. Instructional designers bring a much needed and research-based perspective on how learners learn to this diverse audience. Ideally, ID professionals would play a key role in researching and designing K-12 distance education environments to carefully accommodate diverse learners with varying degrees of maturity.

Research-Based Approaches

We have become a bit cynical in our view that, K-12 educational personnel who always seem to seek out the "magic elixir" that cures all ills, will embrace distance education as the latest in a long line of perfect solutions. ID professionals, perhaps in partnership with academic researchers, can play a key role in making sure that distance education initiatives truly serve the needs of students. Instructional designers must stay on top of the current research and be able to defend decisions regarding who should and should not enroll in the available distance education offerings and promote designs that have the capability to serve the targeted student population. In this way, instructional designers are protecting students by promoting solid distance learning practices based on research and theory.

Unfortunately, little research currently exists to inform decisions about online learning in K-12 schools. Instructional designers are uniquely qualified to help fill this research gap. Few high-quality, evidence-based research studies have examined the effectiveness of online learning at the high school level compared to face-to-face instruction, with even fewer studies examining curriculum-specific interventions (Conceição & Drummond, 2005; O'Dwyer et al., 2007).

The majority of research on student success in online courses has been conducted in higher education settings (O'Dwyer et al., 2007; Ronsisvalle & Watkins, 2005). How this research translates to the K-12 setting is unknown. Cavanaugh et al. (2004) caution against applying the findings of higher education research in distance education to the K-12 setting, adding that K-12 distance education is fundamentally unique. ID professionals are needed to direct research concerning which distance education learning models work best with certain groups of students. Finally, the majority of K-12 distance education research has been conducted in grades 6-12. The effectiveness of online learning for all grade levels is, at best, unclear. K-12 instructional designers for distance education need to be aware of the lack of a clear research agenda and the controversies surrounding this new delivery medium. ID professionals have an exciting opportunity to guide the development of K-12 distance education to make sure that the needs of learners are met.

As with research in adult distance education, studies in the K-12 setting focus primarily on comparisons of student achievement in online versus face-to-face courses. The popularity of studies comparing distance courses with face-to-face instruction stems from the longstanding curiosity about the legitimacy of distance education as an alternative to traditional settings (Bernard et al., 2004). Comparison studies in both higher education and K-12 environments appear to show no significant difference based on the delivery medium. Cavanaugh et al. (2004) completed a meta-analysis reviewing web-delivered K-12 distance education programs and found that student achievement was similar between online courses and classroom-based courses.

We agree with the suggestion by Bernard et al. (2004) that the need for studies comparing distance education with traditional classroom instruction is nearing its end. ID professionals should begin to direct a research agenda involving comparisons within distance education environments. A

review of existing K-12 distance education literature by Rice (2006) supported this assertion, adding that distance education research should move beyond comparative studies to focus on the factors that ensure successful teaching and learning. In general, the requirements of non-traditional settings, like online learning environments, have received only a small amount of research and are not well understood. The systems thinking of an instructional design researcher could be invaluable in the investigation of these models.

There are also issues concerning evaluation. Already, it is clear that issues of quality and assessment are as critical in distance education as in traditional forms of education, but non-traditional programs often must prove their worth in ways not expected of mainstream schools. The instructional design perspective can inform evaluation strategies to ensure that naïve questions about technology and online educational delivery are not the primary ones being asked.

Lack of Trained Professionals

In terms of instructional design, teachers (if they are trained at all in ID theory and practice) are trained to design instruction for the traditional classroom. Presupposing that this training is sufficient to create solid, pedagogically sound, online instruction is a fatal flaw in the process. Expecting teachers to be instructors, content experts, distance education instructional designers, and technology experts, in addition to their other responsibilities, is asking too much. There is a strong need for instructional designers, specifically trained in distance education technologies and design, who are ready to tackle distance education challenges at all levels. Such collaboration would allow instructors to focus on their roles as content knowledge experts and teachers while instructional designers work with those teachers, and within the medium, to facilitate delivery of specific instructional strategies and design features for successful implementation. Since the cost-benefit characteristics of online programs are very different from the traditional education systems, we can predict that there will be substantial implications for

what kinds of technology solutions will be feasible and cost-effective. Again, instructional design research on feasibility of technology in these contexts is needed.

The overwhelming demand of the training field for people with instructional design backgrounds (Moller, Foshay & Huett, 2008) has diverted much of the attention of the field away from education. Now that technology is finally entering the educational system in substantial quantity (and with the growing interest in online course offerings), we can hope that the trend reverses. Bringing instructional designers into "the fold" allows us to move away from individual initiatives and more toward a collaborative approach where instructional designers partner with teachers to create dynamic and engaging distance learning environments. Kachel et al. (2005) listed three critical elements for exemplary K-12 online learning: "the features and design of the course, the role of the teacher or facilitator, and the characteristics that successful online learners exhibit" (p. 14). If one agrees with this assertion, then it could follow that the first point should be the new domain for instructional designers. However, instructional designers may also have a role that extends beyond the preliminary design of the course. In many distance education initiatives, the class "shell" or template is initially designed with the idea that the section can and will be taught by multiple instructors in different locations with varying backgrounds. The classes can then be packaged for distribution to many different school settings. A key role that instructional designers may play in the success of distance education initiatives is in helping to ensure that the environment in which the course is delivered is supportive of (and consistent with) the initial design of the class and to make adjustments accordingly. This could help maintain an invaluable user-centered design perspective for each location and audience.

Organizational change

What we are witnessing with the current evolution of distance education and the technologies that support it is nothing less than the single most

important reorganization of how we will engage learners since we started to gather students together in school buildings. If schools are going to make a commitment to deliver education in this format, it will require a restructuring of how they do business, necessitating the hiring of distance education instructional designers to work with teachers and the local district. ID professionals would bring a much needed awareness of sound distance education design to the process.

Since, in the U.S., K-12 schooling is primarily a state and local enterprise, structures needed to achieve a cost-effective scale for online learning are only beginning to emerge (most often in the form of regional and statewide consortia, with some private-sector activity). In those few cases where a curriculum has gained national recognition (such as Advanced Placement or International Baccalaureate courses), we are beginning to see national offerings as well.

However, it is unclear if the economies of scale promised by e-learning will ever be substantial in the U.S. K-12 context beyond a variety of niche applications such as those mentioned above. It may be that countries with national curricula will see these benefits long before the U.S. does.

Conclusion

Is e-learning (and the technologies that support it) truly a breakthrough or is it only the latest "miracle" which promises solutions to all the problems associated with education and training? Clearly, our society loves simple answers to complex problems—especially if those answers require little or no effort. It is impossible to deny the benefits and ubiquity of the Internet. Yet the history of education is a history of so-called advances and new ideas which fail to hold up to scrutiny over time. Rushing to adopt distance education, or any new technology, to avoid being seen as out of touch or outdated certainly is as ephemeral as most fads. We agree with those who argue that education and training are costly endeavors that are not presently serving our schools, our business organizations, or our society

well. We need training and educational solutions, and e-learning holds out promise. Unfortunately, much of real promise is buried under the hyperbole of a quick fix, much like a TV commercial that makes exaggerated claims of losing weight while one sleeps. While some may view this as a cynical opinion, our view for the future is actually quite positive: We just need to choose to view e-learning as the question rather than the answer. In short, the Internet and e-learning make wonderful things possible if we decide, as educators and trainers, to exploit those possibilities intelligently and systematically.

The multitude of possibilities outlined in this three part series illustrate that there are opportunities to evolve and to grow the field of instructional design in many directions. At the same time, however, researchers and practitioners are facing such a demand for their talents that getting the support and the time for disciplined research and theory building is often extremely difficult. This makes for tricky but exciting challenges.

For instructional design and technology, this is "stand and deliver" time. Professionals in the field are finally getting their chance to make good on the visions of learning transformed by technology. However, we have neither unlimited time nor unlimited resources to prove our worth to the current leaders aggressively advocating the use of technology in training and education. If the expectations of the public and policy makers are not realized, it will not matter which learning theory, design methodology, academic program, or software company did or did not succeed. The credibility of technology as a transformative force will be damaged. It is incumbent upon all professionals with a commitment to the potential of technology in education and training, no matter what their theoretical or ideological bent, to think outside the box, to collaborate and to advance the common vision. As much as our understanding of technology in education and training has developed over the past 40 years, we still understand only a small fraction of what

is required to transform the craft of instructional technology and design into an engineering or science-style discipline.

Given the challenges we face, practitioners in the field have little time for ideological bickering about various theoretical positions. No single line of research can possibly lay a unique claim to ultimate wisdom and understanding. There is much to be accomplished and little time to accomplish it. Let us proceed then, together, with the hard work of building a cumulative and unified base of knowledge for e-learning and the field of instructional design.

Jason Bond Huett, is an Assistant Professor with the University of West Georgia. He is currently a member of the editorial boards for Quarterly Review of Distance Education, The Journal of Applied Educational Technology, Information Systems Education Journal and served as chair on AECT's Distance Education Standards Committee. He presents internationally on a topics concerning distance education and online learning and serves as a consultant for several virtual schools. Dr. Huett was a featured researcher at the 2006 AECT International Convention in Dallas, Texas and has published numerous articles and book chapters relating to distance education—including two award-winning publications. jhuett@westga.edu

Leslie Moller is an Associate Professor at the University of South Dakota. He is a graduate of Purdue University's Instructional Research and Development program. Leslie serves on the editorial boards of the Quarterly Review of Distance Education, International Journal of Educational Technology and Performance Improvement Quarterly. Dr. Moller is also the former chair of the Instructional Technology Special Interest Group within the American Educational Research Association as well as the Distance Education and Curriculum committees for AECT. Leslie has authored over three-dozen articles and book chapters related to Distance Education and Instructional Systems Design. Lesmoller@aol.com

Rob Foshay is Director, Research for the Education Technology Group of Texas Instruments, Inc. In this role, he helps to guide TI's ongoing global program of independent, high-quality research on education in mathematics and science. Dr. Foshay's experience includes over 35 years in education and training, including 25 years leading research and design efforts in private sector educational technology companies, most recently for the PLATO system and other distance learning companies. He also has

held faculty appointments at the University of Illinois - Champaign, and as a secondary-level teacher and district technology coordinator in suburban New York. He has published over 70 major peer-reviewed articles and book chapters on a wide range of topics in education and training, and he is co-author of a successful textbook on advanced techniques for instructional design. His doctorate is in instructional systems technology from Indiana University. rfoshay@foshay.org, www.foshay.org

Craig Coleman *is a School Library Media Specialist at Mundy's Mill Middle School in Clayton County, Georgia. He is a member of the American Association of School Librarians and the Georgia Library Media Association. He is a guest blogger for GLMA writing technology postings for school library media specialists throughout Georgia. He recently gave presentations about using iPods and Podcasting in schools at the Georgia Conference of Media Organizations and the AASL National Conference. craig@justsaycheese.com*

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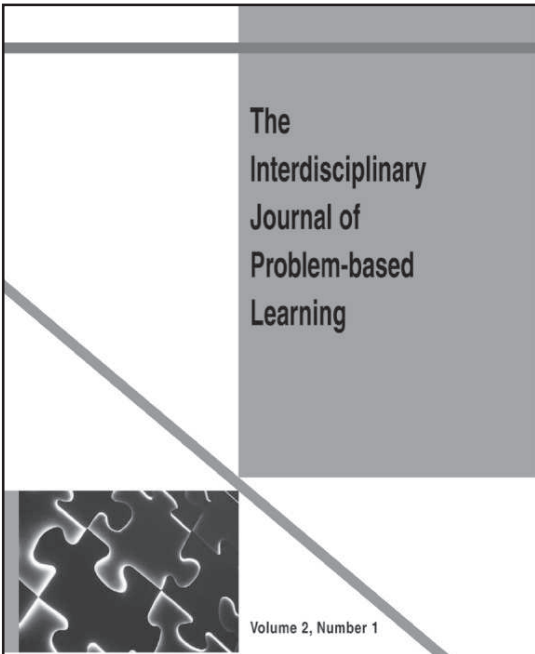Pape, L. (2005). High school on the web. *American School Board Journal, 192*(7), 12-16.

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