

DISTANCE LEARNING

... For Educators, Trainers, and Leaders

*In this
issue the
spotlight is on*

***The Story of
Network
Nebraska***

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DISTANCE LEARNING

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PURPOSE

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

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

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SPOTLIGHT ARTICLE

Constructing the 39th Statewide Network

The Story of Network Nebraska

Brenda Decker, Tom Rolfes, Walter Weir, and Rick Golden

INTRODUCTION

This article is the story of one of the youngest statewide networks in the United States: Network Nebraska. After reading the title, one could hardly imagine what would be newsworthy or printable about the development of another state network. It is obviously not the first; and almost certainly will not be the last. It's definitely not the largest and almost assuredly is not the smallest.

What this is, however, is a story of determination and vision; about how a relatively small group of persistent people brought about tremendous change in the way that public policy and funding and network services are administered on a statewide basis. It is a story of finesse, risk taking, trust, and bumpy roads along the way. It is a story of heroes and heroines and, if you read to the end, you will



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get to meet some of these incredible people.

If you are from one of the 40 states that claim a statewide network and you have lived through the growing pains of developing an organization where none existed, you may chuckle and nod your head about reading these personal accounts. If you happen to be from one of the 10 states yet to achieve statewide public networking, you may read with interest the “lessons learned” and “if we had it to do all over again” to avoid similar pitfalls. Network Nebraska is only midway through a 3-year development plan that will interconnect over 330 public K-12 higher education entities and up to 100 nonpublic education systems across the state, all of whom had well-established distance learning relationships and existing telecommunications providers prior to the start of the project.

IN THE BEGINNING...

After reading numerous accounts of the origins of statewide networks across the

United States, it was determined that no single template for change or model of network exactly fit the environment and forces that were at work in Nebraska in 2003.

What was discovered through research was that large-scale public telecommunications networks are much easier to develop if the following components or features are present: A public sector champion or champions (e.g., governor, university president, state senator, commissioner of education); an upfront funding source (e.g., legislative appropriation, federal grant, bonded investment); a public policy mandate (e.g., a gubernatorial initiative, legislative bill, campaign promise); a trusted business unit (e.g., state agency, college or university department, consortium of public entities, 501(c)3); a sustainable funding source (e.g., public services fund, legislative appropriations, user fees); the onset of a disruptive event (e.g., loss of provider, legacy technology extinction, sudden cut in funding, natural disaster) and, to a lesser extent, having a history as an early, estab-



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lished service provider (e.g., Internet services, Web hosting, dial-up connectivity, IP [Internet protocol] networking).

THE IMPETUS

What was unique about Nebraska's network development story is that almost none of these factors existed to get the original network off the ground. There were no huge or sudden disruptions, nor any over-the-top crusader making educational broadband a top priority. However, back in 2003, then-Lieutenant Governor Dave Heineman (now Governor Heineman) and L. Dennis Smith, president of the University of Nebraska, agreed that the State of Nebraska and the University of Nebraska would work together on telecommunications projects for the common good. That single suggestion did create the original impetus for the state's two largest telecommunications resellers (state government, University of Nebraska) to begin collaborating, along with Nebraska Educational Television. Within months, the State Division of Communications and the University of Nebraska entered into the world

of competitive Internet provision for the state's K-12 and nonuniversity higher education entities. They also began cooperatively procuring contracts for aggregated backbone transport to serve state agencies and university facilities. And so the Collaborative Aggregation Partnership (CAP) was born, and it exists to this day.

Meantime, in the K-12 world, there existed a dozen or so decentralized distance learning consortia comprised of school districts and neighboring colleges who had banded together originally to exchange synchronous video distance learning classes. The earliest of these formed in 1992 and the most recent in 2002, with 45 late-adopting school districts added in 2003. These 12 consortia were using a variety of incompatible, aging audio/video technologies and were rapidly approaching the end of their long-term (10-year) telecommunications contracts, so something had to be done. The school districts had used lottery monies, federal grants, and local funds to purchase their original analog, motion JPEG, and MPEG2 video equipment over high bandwidth (45Mbps, 100Mbps) circuits, but virtually

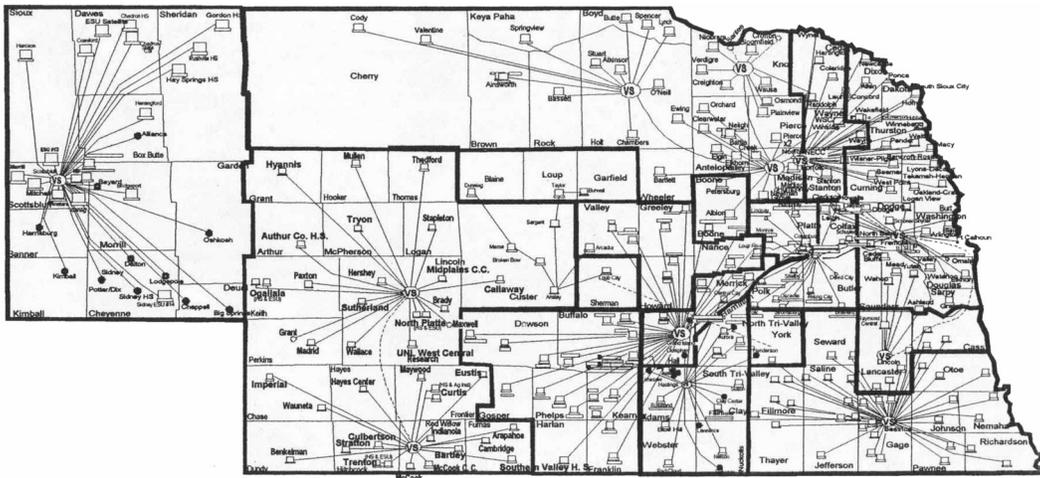


Figure 1. Nebraska's original distance learning consortia were divided up into 12 different groups with disparate technologies.

no escrow funds were ever set aside for technology replacement. Also, the consortia's incompatible video compression technologies and localized and regionalized infrastructure did not lend itself well to statewide distance learning exchange.

Partly in response to the heated debate between the adoption of analog versus motion JPEG technology in the 1990s, the state legislature created the Nebraska Information Technology Commission (NITC) in 1998. Comprised of nine members appointed by the governor (with the lieutenant governor as chair) and confirmed by the legislature, this commission is assisted by five advisory councils (state government, community, education, eHealth, and GIS) and a technical panel. The role of the technical panel is to review requests for technology funding and to set standards and policies to guide the state's future investments in information technology.

The NITC developed nine strategic initiatives in 2004, two of which directly affected educational networking. The first was the Statewide Synchronous Video Network and the other was Network Nebraska. In essence, the Synchronous Video Network was to bring about the unification and interconnection of video distance learning applications, and Network Nebraska was to provide the conduit or transport to interconnect the distance learning classrooms and more cost-effective Internet.

The first legislative appeal to provide funding for the aging distance learning equipment was brought forward in January 2005. Facilitated by a determined group of distance learning coordinators with little experience in legislative lobbying or advocacy, a \$30 million video equipment and wide area networking "train wreck" image was painted before the unicameral legislative body. When the debate settled, the legislature denied funding but did agree to launch a 6-month Distance Education Enhancement Task Force to study the issue and to come back before

the body in January 2006 with recommendations. As a result of the next session, "LB 1208" was passed by the legislature in April 2006 by an overwhelming margin and signed by the governor to become law, with an effective date of July 2006.

CARROT OR STICK?

Legislative Bill 1208 set out a number of policy, funding, and coordination changes across the state. This legislation tasked the state chief information officer (CIO) with providing access to every public school district and public higher education institution in the state, but it did not require participation. The bill also required the University of Nebraska to assist in this effort.

Since participation was not mandatory, the legislation provided a number of financial incentives or "carrots" for participation. First, it recognized the importance of equipment upgrades by allowing each high school building and educational service unit \$20,000 in equipment reimbursements from lottery funds if they joined the statewide network and participated in distance learning. The bill also provided 8 years of lottery funding for distance learning incentives of up to \$1,000 for each video course sent, up to \$1,000 for each video course received, and additional incentives for sending asynchronous courses or reaching "sparse" or "very sparse" districts with distance learning courses, when delivered over Network Nebraska. The total amount of lottery funds attributed to this project through 2015 is estimated to be about \$34 million and is administered by the Nebraska Department of Education.

In order to offset the potential increase in cost of full IP, flexible wide area networking, the legislature also introduced a new telecommunications allowance within the state aid formula that allowed any "equalized" (high need) school district to be compensated for 85% of the post E-rate

cost of telecommunications. In effect, with the average state E-rate reimbursement at 67%, the final net cost of telecommunications for these 207 school districts is approximately \$5 of every \$100. For the 47 school districts that are unequalized, their only benefit is E-rate. Nonpublic school systems may also participate in Network Nebraska but do not receive state aid; only E-rate. Higher education entities do not receive any direct itemized support for telecommunications.

The legislature also provided approximately \$1.3 million to a newly formed Distance Education Council to purchase a statewide clearinghouse and scheduling system. This Web-based Renovo Software system allows any school district or college to list their distance learning courses on a statewide clearinghouse and allows any eligible entity to register for the courses. Once the tentative schedule of send and receive courses is finalized, the software system is programmed to become the daily calendar of device control; turning on and off codecs all over the state for every multi-point, recurring videoconference.

WHO'S IN CHARGE?

As mentioned earlier, the state CIO was deemed responsible for providing access to every public education entity in the state by July 1, 2012, but the law did not require any entity to participate. Also, the statute did not provide for any direct funding to the network for development or administration. It specifically required that any administrative costs incurred in building and maintaining the network be paid for by the participants. This presented an accounting challenge early on because there were over 16 months between the time that staff began working on network development and the first revenue appearing from the Network Nebraska Participation Fees.

These provisions challenged Network Nebraska to be customer-centered and economically minded. If the cost of partici-

pation became too high, the entities would not join. If only a few entities joined, the network would not achieve its goal of economies of scale of less expensive Internet access through aggregated purchasing or affordable statewide transport through shared backbone costs.

Qualified staff members of the Educational Service Units, or ESUs, as they are called, also responded to the project by assisting with network design and RFP review. ESUs also offered to become the rebilling entities to their member schools for the State of Nebraska. By using the ESUs' standard rebilling mechanisms with schools, the central finance division of the state was able to keep its costs down, consequently keeping the Network Nebraska Participation Fee as low as possible. Without the collaborative assistance of the ESU and college staff helping with network design and support, this project would not have succeeded.

SUCCESS OR LACK THEREOF?

The authors are happy to report that, at the time of this writing, 100% of the south-central Nebraska institutions (83 school districts/ESUs and 6 colleges) are in the process of joining the network in the summer of 2008. The Phase I upgrade, summer of 2007, saw 100% of the northeast region (92 school districts/ESUs and 2 colleges) join the network. The third and final phase, consisting of over 100 schools and colleges in southeast Nebraska and the panhandle, will join the network in the summer of 2009 (see Figure 2). At project's end, Network Nebraska is expecting to have 100% of all its public colleges and public K-12 districts connected with high bandwidth fiber transport.

It's important to understand that "joining" the network is composed of three main obligations. First, each education entity must commit to a connection of 30Mbps or greater optical fiber for public school districts and 10 Mbps or greater

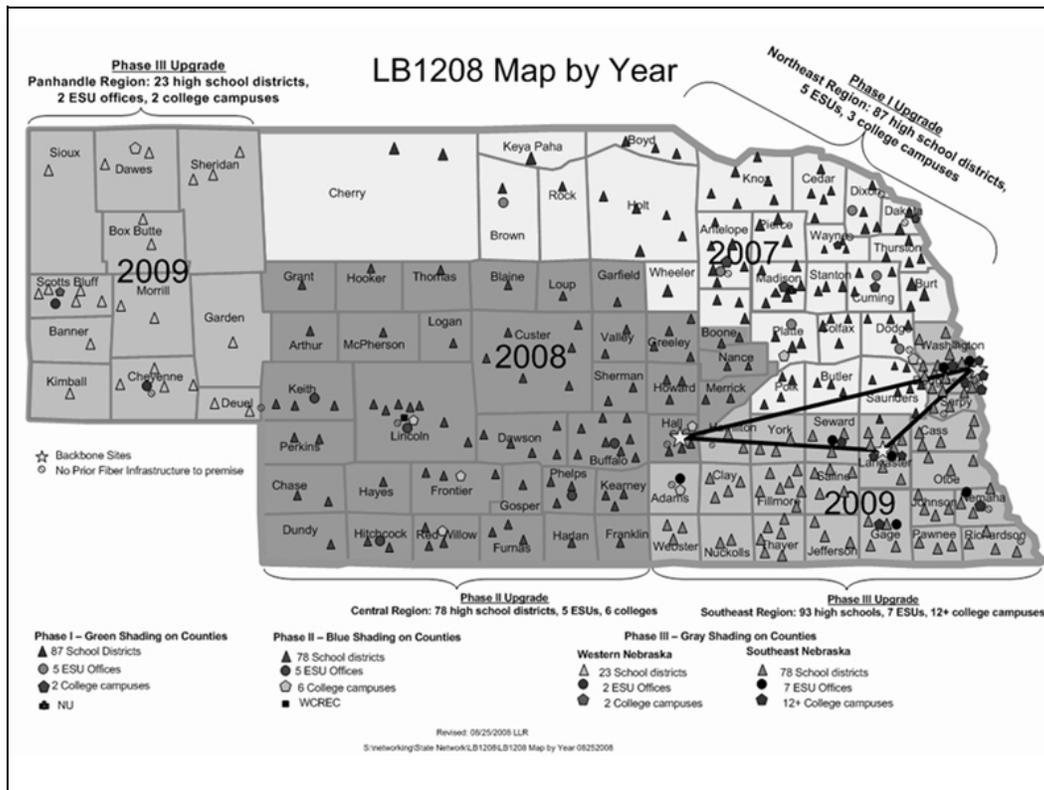


Figure 2. The conversion of 336 schools and colleges to a high bandwidth, IP network will occur over three summers.

fiber or fast copper Ethernet for nonpublic education systems and smaller colleges. This connectivity can be bid either by the CIO or the local entities, with specifications provided by Network Nebraska as taking them to a certified network aggregation point, one of three in the State. Second, each participant, regardless of size, must agree to assume its share of the Network Nebraska Participation Fee, about \$200/month. And third, each participant must, regardless of geographic location, agree to assume its share of the Interregional Transport Fee to help interconnect the three LATA regions of the network, about \$95/month (before E-rate). In comparison to other similar statewide networks, these costs are very modest and also represent a fully sustainable funding

plan, with no outside or upfront assistance by any state entity.

In addition, individual colleges or school district consortia may purchase Internet access off of the statewide contract, currently at \$38/megabit/month for 2008-09. This per unit cost has decreased steadily and substantially since the first aggregated Internet access purchase in 2003.

What originally was considered by the network constituents as a funding weakness and lack of support by state government is now considered by the network organizers a determinable strength and more reliable funding model by not being dependent on unpredictable state general funds. With the network management and administrative functions fully funded by participation fees, the focus remains on the

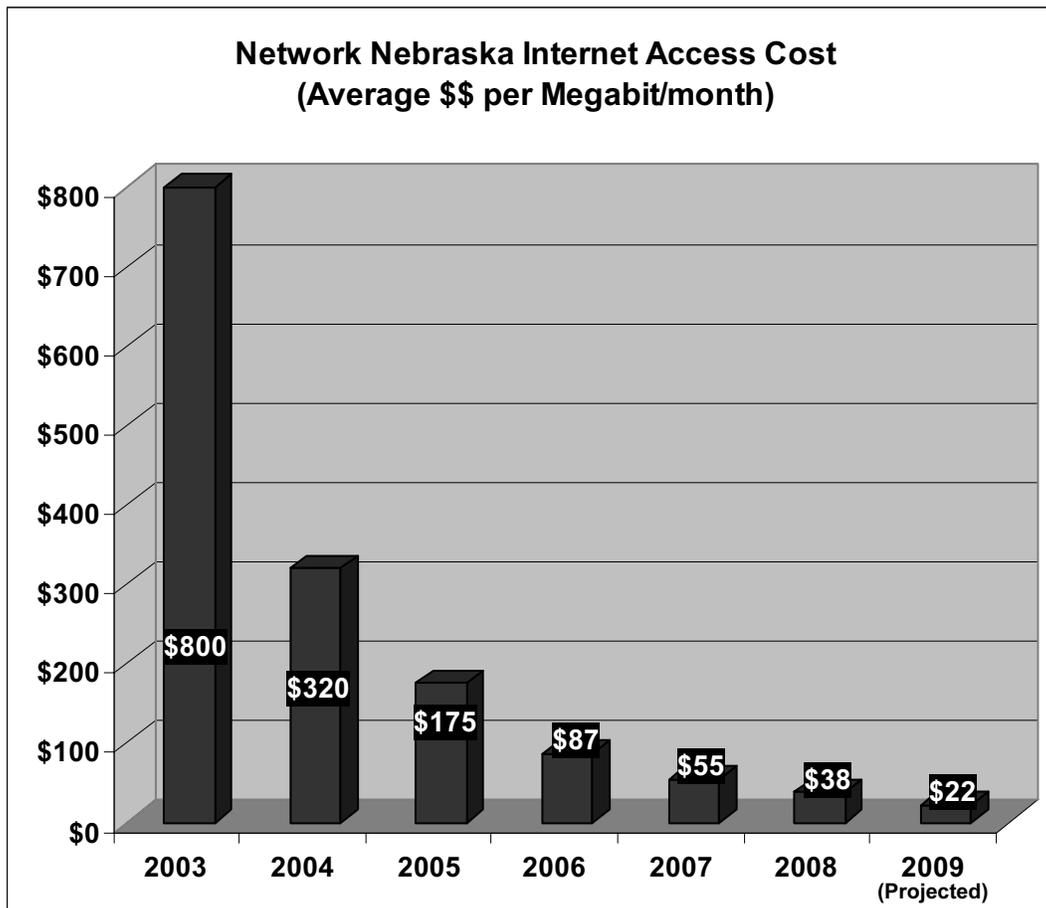


Figure 3. Network Nebraska Internet access unit costs have decreased by 97% over 6 years due to aggregated purchasing.

services and needs of the customers, partners, and end-users. The measure of success since the beginning of the network has always been “better services for the same or lower prices.”

WHAT MAKES IT ALL WORK?

Network Nebraska, as Figure 2 suggests, is not a completely unique infrastructure. There are three large network aggregation points located in Grand Island (308 LATA), Lincoln (402 LATA) and Omaha (402 LATA), that act as the core routing and “choke points” for the Layer 2 network. All 300+ district and college entities belong to

one of the three regional Ethernet clouds and are then routed through one of the core network nodes. The three-segment backbone, consisting of 500Mbps to 1000Mbps, then interconnects the three regions. The 28 Nebraska telecommunications companies all play a part in either the backbone transport or wide area Ethernet network. The Network Nebraska engineers, together with their public education partners, have collaboratively decided the approved routers and switches acceptable on the network; IP block addressing schemes; Quality-of-Service (QoS) routing protocols for different types of data; and



Figure 4. Frau Elaine Bruning, 7-year veteran distance learning teacher from Humphrey Public Schools, works on German vocabulary with students from Schuyler and Twin Rivers.

an informal approach to network troubleshooting and problem resolution. As intended, the network has been extremely reliable since its first days of operation. ESU, college and Network Nebraska staff all share in the monitoring of individual sites' traffic and can, on a moment's notice, shut down a rogue location, if overtaken by viruses or malware. Videoconferencing traffic is prioritized from end to end through the various routing devices and regions to make sure that all multipoint conferences interact with very high quality audio and video with no degradation.

WITH AN EYE TOWARD THE FUTURE?

As with any technical innovation, it takes time for humans to adapt. Even with a

statewide, IP-based network infrastructure, it will take time for end-users to discover its power and flexibility. For instance, it is still common for school districts to use only their one former static motion-JPEG room, even though they could be adding several more IP video devices at a fraction of the bandwidth. They will soon discover that they have bandwidth for many more uses and applications. Dan Hoelsing, superintendent of four school districts in northeast Nebraska, may be one of those pioneers. In the first year of operation, Hoelsing has purchased an additional 17 mobile IP video carts to exchange distance learning courses with his small rural school districts. He reports that they are on schedule to add an additional six carts for the fall of 2008, making a total of 27 distance learn-

ing rooms divided among four districts. Hoelsing and his four high school principals report that they reached over 860 students each day of the 2007-08 school year with 57 different distance learning classes, and an additional 270+ college credits being earned through dual enrollment classes. Several of the high school seniors were enrolled in enough college courses to be considered full time. It's no wonder why Hoelsing was selected as one of eSchool News' Top 10 Tech Savvy Superintendents for 2007. Hoelsing's teachers all use Angel Learning Management to augment each of their video courses, which allows students and teachers to interact, exchange assignments, and conduct electronic assessments. The four districts are also experimenting with portable white boards on their codecs' data channel to fur-

ther enrich the teaching and learning experiences. Dr. Hoelsing reported that his four school districts recouped over \$200,000 in distance education incentives in the 2007-08 school year to help facilitate further program growth and equipment investments.

Although Nebraska has a rich video distance learning heritage, the Partnership for Innovation (a K-16 consortium of Nebraska instructional officers) recently committed \$150,000 in discretionary Perkins grant funds to purchase a 3-year institutional license from the National Repository for Online Courses (NROC). This promises to be Nebraska's first statewide venture into a virtual, online curriculum. The Nebraska Information Technology Commission and Network Nebraska are eager to partner with the



Figure 5. Superintendent Dan Hoelsing and Principal Craig Frerichs discuss woodworking projects with Coleridge Public Schools upperclassmen, whose class is being taught over Network Nebraska.

Partnership for Innovation to help guide the technical deployment of these content servers. If done strategically, the National Repository for Online Courses courses can be joined by other commercial content on a very robust digital content repository, thereby storing, cataloguing, and retrieving teacher-produced learning objects.

LESSONS LEARNED?

So, when asked “What would you do differently if you had to do it all over again?”, The Network Nebraska organizers would contend that the public partnering of K-12, higher education, University of Nebraska, and Office of the Chief Information Officer has gone about as well as it could possibly go. When all the involved entities have such a large stake in the game (i.e., network reliability, increased Internet demand, and finite financial resources), it’s easy to stay focused on the ultimate goal; a statewide federated network. While the original LB 1208 legislation offered much in the way of incentives for participation, it did not allow much in the way of top-down control. Therefore, much of the development had to be participative and democratic. This worked well when deciding on a single make and model of router for each site on the network; it did not work so well when the same entities had to decide on a single codec make and model or even the same codec equipment configuration to be deployed. Setting up a multi-tier centralized help desk and trouble-ticketing system was resisted by the K-12

entities and dismissed as unnecessary. Still, school districts and ESUs have begun to trust Network Nebraska to act on their behalf. Success has bred more success.

WHAT’S NEXT ON THE AGENDA?

At the time of this publication, the Phase II conversion will have been completed and the Phase III Letters of Agency (Erate permission to enter into a consortium) will have been submitted. The interregional transport (backbone) bandwidth will need to be increased for 2009-10 and the statewide Internet access contract will have to be rebid. More work needs to be done to give the customers and partners a formal voice into how Network Nebraska is managed and maintained. And, once all the entities are on board and the network is fully deployed, more attention can be placed on new and emerging technology applications on the network and developing even more collaborative content relationships within and outside the Nebraska.

For more information, visit the following Web sites:

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- Distance Education Council:
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- Nebraska Information Technology Commission:
www.nitc.nebraska.gov
- Nebraska Office of the Chief Information Officer:
www.cio.nebraska.gov

AT A DISTANCE

An Instructional Design Framework for Distance Education

Amber D. Evans and Barbara B. Lockee

INTRODUCTION

Instructional design (ID) offers a systematic process for ensuring the development of effective learning environments. The creation of learning solutions through ID is typically based on a model that serves as a framework for the design and development process. In the world of distance education, the application of such processes are as important, if not more so. While distance education reflects a specific context for which instructional programming is produced, it maintains inherent features that require a

customized model to guide development for this delivery approach. As stated by Head, Lockee, and Oliver (2002), distance education presents a myriad of different (and sometimes new or difficult) parameters regarding how the instructional program has to be delivered.

Simply considering the delivery technologies that may be employed for distance courses gives insight to the types of challenges that need to be planned for designing such instruction. What if a particular system of providing distance educa-



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tion has limited (or nonexistent) face-to-face interactions? Do time delays exist among members of the learning community? Is the targeted class synchronous, asynchronous, or a blend of both? Professors teaching in distance education environments are aware that there are other complexities as well: what technologies are available, how easy are they to use, what are the uses; what is possible, probable, unlikely, or impossible to do? These considerations should factor into how instruction will be organized, developed, presented, delivered, and ultimately designed and evaluated for maximum learning effectiveness.

Distance education does not offer a new or better way of teaching or learning; it is a different context that provides an alternative approach. As Gustafson and Branch (1997) stated, "the greater the compatibility between an ID model and its contextual, theoretical, philosophical, and phenomenological origins, the greater the potential is for success in constructing effective learning environments" (p. 16). If the model can be aligned to the way it is going to be used, the instructional designer will be more likely to create a successful learning experience (in any medium). This construct is especially true for distance education. The model by which distance courses are developed must consider the features of this specialized learning environment.

The model proposed herein consists of seven key stages, four of which have sub-stages of their own. This model, called AT A DISTANCE, is an acronym for the primary seven stages: Analysis, Technologies, Affective domain, Design and develop, Implement, Sample, Tryout, Adjustments, Negative consequences, Completion, and Evaluation and endorsement. Combined aspects from established design models have resulted in the current framework for the systematic planning and implementation of distance education.

What makes this model different from many others is that it inherently acknowledges the significant influence that organizational and/or technological infrastructures place on the designer or instructor in choosing how to best design for the delivery system in place. According to Gustafson and Branch (1997), "models also assist us in selecting or developing appropriate operational tools and techniques as we apply the models" (p. 21). Related to this principle, any designer or teacher would prefer to have full control over what, how, and why they would choose to use a particular development tool, media, or mode to deliver their instruction. The reality is that an instructor is presented with a list of available technologies and told to "pick one or several" to deliver their instruction. It may seem like a step backwards, and in many situations, it is. Often being "stuck" with a particular technology that does not match the instructional goal will result in an ineffective instructional experience. Through early recognition of the technologies and tools the instructors are "bound" to use, instructional designers can create a more complete and cohesive learning solution.

A CLOSER LOOK: "AT A DISTANCE"

The AT A DISTANCE model begins with clear performance objectives in mind and, taking into account the given design and delivery context, builds a learning program that appeals to the learner's affective domain while facilitating the targeted learning outcomes of the instructional event. From there the coursework is developed in stages of modules and units. At the stage of implementation, a prototype module or unit is created and tested. Adjustments are made, at which point the designer steps back and asks, "Are there negative consequences in having learners do what I'm asking them to do?" Depend-

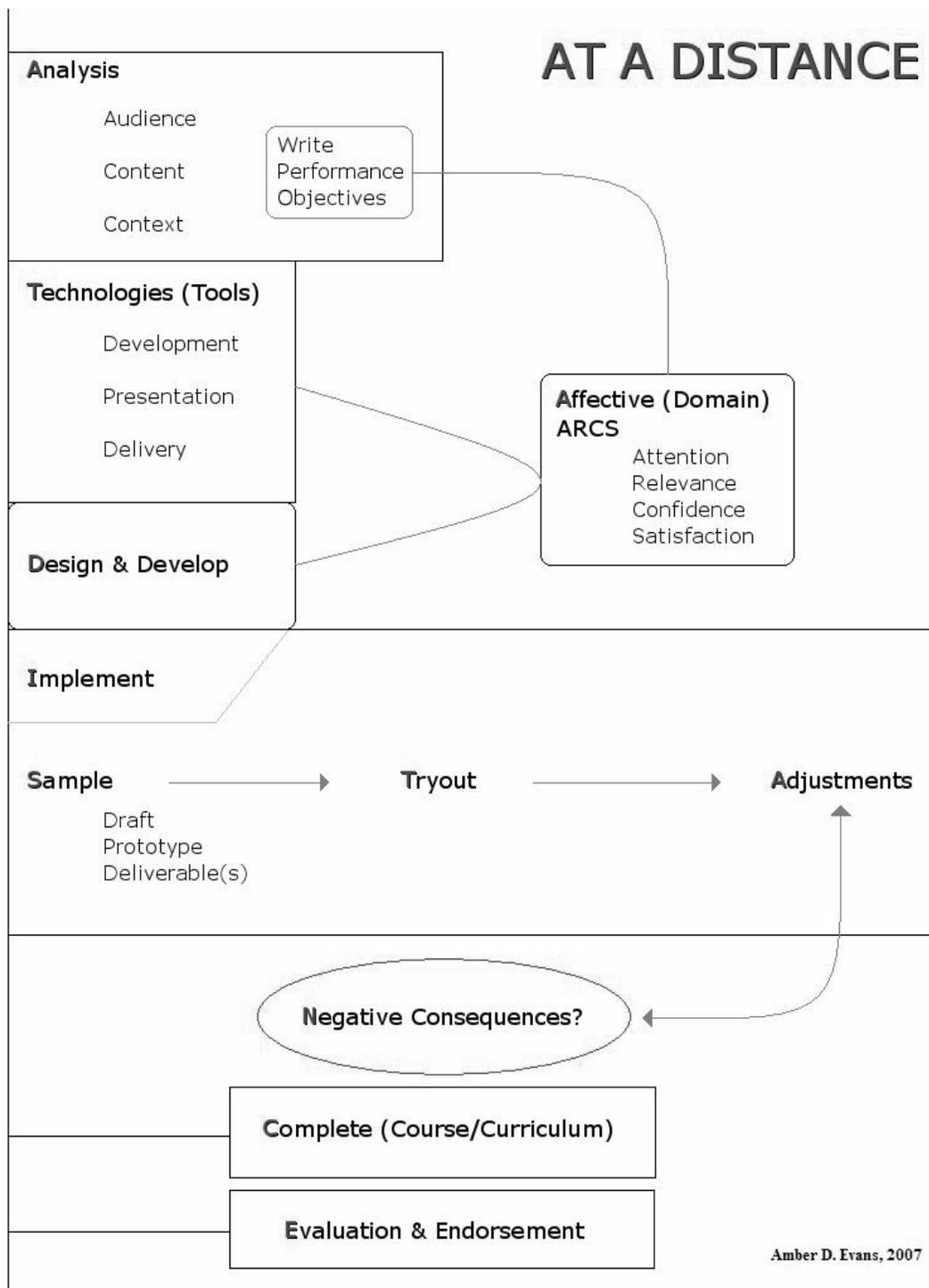


Figure 1. Diagram of the AT A DISTANCE model.

ing on the answer, the prototype is either further adjusted or tested. When satisfactory, the next sample (module, unit, etc.) repeats this process. This phase continues until all components of the instruction are effectively designed according to specification, and also technologically functional. The course can then be pilottested and evaluated. A variety of data are then collected to determine any necessary revisions prior to full-scale implementation of the distance-delivered instruction.

ANALYSIS

Borrowing from the analysis phase of Rothwell and Kazanas' (1992) version of the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model, a general reference to the commonly acknowledged stages of ID, the analysis stage as part of AT A DISTANCE is a look into the audience's characteristics (needs/desires), the content to be taught, and the context in which it will be implemented. The level at which these three facets of analysis receive treatment will vary.

In the case of a distance education course, a closer look into the demographics of the target group can be quite pertinent to development. Consider that the audience is likely to be broader in age, experience, and geographic location. What discrepancies exist? Will any of them require special services or alternate accessibility? If nothing else, be sure to understand what the learner-related characteristics are for the target audience. Find out what prior knowledge, skills, abilities, and attitudes they may have. If possible, also determine audience members' ages, gender, ethnicity, and what their general interests may be (Rothwell & Kazanas, 1992). Knowing such demographic information can help guide important design decisions that can serve to keep students actively engaged.

After the audience has been defined, one must analyze the instructional con-

tent. Instructional analysis is defined by Gibbons (1977) as "the process of breaking large bodies of subject matter into smaller and instructionally useful units" (as quoted in Rothwell & Kazanas, 1992, p. 133). The resulting process of this allows designers to proceed with the development of instruction in a logical and meaningful way.

Lastly, an analysis of the learning and performance context needs to be conducted. Designers need to be aware of the settings in which the instruction will occur, as well as the actual environment in which the newly acquired skills and knowledge will be applied. Awareness of contextual elements related to learning engagement and transfer are critical in making effective distance course design plans.

TECHNOLOGIES (TOOLS)

Designers and instructors are expected to be proficient not only in knowing what technologies can do for them instructionally, but also how to proficiently utilize such technologies for distance course development and teaching. With only so much time available, it is nearly impossible to make fully informed media selection choices. There are media for development, for delivery, for presentation, and for activity or engagement among learners. With so many choices, decision making can be overwhelming.

For this reason, this stage is an important one to incorporate into the process of developing a distance course. Expect to spend a fair amount of time either working with someone knowledgeable or doing a fair amount of research to determine which methods (and media) will work best for the intended learning outcomes.

This stage is often the most frustrating—yet interesting—segment of the process. As part of this process, designers may need to assess whether or not media selection choices will need to be adjusted. Gustafson and Branch (1997) state, "While models provide the conceptual reference, they also

provide the framework for selecting or constructing the operational tools needed to apply the model” (p. 24). When done properly, the end result is learning that aligns with the original desire of the instructor.

AFFECTIVE (DOMAIN) ARCS

The affective domain is often regarded as a difficult aspect to address in the ID process. Engaging learners is important because when they are drawn into the instruction, they are more likely to focus and attend to the content and instructional tasks. This is why the third part of the model is important to the design of distance education. Keller’s ARCS model (1987) is an acronym for: Attention, Relevance, Confidence, and Satisfaction. If the ARCS model is connected with the Technologies segment of the AT A DISTANCE model, then designers can assess whether or not the presentation and delivery of the material maintains attention and gives the learner enough feedback or interaction to instill a sense of confidence in his or her learning.

DESIGN AND DEVELOP

This stage is where all the previous stages come together in the building of cohesive units and modules, as part of a course or larger curriculum. Tasks within this stage will vary widely, as much will be dependent on what technologies were selected and what outcomes were desired. Some materials may be newly developed (taking the longest), while existing materials may be repurposed into a different format that is more suitable for the distance learner to use and understand. As these parts are close to completion, the next stage of the AT A DISTANCE model can begin.

IMPLEMENT

In this stage, full implementation of the distance course is not yet intended, as in the ADDIE model. Instead, this stage is a form of formative evaluation, allowing for a

Sample component of the instruction to be created, tested, adjusted, and tested again. This process would allow for the most useful information to be fed back into the revision of the unit or module. Multiple versions and multiple modules or units can move through this segment at any time for as many times as needed to perfect the learning experience (en route to obtaining the desired performance objectives).

SAMPLE → TRYOUT → ADJUSTMENTS

As subcomponents to the Implementation stage, these steps work together to identify a functional draft, prototype, or deliverable to then be tested in a realistic setting. Such small-scale testing can help designers obtain feedback that can then be incorporated into the revised version of the instruction. Once the sample prototype has passed the Tryout and Adjustments substages, it can move forward to the next primary stage.

NEGATIVE CONSEQUENCES?

Are there negative consequences? This segment of the AT A DISTANCE model is borrowed from Mager and Pipe’s (1992) performance analysis flow diagram for performance improvement. Mager and Pipe ask if what learners are asked to do is somehow punishing to them. For example, if learners are required to contribute to a wiki board, but the application times out while they are typing, they may lose their efforts and have to begin again. When this happens, this is a negative consequence that is detrimental to the learner’s attitude and instructional experience. Another example may be requiring learner participation in “virtual office hours” rather than providing asynchronous information or feedback to students. Time zone differences and network connectivity may make such experiences less than convenient for distance learners. Acquiring learner input in the Tryout stage can help alleviate negative consequences prior to course deployment.

COMPLETION (OF COURSE/ CURRICULUM)

After the course has passed the Negative Consequences review and appears to be functional and engaging, then the unit or module can be developed to completion. Each unit or module can be completed at different times and assembled in this stage to form a cohesive instructional program ready for use.

EVALUATION AND ENDORSEMENT

Once the instruction is initially conducted, evaluation data are collected to guide any necessary revisions prior to its next implementation. Feedback from students, designers, and relevant support personnel would be ideal in determining the effectiveness of the overall experience. The evaluation of distance education requires that criteria be strategically examined to ensure that all aspects of distance delivery are assessed. Once the instruction has been evaluated and revised, the course is ready for organizational endorsement.

CONCLUSION

Why use a model to guide distance course development? The AT A DISTANCE framework recognizes that many people

are involved in the process of distance education. The instructor or designer creates the materials, but there is also policy, infrastructure, and technologies that also need to be taken into account and appropriately included within the whole scope of developing effective education for lasting learning.

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AT A DISTANCE IS AN ACRONYM FOR:
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EVALUATION AND ENDORSEMENT

The Importance of Accreditation and Infrastructure for Online Schools

Margaret G. Morabito

PURPOSE

This article provides an integration of the author's 1997-1998 ERIC Digest articles, "Educational Administration in the Global Community" and "Foundations of Distance Education," and an update on the evolution of CALCampus, an online distance learning school that was a pioneer in the field when it first appeared online in 1986 (Morabito,

1997, 1998). CALCampus was presented in this author's dissertation, *Online Distance Education: Historical Perspective and Practical Application*, as an example of the effectiveness of online distance learning (Morabito, 2008). This article serves to show a portion of the evolution of CALCampus since 1997 and some of the leadership tasks needed to succeed in an ever-growing world of online schools.

Leadership in this school has involved decision making and actions that have shown a willingness to move into new territory while operating within a sphere of uncertain outcomes. Although the school has always experienced a certain level of success, this was possible only because its leadership has been able to contend with many changes in this still relatively new field of education and has been able to modify its organizational structure when needed. In the early decades, the 1980s and 1990s, the school was under the leadership of the director with input from faculty and academic department heads. As we entered the twenty-first century, the school leadership evolved to include a three-member school committee. In order for the school to succeed, the leadership has had to be willing to change itself, as well as to be an agent of change, one of 21



responsibilities discussed in *School Leadership That Works* (Marzano, Waters, & McNulty, 2005).

While there have been many changes to CALCampus, this article will concentrate on two areas of school development that address needs crucial to the survival and advancement of an online distance learning school: accreditation and instructional infrastructure. Both areas serve to illustrate leadership challenges impacting private, independent online schools in the twenty-first century. This article relates sequences of events and specific thoughts, motivations, and comments about the events as they occurred over the past decade from a firsthand perspective as the top administrator of an international online school.

PUBLIC DEMAND FOR ACCREDITATION AND/OR STATE APPROVAL FOR ONLINE SCHOOLS

In the closing years of the last century, the public came online in greater numbers than in prior years and there was a growing demand for distance learning opportunities to be provided through online divisions of traditional schools and through online distance learning schools. Within nontraditional higher education (including, but not exclusively, online schooling), data showed substantial growth by the end of the century. In 1988, Bear listed over 500 schools and programs that offered nontraditional college degrees; by 1998, this list had grown to over 1,600 higher education schools and programs (Bear, 1988; Bear & Bear, 1998). Concurrently, there was growing public pressure on online schools and other nontraditional schools to show quality comparable to traditional schools that were already accredited.

The general public learned from online advice-givers, both then and today, that accreditation was the main sign of a reputable online school. On the About.com Web site, the general public is warned that

“Accreditation is one of the most important factors in choosing an online school. Make sure that your school is accredited by the right agencies” (About.com: Distance Learning, n.d.). This is one of dozens, if not hundreds, of Web sites that inform parents and students about the need for online school accreditation. Although educational leaders know that accreditation is a voluntary process and know that the U.S. Department of Education does not accredit schools, the public believes that accreditation is mandatory, does not know which accrediting agency is required for their particular needs, and does not understand that certain schools will only fit within an individual state’s Department of Education approval, which also serves as a sign of quality and legitimacy (Overview of Accreditation, U.S. Department of Education). Despite this situation, these online advice-giving sites serve a valid purpose and their impact has been demonstrated by requests from prospective students for the accreditation status of online schools before signing up for classes, thereby motivating many online schools, both secondary and postsecondary, to seek some kind of accreditation or state approval.

The problem in the 1990s, and unknown to the public, was that most states and accrediting agencies did not have rules governing the licensing or accreditation of online schools. In 1994, Moore wrote: “At the regional level, the accreditation process still uses campus-based learning, faculty-centered teaching, and classroom-based instruction as the bases for reviewing and evaluating programs.... At the state level, long-established mechanisms drive continuous investments in bricks-and-mortar education” (para. 3). There was a disconnect between public perceptions of unaccredited online schools and the reality of a lack of accreditation possibilities available to online schools from the established accreditors and states. This hindered online schools from being able to meet

public expectations, no matter how good the quality of their courses and faculty.

By 1997, CALCampus had been in operation totally online for over 10 years, serving both secondary and college level students. At that time, many of the established accreditors recognized by the U.S. Department of Education would allow only a small percentage of a school to be offered through online distance learning; this requirement alone eliminated our school from eligibility. Although we provided a traditional curriculum and highly academic courses, we still had to wait for the educational establishment to catch up. We were at that time located in New York state, a state that did not license online schools at all, and when we searched for accrediting agencies that might accredit our online school, we could not find one that matched our situation. First, we served two different levels of students that traditionally fell into two different levels of accrediting agencies; and, second, we were 100% online by design, something for which most established accreditors were not ready. Furthermore, being a small school, we were also looking for an accrediting agency that would be financially affordable.

Spurred by public requests for accreditation and a desire for school improvement by the administration, CALCampus continued its search for a way to be recognized by the educational community. Not finding an appropriate match from the regional accreditors, we sought state approval. In 2001, we found the state of Wyoming Department of Education, Post Secondary Proprietary School Department, which had implemented licensing laws for nondegree granting distance learning schools. Wyoming did not require a physical presence in their state, so this gave us an opportunity to become state-licensed without relocating (Wyoming Private Schools Licensing, n.d.).

We continued to search for other states that would license and approve our school.

New Hampshire was our state of origin, but it did not yet have rules for our kind of school. Eventually, New Hampshire developed licensing rules for online schools and, in 2003, we were able to apply for and earn state approval from the New Hampshire Postsecondary Education Commission (n.d.). New Hampshire had a physical residency requirement, which we complied with although we were in New York, with our goal being to relocate to New Hampshire. In 2005, we accomplished the move to New Hampshire and are now in our own building. In 2005, we discontinued our Wyoming license.

While Wyoming had covered our entire school, including our adult high school diploma program, our New Hampshire licensing in 2003 covered only our postsecondary courses and programs. Our search continued for accreditation or state approval to cover our high school program. In 2004, the National Association of Private Schools, located in Oklahoma, accredited our high school courses and diploma program without requiring that we move the school to their state. This also expanded our age group market, so that the high school diploma was no longer specifically for adults. Since we needed two different organizations to approve our two levels of instruction, high school and nondegree granting college/postsecondary, we evolved into more clearly delineating between our high school and our postsecondary divisions.

By this time, online education was clearly becoming mainstream and was being adopted by many traditional brick and mortar institutions. We could see firsthand the growing demand from students, both postsecondary and high school, for online courses. Allen and Seaman (2007) report that from 2002 through 2006, statistical data bears this out. Between these years, online enrollments grew substantially faster than overall higher education enrollments: in the fall of 2002, there were 1,602,970 students taking at least one

online course, but by the fall of 2006, this number had grown to 3,488,381. This is more than 100% growth in only 4 years. Furthermore, by this time, high schools were also becoming more involved with online education. A 2007 survey by the Sloan Consortium (Picciano & Seaman, 2007) presented results showing that, although there was less activity within K-12 schools than in higher educational institutions, there was growth in this level of schooling with the expectation of future growth. Cited in this study were estimates that 40,000 to 50,000 students enrolled in online courses in 2001, while by 2005-2006, the estimate had grown closer to 700,000. This is a tremendous increase within a short period of time.

This growing demand from students within the established educational communities led us to pursue an even higher level of accreditation and recognition, to give our entire school more acceptance within the United States and the international educational community. We looked again at the regional accrediting agencies who, by 2005, had started to recognize online schools. Our natural choice, the New England Association of Schools and Colleges, still did not have rules governing online schools. In order to seek regional accreditation to cover our entire school, we had to go outside of our region. This led us to the Commission on International and Trans-Regional Accreditation (CITA). With CITA, we would also be able to earn regional accreditation for our entire school through one of its alliance members, the North Central Association Commission on Accreditation and School Improvement (NCA CASI). In 2006, we applied and became a candidate school and in September of 2007, CALCampus High School and Postsecondary achieved dual accreditation with CITA and NCA CASI.

This journey of over 20 years resulted in CALCampus achieving regional, national, and international accreditation, as well as state approval. The story illustrates the

organizational challenges facing the leaders of small private online schools in the twenty-first century to fulfill expectations of an international educational community and the need to patiently pursue the tasks needed for school survival and improvement.

INFRASTRUCTURE OF AN ONLINE SCHOOL

On an operational level, online schools face another major task in fulfilling the expectations of online students: effective and user-friendly instructional infrastructure. Infrastructure is comprised of four areas: hardware, content/software, technical support, and ancillary materials and resources (Kansas National Education Association, n.d.). An online school requires frequent updating of its infrastructure, in particular the hardware and software used to provide the underlying course management system, a set of authenticated server applications designed to function together in providing course content, assessment tools, and interactive communication tools. In the online *Guide to Online High School Courses*, the National Education Association (n.d.) provides advice to the public when searching for an online high school: "the technical infrastructure supporting the online course should provide the necessary tools for instruction and interactivity. The technology ... should work reliably, simply, and economically" (para. 19).

While one would assume that online course management systems are new creations, many universities and secondary schools are using some core tools that have been available since 1986; however, newer course management systems have been designed specifically for the school market and made available through the Internet. When CALCampus began in 1986, there was no Internet available to the public. Online users joined large, public-access online networks and participated only

with other members of the same network. CALCampus was originally designed as an online school, adapting the tools that were available on the networks for educational purposes. These included real-time, synchronous classrooms, supported by asynchronous communication tools in the form of message boards and e-mail. Teachers provided course materials through downloadable online libraries. The school also had an online testing center, programmed by our in-house programmer, through which students could take online quizzes for the courses or for supplemental study. The school was designed so that group classes met at predetermined times each week in specific rooms within the online campus. This basic infrastructure of server applications, although ancient, is similar to what we see in 2008 at many schools that have adopted distance learning through the Internet.

By early 1995, although the Internet was fairly new for the mainstream public, our school chose to move onto the Internet with our own domain (www.calcampus.com). We bought the equipment and software needed for the school infrastructure. There were no Web-based course management systems as we see today. Instead, we used an applications server, similar to a bulletin board system, that was accessible via the Internet. The hardware and software that were needed to operate the applications server were physically located and maintained in-house by CALCampus. Our applications server software, Worldgroup, was produced by Galacticom. The system itself was aimed at a market of bulletin board users; however, we took the system and adapted it to be an educational delivery system. Originally, in 1995, it was mainly a text-based system that was accessed via Telnet through the Internet. It also had Internet Relay Chat (IRC) for supplemental online chat and file transfer protocol (FTP) for quickly downloading files. In 1996, Galacticom introduced a graphical user interface for

Worldgroup that required a downloadable plugin. By 1997, the Worldgroup set of server applications was being modified to become Web-based, which allowed users to access certain applications with standard Web browsers using HTTP instructions. This made accessibility easier for online users who knew nothing about Telnet, IRC, or FTP, while also avoiding the requirement of a downloadable plugin. However, support for Worldgroup ended, and no significant advancements were provided by the company after 2002.

As a result, in 2002, we had a course management system that provided the core tools seen in many present-day online schools; however, the system was not originally designed for school use, so there were certain features lacking. For example, it lacked the built-in utilities for teachers to easily create and modify course Web sites without needing to know HTML programming. While we did develop and use a few course Web sites, their production was too time-consuming and required a lot of in-house work, so the majority of courses continued using download libraries that the Worldgroup server provided.

The newer course management systems, such as BlackBoard (www.blackboard.com) and the open-source Moodle (www.moodle.org), are well-known examples of modern course management systems that provide advancements to what CALCampus has been using. They provide user-friendly methods of providing course content, creating and giving online quizzes, submitting homework assignments by students, retrieving homework by teachers, reporting and tracking online test results, and recording and updating assignment and course grades. The systems we see today are a great improvement because they are designed specifically for schools using the Web and provide the various tools in more user-friendly ways, thereby encouraging their use by teachers and students. They also are being upgraded continually. The online

infrastructure at CALCampus from 1995 until the early twenty-first century was effective, but it reached a point where it was not able to be easily modified or updated. In addition, as more online schools and online divisions of traditional schools came into being in the early 2000s, we saw the emergence of new student and teacher expectations that were not there before, therefore urging us onward.

Today, there is much competition in the online school arena and students are more knowledgeable about online learning. Howell, Williams, and Lindsay (2003) discussed 32 trends affecting distance education; among these is the fact that students are shopping around for online courses that can be used to fill needs in their own degree programs. These students have been exposed to a variety of course management systems. While there is no single correct way to provide online learning, there has developed a level of student expectation, especially from those coming from schools using current course management systems, such as Blackboard and Moodle. Many students today expect to use a Web-based school system that provides classrooms, message boards, e-mail, library files, quiz centers, and homework submission utilities in one easy-to-use Web-browser format. Many teachers today also expect this kind of modern course management system, especially for facilitating Web-based course development.

As an old school in relation to all online schools, CALCampus has had to continually advance technologically. In 2007, when we prepared our accreditation self-study for CITA, we needed to look closely at what we were doing and where we were going technologically; this was one of CITA's seven standards for accreditation (CITA, 2006). The need for a technology plan and a reliable technology delivery system is also stated as one of the institutional support benchmarks discussed by the Institute For Higher Education Policy (Merisotis & Phipps, 2000). In developing

our updated technology plan, we decided that the time had come to take advantage of one of the newer Web-based course management systems. Considering features and affordability, we decided to adopt the open-source Moodle, a system that has an international following and widespread support. In 2008, CALCampus transferred over to this new system, which provides easier access by teachers and students to all aspects of our online campus, more tools for learning and assessments, an easier online course development interface, administrative tracking of student progress, as well as training documentation for our teachers.

The need for updated instructional infrastructure has required an ongoing willingness on the part of the school's leadership to make changes. Gangel (1997) discussed the fear of change and the innate desire to maintain the status quo as a major cause of ineffective decision making by organizational leaders. In the world of online schools, organizational leaders do not have the luxury and time to relish past successes. In order to remain competitive in this technology-driven world, educational leaders must take bold steps to keep their schools progressive and responsive to students' needs.

IN CONCLUSION

The foundational improvements discussed in this paper, accreditation and instructional infrastructure, are only two keys to the survival and progress of an online school today. As the entire educational community becomes more knowledgeable and experienced with online learning and as the surge in Internet-based learning grows, more demands are being placed on leaders of online schools to keep up with changes needed to successfully compete in a constantly evolving market. CALCampus is one example of an online school that has continued to evolve over

time to serve the needs and expectations of its students.

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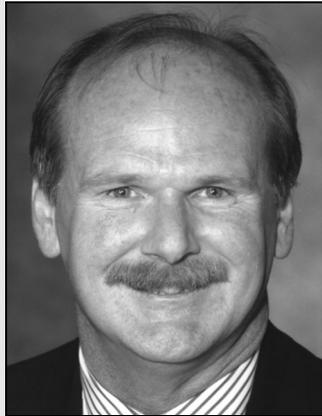
Going Global

Perils and Promises for Open and Distance Education

Don Olcott, Jr.

INTRODUCTION

The advances in e-learning and distance learning technologies during the last decade, including refined teaching designs, methods, and support services, suggest that these innovations would have revolutionized the international stage for higher education.



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Moreover, globalization is driving the interconnected facets of international economic, social, political, cultural, and political life that further suggests that e-learning (or distance learning, blended learning, distributed learning, or next week's latest term) would have created a brave new world, but it hasn't happened. Indeed, this is just the opening act (Olcott, in press-a, in press-b).

This commentary will examine a range of issues related to internationalism, cross-border higher education, and distance learning. Some of these remarks may be perceived as provocative and controversial. C'est la vie! Moreover, they are directed specifically at college and university presidents. Why? Because as the honorable Harry S Truman so eloquently stated, "the buck stops here."

LOST IN TRANSLATION: THE INTERNATIONAL E-LEARNING ENIGMA

Institutional leaders often convince themselves that distance delivery will accelerate their welcome on the international stage (Olcott, in press-a). In some respects, this

would be an excellent strategy if the rest of world would just see the value-added simplicity in this approach. The rest of the world, however, is not quite ready to play in this techno-sandbox. China, North and South Korea, Japan, the Gulf States, Eastern Europe, Russia, Malaysia, India, and other nations have publicly stated they want Western technology, academic programs, research, and technology transfer to help create sustainable economies, develop multitalented workforces, and ultimately build stable higher education systems at home (Olcott, in press-a, in press-b; Olcott, Papi, & Newbould, 2008).

At the same time, the credibility of these Western resources appears to be directly related to having real people (academics, researchers, business executives, etc.) on the ground in country (Olcott, 2008, in press-a; Verbik & Merkely, 2006). The net result of these views is that the majority of cross-border higher education is being delivered at branch campuses, corporate sites, and through unique public-private partnerships. There are, of course, exceptions, and international students do take online and video-based courses, but proportionally, these numbers are relatively small.

From an instructional design perspective, it is not surprising that foreign universities and governments have been resistant to embracing external distance learning providers. Most faculty will tell you the inherent challenges in teaching foreign students and the potential for language, cultural, and social miscommunication. Online teaching exacerbates these issues and creates a whole new range of challenges for teaching faculty (Olcott et al., 2008).

Technology is not culturally neutral, and even English is contextual like most other languages with potential for miscommunications. The fact is, we know very little about the interconnected dynamics of culture, language, and social norms of academic communications delivered via

media. We have many assumptions, but these do not equate to sound teaching and learning paradigms that are grounded in empirical research. Given that China, in fact, in the next few years may be the largest English-speaking nation on the planet it would seem prudent to begin addressing these pedagogical issues now rather than later (Helms, 2008; Olcott et al., 2008).

These teaching challenges are also intimately tied to the quality assurance measures of international open and e-learning programs (Helms, 2008; Knight & de Wit, 1999; Stella, 2006; United Nations Educational, Scientific, and Cultural Organization/Organization for Economic Cooperation and Development, 2005; Woodhouse, 2006). We might argue that we employ the same quality standards for international student programs, yet we have not accounted for these language, cultural, and social differences. Going international through distance education will require these issues to be addressed in systematic and meaningful ways. This can only be accomplished through research and the development of new pedagogical models. Visionary leaders who desire to play on the international stage will take the necessary time to ensure these issues have been addressed.

LEVELING THE LEARNING FIELD: TOWARD GLOBAL ENGLISH OR CULTURAL IMPERIALISM?

The emergence of English as the global language of commerce raises some critical issues for open and distance learning. Although there is merit in having a language in which many peoples of the world can communicate, particularly for education, commerce, employee mobility, and day-to-day communications, one must ask: What do we as citizens of the global village *lose* in the process of placing one language above all others? Moreover, from a higher education perspective, will this global trend really “level the learning field” for all

students and make them more competitive in the job market? The general answer seems to be “yes” among international students, educators, and business leaders (Olcott, in press-c).

This issue is among the many double-edged sword dilemmas that permeate higher education. Many will argue that this makes good pragmatic sense and will create a common connection for a globally mobile economy and workforce. This author is not convinced.

First, the inherent value and mutual respect that can be extended through the language continuum of the world are immense. When one visits France or China or Oman, should we not expect to initially communicate in the home country language? This is simply good manners, which dominant English speaking peoples often forget, ignore, or just do not waste their time trying to learn. And, here is the ultimate paradox: the United States and the United Kingdom, global leaders in attracting international students and in delivering cross-border higher education (face-to-face and via distance learning) send very few of their own students abroad (Olcott, in press-c).

Less than 1% of the total U.S. higher education population of nearly 17 million students, study abroad. More students in the United States go to Cancun or St. Thomas on spring break than study abroad. The study-abroad numbers in the United Kingdom are not much better. Candidly speaking, this is an arrogant and Anglo-centric view of the world that is very perplexing when one considers the global language movement for English. This movement, in fact, may have less to do with “leveling the learning field” than with a subtle infiltration of language and cultural imperialism (Olcott, in press-c). *C’est la vie!*

Another manifestation of this Anglo-centric view of the world centers on the study of foreign languages in English-speaking countries. Despite years of

research and results by linguists that has show clearly that children can learn a second (and third) language beginning around age 5, American school-aged children do not take language courses until their first year of high school. This is usually around age 14-15. With over 4,130 institutions of higher education, all which accentuate the importance of graduating global citizens, consider the irony. We are preparing global citizens from among a pool of students who do not travel, who do not study abroad, and who have the most basic and deficient level of foreign language skills. What’s wrong with this picture?

Let’s return to the issue of language and culture. We know that language is very closely aligned with cultural and social norms in many countries. For these students when taught in English, the questions really are about what is “lost in translation.” As earlier noted, international distance learning in English is resisted by many governments and foreign universities exactly for issues of quality of instruction and the threat to local language, culture, and social norms (Olcott, in press-c). At the same time, students are being encouraged to study English by their governments, businesses, and higher education institutions. Why? Because a knowledge of English is accepted as an invaluable asset for future employment and career advancement. So the story goes. Apparently, the threat of English dominance is perceived as less than the long-term benefits of learning English.

The trend toward English is, in and of itself, not the problem for open education or society. The issue is about global context, showing mutual respect for diverse languages, cultures, and social values, and engaging actively in the global village. How can anyone enjoy coffee at a Parisian café and not immerse themselves in the setting, culture, and language of the City of Light? How can a historian or tourist walk along the Great Wall of China and

not be taken aback by the immense history, culture, and beauty of this experience? If you want the English version, buy a video; there are plenty.

Perhaps the obvious resolution to this dilemma is to create a new global language policy. Given that in about 10 years the largest English-speaking country on the planet will be China, the United States, the United Kingdom, Canada, and all other English-speaking countries could require that all college students are fluent in Chinese, Spanish, and French. Moreover, these must be articulated in clear student learning outcomes, measured by established competencies, and demonstrated by all students prior to graduation. It is unlikely this will happen, and hence the language and cultural illiteracy of native English-speaking students will persist (Olcott, in press-c).

A final word to our international students across the globe. Embrace the language, customs, culture, and social diversity of your homeland. English will be a valuable skill for your future, but it will not be a panacea for all the opportunities and challenges you will face in your lifetime. It is your responsibility to demand that others across the globe show respect and dignity towards your language and culture.

ASPIRING TO THE INTERNATIONAL STAGE

In my view, aside from the fact that every president wants to leave an eternal legacy at his or her institution, the single most important driving force is money or the pursuit of money to offset continuing reductions in the funding levels to American colleges and universities over the past 15 years (Olcott, in press-b). Of course, leaders will seldom articulate this publicly and offer politically correct rhetoric that focuses on educational goals such as internationalizing the curriculum, preparing students for a global society, collaborative

research, and the value of exposing and immersing students (and faculty) among and within a diverse multicultural, global society.

All of these are laudable and admirable goals that intrinsically are based on a sincere and substantial dose of truth; yet, before we get a bit too goo-goo eyed over these, let's set the record straight. *Colleges and universities have been forced or driven to be more entrepreneurial to replace funding reductions.* I did not say institutions were asked, encouraged, persuaded, nudged; no, they have been driven by these realities to pursue business-type activities, particularly in the international arena. Indeed, institutions can only raise tuition so many times before the public demands restraint, legislators are removed from office, or students dropout and go to Key West to find themselves, write a novel (let's just hope they read one occasionally), and/or meditate on the beach (Olcott, in press-b).

Of course, the exception is California, where tuition and fees have increased over 90% on average in the past 5 years in the University of California and California State University systems alone. Annually, this has become as regular in California as the Academy Awards. Perhaps the governor should find a "terminator" to deal with this strategy. These increases are not just the domain of Schwarzenegger's state, they are pervasive across American higher education.

DEVELOPING AN INSTITUTIONAL INTERNATIONALISM STRATEGY

If we follow the premise that colleges and universities in many nations have been driven or forced into the metaphysical world of international entrepreneurial business ventures, then one might surmise that when force is the primary driver, performance is mixed. This is a critical reality check for presidents. Many colleges and universities are pursuing this market, yet do not have any business in this market.

These institutions do not have the resources, the experience, and/or the history to move from local delivery to the international stage. They also do not have the connections to make these ventures work (Olcott, in press-b). Even The Beatles had to pay their dues and have the right supporting cast before arriving on *The Ed Sullivan Show*.

TRENDS IN CROSS-BORDER HIGHER EDUCATION

The delivery of cross-border programs, research, and related services is a complex enterprise for most universities. Despite the growing number of international providers over the past 5 years, there are emerging trends that suggest this market will become increasingly competitive and that host countries will focus on partnerships with foreign institutions that can help them build their own high quality, sustainable higher education system and economy. Some of the current trends include:

- Host nations (nations and/or universities hosting foreign programs in their country) are becoming more selective of entering foreign providers (Helms, 2008).
- Asia, the Middle East, and the Gulf States are the most active cross-border regions, yet increasingly, interregional partnerships are arising in these geographical areas (McBurnie & Ziguras, 2007).
- Cross-border research exchange is a rapidly growing priority among nations (McBurnie & Ziguras, 2007; Thomas, 2007).
- Quality assurance oversight agencies, internal and external, are paying increasing attention to universities operating abroad (Helms, 2008; Stella, 2006; United Nations Educational, Scientific, and Cultural Organization/Organiza-

tion for Economic Cooperation and Development, 2005; Woodhouse, 2006).

- Competition for internationally mobile students is growing more intense each year (Verbik & Lasanowski, 2007).
- New models of public-private partnerships are emerging in cross-border higher education among business, higher education, government, and community organizations (McBurnie & Ziguras, 2007).

MANAGING INTERNATIONAL PARTNERSHIPS: STRATEGIES FOR SUCCESS

Colleges and university leaders negotiating international e-learning partnerships, either internal or external, will be faced with many critical decisions during the process. The following provides a summary of key strategies to assist leaders in these discussions (Olcott, 2008).

GETTING STARTED BEFORE YOU GET GOING

- “You never have a second chance to make a first impression.” Do your homework before, not after, you establish an international partnership. Research your partner organisation, it’s culture, language, history, current partners, partnership record, financial stability, and how the organization is perceived in their own country. What do they bring to the table that you need? *What are the potential benefits for all partners?*
- Build partnerships that compliment your organisational strengths? Does your potential international partner view these attributes as your strengths? Why or Why not? Do not attempt to be all things to all people.
- Establish formative and summative performance review processes—managerial, programmatic, and financial from

the outset. Presume from the start that you will need to make adjustments, modifications and, perhaps, major alterations to your partnership strategy. Global economic, cultural, political, and social environments can change rapidly, can you

HOW DO YOU CREATE PARTNERSHIP SUSTAINABILITY?

- Create a diversified investment strategy—one partner, but additional stakeholders who perceive value in the endeavour and may invest money, people, and time. Remember, international partnerships particularly, in higher education must be approached as a business venture.
- Build contingencies into your budget planning. Every higher education budget on the planet looks good on paper, when it hits the real world is when the problems start. Build your budgets based on real costs plus inflation and the projected costs of doing day-to-day business.
- Conduct extensive market research on your customer(s) base. If your financial plan is highly dependent on student enrolment tuition and fees, analyze the changes that are occurring in this sector for the partnership country and surrounding region. Students are becoming more mobile and more selective, with more higher education choices.

COLLABORATION AND THE CURRICULUM

- If your university-department is the primary content provider, you retain control of the curriculum, period. From a practical standpoint, however, connecting your faculty with international faculty in the partnership country can be

beneficial and strengthen partnership collaboration.

- Align curriculum delivered abroad with the process of “internationalizing” the curriculum on the campus. Developing curriculum that is culturally, socially, historically, ethnically, and gender accurate and sensitive are prerequisites for all international curriculum.
- Diversify your delivery modes. Can you deliver a significant part of the curriculum via educational technologies (distance learning)?

HOW DO YOU PRESENT YOUR PARTNERSHIPS TO INTERNAL AND EXTERNAL INSTITUTIONAL STAKEHOLDERS?

- Leaders must be able to articulate how the partnership aligns, strengthens, and enhances the mission of the university. How will the partnership impact specific stakeholders?
- Benefits, benefits, benefits? What are the benefits from the partnership? How will these be assessed and by whom?
- Provide status reports to all key stakeholders, particularly academic deans, faculty, and board members.
- What is your exit strategy if the partnership must be terminated? Do you have an answer? Indeed, this question will be asked by multiple stakeholders. Have you considered this from a public relations, reputation and marketing perspective? Universities are talented for creating things such as knowledge, research, partnerships, policies, procedures, logos, curriculum, and services. Conversely, universities are infamous for their inability to cut their losses and exit from partnerships. From a risk management perspective, your exit strategy needs to be formulated in advance and built into the contractual negotiations with all international partners.

STAFF DIVERSITY TO REFLECT THE PARTNERSHIP

- Foreign-based partnerships—hire local staff to strengthen instruction and support services. Take advantage of the culturally- and language-rich human resources available to support your program and partnerships.
- Campus-based—ensure you have diverse staff with the communication, language, cultural awareness, and social skills to interact effectively with your international students.
- Ensure that partnership staff, faculty, and students have multiple opportunities for sharing comments, suggestions, and recommendations. This should be an essential part of the partnership and program assessment

STRATEGIC CONSIDERATIONS FOR INSTITUTIONS

Playing on the international stage is a major decision for most colleges and universities. The diversity of institutions and partnerships make specific recommendations difficult at best. However, there are a few guiding principles that presidents may want to consider.

- Articulate clearly that international cross-border and distance education initiatives align with institutional mission and strategic goals.
- Do your homework about your potential international partners. Leave your cultural norms at home and learn about those whom you may be working with ... their culture, their language, their social norms. If you are going into their country, you—even virtually—are a guest; act like one.
- What is your internalization strategy? How do the campus- and external activities of your strategy strengthen your institutional and contribute to a cre-

ative, dynamic learning environment for all students?

- Align distance teaching with instructional design formats that compensate and respect language, culture, and social norms of foreign students.
- Do you have a risk management strategy for major international initiatives at home and abroad? What are your contingency or withdrawal strategies for endeavors that do not work? Universities are magnificent at creating things—knowledge, partnerships, research, and curriculum—but universities are terrible at getting out of things. Develop an exit strategy in advance; don't wait until it's too late.
- Why can your institution do it better than your competitors internationally?

A LOOK AHEAD FOR INTERNATIONAL OPEN, DISTANCE AND E-LEARNING

The international stage, in many respects, is wide open for institutions that can provide responsive, high-quality open and e-learning programs. Moreover, institutions that can deliver combination of blended educational programs (face-to-face and e-learning curriculum) will be well positioned to take advantage of emerging global markets. The relatively slow immersion of open, distance, and e-learning internationally is a natural evolution of the field and the demand for programs will accelerate over the next 10 years.

At the same time, international providers of open, distance, and e-learning must address the emerging issues of language, culture, customs, and social norms that are part of the fabric of today's culturally diverse, mobile, international students. The perpetuation of English as the global language will demand that institutions offering distance programs address the pedagogical issues of what is "lost in trans-

lation" when teaching non-English natives via educational technology.

Institutional leaders and government policymakers must also collaborate to ensure that they are building a coherent international agenda that is focused on genuinely creating global citizens and providing multicultural educational experiences with dedicated support services for international students. If these are ignored in the pursuit of generating alternative funding streams, these institutions will find themselves performing their final act on the international stage. Leaders must create an institutionwide internationalism strategy, internal and external, that supports the mission of the institution and creates educational, cultural, language, and social benefits for all its students. One-dimensional strategies, no matter how well intentioned, will become obsolete when faced with competition from institutions that provide a comprehensive, multi-dimensional internationalism strategy. Olcott (in press-a) sums up the challenges for colleges and universities.

The internationalism of your university is an opportunity to strengthen all aspects of your educational program. Indeed, many large, research-based universities will have comprehensive international and cross-border programs and research exchanges. But even the smallest institution with limited resources can incrementally build the international diversity, services and curriculum of their campus. We in higher education are given the privilege and responsibility for educating tomorrow's citizens and contributing to our local community, our nation, and the global village. Our primary responsibility and commitment as educators must be to our students. This golden rule of our profession must be embraced and applied to all aspects of developing an internationalism strategy that places the education of students front and center.

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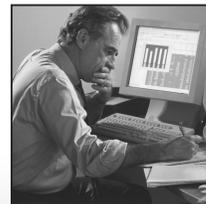


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Educational Gaming

Interactive Edutainment

Sharon DeVary

INTRODUCTION

“**P**lay is a very serious matter... It is an expression of our creativity; and creativity is at the very root of our ability to learn, to cope, and to become whatever we may be.” (Rogers & Sharapan, 1994)

I agree with Rogers and Sharapan’s observation that play is a very serious matter. As humans, we have all experienced and observed this phenomenon. Young children cannot grasp the complexities of formal education. However, at an early age, they begin to learn through play. This “play” begins to build the foundation of

knowledge that is eventually used for more advanced learning. The introduction and ever-increasing use of computer games has prompted educators to debate and research the merits for using computer games as learning tools.

The body of research is substantial. However, the research supports multiple points of view for both the benefits and the challenges for using computer games as learning tools. This article provides an introduction and overview for the use of computer games in education. It will explore the term “edutainment,” the benefits and challenges of educational gaming, the architecture of educational games and gaming design theories and how their use may prepare our students with the skills required to compete in the “knowledge” and global economies.

Commercial digital games are widely available and used by most college, high school, middle school, and even elementary school children. This trend underscores the evolution of the digital and information age and its corresponding technologies. It is easy to see that our children are comfortable with using technology. This “global” collective experience provides a lens from which our young people will learn, work, and live in ways not experienced by previous generations. These collective experiences evolve from their ability to explore virtual worlds and to work individually and collaboratively using technology (Green & McNeese,



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2007). Our young people communicate using a new universal technical language.

WHAT IS EDUTAINMENT?

Edutainment is defined as education that has been placed within the framework of entertainment. This software genre is designed and developed to target parents and teachers and is specifically designed to focus on academic subjects while commercial gaming software is developed to target players for purely entertainment purposes (Gros, 2003).

Edutainment software, the Internet and other multimedia products rely heavily on images, animations, sounds, and other components that engage learners' senses, and can provide immersive learning experiences. Education games can also provide students with experiences that simulate real life. For example, simulations can recreate lifelike scenarios that can be used to learn to fly airplanes or to perform knee surgery.

Aldrich (2004) suggests that simulation games should include a balance of simulation elements, game elements, and pedagogical elements. Too much simulation can produce dry and often frustrating learning experiences while distracting learners from the task of learning. This process can leave learners with the feeling that they are mindlessly following directions. The task for developing effective edutainment software and other multimedia products requires the use of education psychology to achieve a balance between entertainment and learning (Okan, 2003).

Commercial game architecture consists of competition, a well-defined beginning and end, and provides rewards for game players. In addition to these attributes, education games should require players to use skill and teamwork or knowledge rather than pure luck to complete games. According to Baranich & Currie (2004), effective games should contain elements of

suspense, competition, drama, and cooperation.

Edutainment games should include the use or acquisition of knowledge in defined subject areas, use intellectual skills that apply to specific course content, and provide interactive feedback. The attributes of high quality edutainment software should include learning goals and objectives that are clear and concise. Games should also provide concept reviews for new content and a vehicle for questions and answers. Games should be fun. When gamers are enjoying themselves, they are more relaxed, energetic, alert, responsive, and are less fearful and more open to learning (Baranich & Currie, 2004; Klaila, 2001).

THE BENEFITS AND CHALLENGES

Although education games are becoming more prevalent, they are no match for the quantity and the quality of games that are produced and are available solely for "entertainment" purposes. It is difficult for education games to compete because of the high cost of game development and production. Most education institutions cannot afford to finance such projects (Gros, 2003; Sawyer, 2004).

According to Sawyer (2004), building a pedagogically sound game is expensive and time-consuming. It can cost between \$500,000 and \$2.5 million, and can take from 12 to 24 months to complete. Many commercial games require peripheral hardware or game devices such as the Xbox. They also require a large block of time for players to complete. These criteria are not readily available to K-12 or higher education institutions. In addition, education games are not designed and created to correlate with specific school curricula. They tend to operate as stand-alone products. This practice allows for commercial games to be utilized by a wider audience.

Perhaps a solution to the high cost of developing and creating games is to take a game's basic architecture and modify it to

fit specific curricula and learning experiences. This practice results in the final products having similar game formats as their original counterparts while having varied learning objectives. Some teachers have the programming skills to adapt gaming software so that these games can maximize learning potential regardless of the games' initial purpose (Gros, 2003).

There are critics who object to the use of educational games. These objections have been based on their observations children while playing commercial computer games. Two concerns are: the addictive nature of computer games and the violence that children are exposed to while playing games. According to Okan (2003), computer games are not culturally neutral. This has raised concerns among educators, business people, and the general public. They fear that technology is sweeping through all levels of education without the benefit of input from individuals who can help to shape and restrain this forward momentum. It is thought that only those earning the profits have a voice. They are quick to point out that history may be repeating itself. They claim this happened with the introduction of radio and television. Initially, control of the airwaves was in the hands of a few big corporations such as RCA, AT&T, Westinghouse, and General Electric (Barnouw, 1990).

It can be argued that although educators and students do not have control over how new technologies evolve, they do have control over how technologies are being used to promote learning. They have learned that technology is a great tool for accessing information, connecting students to experts and other students all over the world. However, technology cannot perform the more important task of transforming information into knowledge. This is an active process that must occur internally and is learner specific. Salomon (2002) noted that accessing information using technology is different than constructing knowledge. He contends the pro-

cess of constructing knowledge from gathered information is a dynamic process in which technology plays a minor role.

Acquiring technology skills while learning in the classroom should be of secondary importance and it should be noted that these skills although secondary are very important. By integrating technology into pedagogy, students learn cognitive and technology skills at the same time. More traditional parents and educators are skeptical of using technology especially edutainment software. They believe that if students are playing or being entertained they are not learning. They fear that technology will undermine learning processes, while at the same time encourage parents and teachers to spend scarce education dollars on technology. They suggest that this encourages a watering down of the learning process. Other concerns are that edutainment technology teaches students that learning does not require perseverance, reading critically, making connections between new information and what is already known, and that collaborating with peers is outdated and unnecessary. In other words, in addition to teaching the curriculum, technology has an unintended effect of discouraging serious learning (Okan, 2003).

Another argument against using computer games in education is the concern that technology will be used only for the sake of "using technology." Using technology does not guarantee academic success.

There is a concern that technology is being used because it is available and that parents approve its use for reasons other than enhancing learning outcomes. A study by McDonald and Hannafin (2003) showed mixed results with regard to the impact of technology on learning outcomes. Their research used game formats from *Jeopardy* and *Who Wants to Be a Millionaire*. They found that students taught by playing games using technology earned higher scores (but not significantly higher) than those students taught by playing tra-

ditional games. However, they observed that students using technology games were more motivated and excited about their learning experiences. They stated that the less-than-significant increase in test scores can be attributed to the uncontrolled variables in the study. For example, the differences in teachers and the inability to control home study. According to McDonald and Hannafin, the gains in student achievement cannot be attributed to the use of technology, but instead to the differences in instructional methods, lesson content, and the “novelty” effect resulting from the use of a new medium (technology). They note that the novelty effect wears off with the passing of time.

Salomon (2002) points out that using technology is a new approach to teaching and that teachers are trying to fit a new medium into traditional teaching methods. Based on his research, Salomon suggests that traditional classrooms produce a better mastery of recalled information. Alternatively, less traditional technology- and constructivist-based classrooms produce improved skills for developing questions, formulating hypotheses, and the ability to intelligently address new problems. According to Okan (2003), the use of technology results in acquiring passive information in the form of entertainment rather than through the more challenging critical thinking process. It is argued that, when used effectively, digital games develop critical thinking skills through the process of active problem solving (Hostetter, 2002). In other words, the choice between technology and traditional pedagogy depends on the desired outcomes.

When students are having fun, they are motivated to persist for longer periods of time or to approach the learning activity more often. According to Rieber (2001), motivation is inseparable from learning and is considered by some to be the most important learning factor. When students are motivated, they spend more time on-task and learning becomes an incidental

part of the activity. Alternatively, some think that technology, although motivating, often diminishes the need to review prior knowledge, to strategize, to analyze, to make new connections and to engage in other high-level learning activities. However, through solving puzzles, conquering enemies, and creating digital cities and theme parks, students are categorizing, analyzing, and using prior knowledge for problem solving (Hostetter, 2002).

Unfortunately, there is little research that examines the relationship between play behavior, learning motivation, and the use of education games (Rieber, 2001; Squire, 2003).

Playing digital games enhances emotional intelligence. This is a result of game players keeping a delicate balance between being cool, relaxed, holding attention and being adrenaline-driven to win the game (Neto, 2001). The gaming generation loves randomness and learning by the discovery method. Also, digital gamers tend to have a more vivid imagination since many of the games they play are set in a fantasy world (Gros, 2003; Hostetter, 2002). Game players are required to quickly discern what is relevant, what must be discarded and what must be fulfilled resulting in skills for dealing with new situations (Neto, 2001).

EDUCATION GAME STRUCTURES

People interact with systems such as computer games by using many of the same social and communicative conventions that are seen in interactions between people in normal contexts (Reeves & Nass, 1996). Consequently, the cooperative nature of the gaming experience sets expectations for the behavior for both the game and its players. As computer and console games become more story-oriented and interactivity within these games becomes more sophisticated, this cooperative contract between game and user becomes even more central to the

Table 1. Game Type

1. Action Games: These games are defined by the first and third person shooting games. There are two types: (a) Fast-paced run-and-gun shooter games, for example, Halo. (b) Slower-paced tactical games. For example, SWAT.
2. Adventure Games: These games require playing out an interactive story in which the gamer takes on the role of the lead character. For example, the game Grand Theft Auto.
3. Driving Games: These games simulate the experience of being behind the wheel in a fast-paced street, rally, or track race. For example, the game Grand Turismo.
4. Fighting Games: These are games that engage players against boxing or martial art opponents.
5. Flight and other Vehicle-simulator Games: These games are used to provide authentic training for operating transportation equipment. For example, Flight Simulators.
6. Puzzle Games: These games use a system of rules that challenge players to solve problems. For example, Tetris.
7. Role-playing Games: These games can be played by single or multiple players.
8. Sports Games: These games strive for authentic simulation of on-and off-field action and include football, baseball, and hockey. For example, Madden NFL.
9. Strategy Games: These games provide players with grand-scale (usually top-down) views of a world in which they manage people, armies, armaments and other resources. There are two types: (1) Role-playing games, for example, World of Warcraft. (2) Games that put players in a living, virtual world in which they live, work, fight or play over an extended period of time, for example, Civilization.

Table 2. Game Characteristics

1. The games' education components are hidden.
2. The games are interactive and nonlinear.
3. The games encourage exploration by rewarding players.
4. Players can choose to assume the "protagonist" character or the "antagonist" character so they may experience both perspectives.
5. The games encourage player creativity.
6. The games have more than one correct answer or a means for accomplishing the same objectives.

enjoyment of games and gaming experiences.

GAME TYPES

According to Rollings and Adams (2003), games have traditionally been grouped into nine categories (see Table 1).

GAME CHARACTERISTICS

According to Gee (2003a), high-quality digital games have six characteristics (See Table 2).

SEVEN RHETORICS

Sutton-Smith (1997) defines the seven rhetorics of play: progress, fate, power, identity, imaginary, frivolous, and self. Each of these elements can be used to maintain or increase the motivation of students to continue to play educational games. Students need to experience success and to not be challenged beyond their capabilities in order to maintain their motivation. A major challenge for educational game developers is to transform learning into play. These seven elements can be

used to bridge the learning process between the domains of learning and the elements of play.

Bridging the learning process between the domains of learning and the elements of play must be a process that is fluid. This can be accomplished by following a standard known as the narrative/ludic causality. This standard combines the appropriate pacing of information and action. This balances the rhetoric elements that combine a narrative or story and incorporates fun while carefully placing the games' information and action.

DESIGNING EDUCATION GAMES

According to Young (2001), the greatest game design challenge is the maintenance of the balance between the control of the game (system) and its users. If a game design removes all control from the user, the resulting system is reduced to conventional narrative forms such as literature or film. Conversely, if a game design provides the user with complete control, the narrative coherence of a user's interaction is limited by the knowledge and skill of the user.

Most interactive games have taken the middle ground by specifying at the time of design sets of actions the user can select at fixed intervals throughout a game's story. The resulting collection of narrative paths is structured so that each path provides the user with an interesting narrative experience and ensures the users' expectations regarding narrative content are met.

On the other hand, Intelligent Tutoring Systems (ITS) provide the benefit of what can be considered customized instruction. ITS enable the participants to practice on their skills by carrying out tasks within highly interactive learning environments. Unlike most other computer-based training technologies it assesses each learner's actions. A model is created for each of the participants' knowledge, skills, and expertise for the learning the game's learning domains. These domains have been struc-

tured by domain experts (Beal, Beck, Westbrook, Atkins, & Cohen (2002). In addition, the ITS has imbedded "pedagogical" agents that provide teaching strategies and corresponding resources that are placed in the learning environments. These agents function as virtual tutors and virtual students (Thalman, Noser, & Huang, (1997).

PROFESSIONAL GAME DEVELOPERS

The most popular games played by students and adults are typically developed by professional game developers. These games are popular and profitable because game developers know what appeals to their target audience. To build quality edutainment type software, game developers and education psychologists should work together with other professionals as a team to formulate the education content. Game developers are very familiar with the latest 3-D graphics, sound technology, and artificial intelligence. They are adept at creating believable friends and enemies. Game developers know when to use real data and when to use derived data to best fit the games' interface. They understand the importance of periodically updating the game to maintain novelty for the target audience.

Education game developers need to build games that allow for extensive modifications. This can be accomplished by being open to allowing academics, scientists, and developers access to their code. Unlike commercial games, it is important that data from educational games be provided and used by trainers and teachers who monitor learner progress. Game developers also need to develop more detailed user's manuals and anticipate a need for more training and support (Sawyer, 2004). Commercial game developers typically design games to take advantage of the latest technology. Unfortunately, education settings typically do not have access to the latest technology. Therefore, developers must create the best possible

game for low-end platforms, which tends to result in low-quality education games.

STORY LINE

Challenges and obstacles that are woven into a strong learning-related adventure develop higher-order thinking skills. The story line should help learners to work through issues and challenges that may normally occur in real life. Every game should be challenging, but not impossible to master. The emphasis should be on learning rather than on winning or losing. Students should never be penalized by being excluded from the game.

The building blocks of story and plot (characters, actions, and their causal relationships) are not new to researchers in artificial intelligence (AI). These elements make up most schemes in research that deal with reasoning about the physical world. They have been adapted in the Mimesis architecture to represent the hierarchical and causal nature of narratives that have been identified by narrative theorists (Bal, 1997; Rimmon-Kenan, 1983).

According to Young (1999), the question of balance between the narrative and user control will most likely not be answered by research into human-computer interaction or by modification of conventions that have been carried over from previous entertainment media. It seems more likely that the balance between interactivity and immersion will be established by the concurrent evolution (or by the coevolution) of the technology of storytelling and social expectations held by the systems' users.

Young (2001) states that if the successful completion of the user's action poses a threat to any of the story's structure, the system responds to ensure that the actions of the user are integrated as best as possible into the story's context. It is the interactive nature of a computer game that contributes most strongly to the unique sense of agency that gamers experience in

the narratives that the game environment supports.

CHARACTER

The role of the gamer in a typical computer game is not one of director, but rather of lead character. The player experiences the story that unfolds around his or her character through the eyes of an audience member, the eyes of a performer, and through the eyes of the character. To uphold the player's portion of the cooperative game contract, the player must act the character's part and with limited perceptions and capabilities to change the games' environment. Consequently, the system creating the story line behind the scenes must bear most of the responsibility for maintaining the integrity of a coherent narrative.

To do this, designers must plan out ahead of time an interesting path through the space of plot lines that might unfold within the game's story. In addition, the game itself must keep constant watch over the story currently unfolding so the user does not deviate from the charted course. Fortunately, all aspects of a user's activity within the game's system, from the graphical rendering of the world to the execution of the simplest of user actions, are controlled. It is the mediated nature of the interaction between player and game environment that provides the hook needed to make the game's system coherent (Young, 2001).

GAMING: RELATION TO TWENTY-FIRST CENTURY SKILLS

Considering how much time students play digital games, it is not surprising that gamers have different cognitive skills than nongamers. The gaming generation has learned to process information more quickly and to process large amounts of information simultaneously. Within a gaming environment, graphics are dominant

and text is often complementary. As a result, game players have developed their visual intelligence because in order to succeed, they first look at icons (Green & McNeese, 2007).

Because games require players to do many things at one time, gamers have become good at multitasking, which requires a more diversified form of concentration. In the digital world of the Internet and games, information is not presented in a linear fashion. Students today are used to hyperlinks and accessing difficult areas of screens that are found in games. This is different from predigital Internet learners, who used books, radio, and television. Games have caused students to be learners who are more active and less tolerant of passive learning situations such as lectures (Beck & Wade, 2004; Gee, 2003; Gros, 2003; Hostetter, 2002).

Games can connect students with instant access to information through experts, friends, and families, as well as offer interactivity with fellow students, friends, and strangers playing multiuser games. As a result, players tend to develop and participate within a network of players who share ideas, experiences, and strategies. They learn to work well together or play alone when no partner is available. Games also have the potential to enhance motor development, intellectual development, affective development, and social development (Gros, 2003). If playing digital games has changed the way students learn, then it is necessary for teachers to change the way they present information to accommodate the needs of the gamer generation.

This first decade of the twenty-first century is a time during which, globally, the modes, the means, and the ecology of learning are being transformed by the activity of more than a billion globally networked people. Three change agents are responsible for these transformations, each related to the growth of a global digitally networked economy and society. The

transformation of learning at the individual level will far outpace a very slow transition at the institutional and school level.

- *Change Agent 1:* The decreasing cost of connectivity, computers, related digital devices, and means of connectivity that are making global digital access a reality for millions.
- *Change Agent 2:* The most transformational aspect of learning during this decade is the development of “biliterate” communication and learning. This new way of enabling millions of people to coproduce essential human needs is being coproduced by millions of digitally connected consumers of all ages, ethnic groups, and languages, globally. This is made possible by the use of software that some of them have produced (producers) enabling of the rest of them (consumers) to effectively blend verbal (written and spoken) literacy skills with their newly learned (computer, digital media, and Web information) literacy skills. These efforts have produced a new form of human communication: “biliterate” global connectivity.
- *Change Agent 3:* The new flat world’s ever-increasing access to an expanding global learning ecology and accessibility to an increasingly expanding population of an anytime, everywhere digitally connected world.

In today’s expanding global learning, school-age youth are surrounded by many modes and means to use out-of-the-box learning. Learning options for what, how, and when to learn is great and readily accessible. Learning is going through a challenging transformation.

America needs to communicate to its youth that as learners they are to face vigorous competition from their peers on a global level. Every American youth needs to understand the degree to which their personal future and Americas’ future depends on how astute they become in

selecting and investing their time and attention in the use of quality learning opportunities. Teachers have a critically important role in guiding their students to produce their intellectual capital.

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BECAUSE GAMES REQUIRE PLAYERS TO DO MANY THINGS AT ONE TIME, GAMERS HAVE BECOME GOOD AT MULTITASKING....

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Create an Online Lesson in Less Than an Hour Using SoftChalk LessonBuilder

David Evans

This article will explain how SoftChalk LessonBuilder can be used to take content that you have already created and quickly develop it into an attractive, interactive Web lesson. Once the lesson is created, it can then be uploaded into any learning management system.

Instructors are realizing that an online course should be more than just a syllabus and a discussion forum. Many instructors are creating content for their online classes that is engaging to the student as well as informative. Instructors realize that online classes lose some of the interactions that happen in a face-to-face environment, online instructors are attempting to compensate for that loss by creating lessons that will engage their students. The problem is learning how to create that engaging content.

Typically, instructors who want to create an online lesson may shy away from creating their Web content because they do not have the time or energy to learn how to take content they may already have and transform that content into a Web page or series of Web pages. Programs like Adobe

Dreamweaver and Microsoft FrontPage are just too difficult for the normal instructor to learn, and once learned are difficult to use on an occasional basis. These are professional design tools that are not really intended for the casual user or for instruction. Creating engaging interactive lessons is even more frustrating for the normal instructor. Learning Flash and creating Flash interactions may seem like an impossible task. As a result, many instructors have not developed Web lessons because they refuse to display an inferior product. Some schools are trying to compensate for this problem by have all Web pages created by the instructional design staff; this really puts a burden on that staff. LessonBuilder can save many hours of frustration. This program fills the void for instruction, as it was created specifically for instruction. The tools are simple to use, yet allow the instructor to create effective online learning content.

Creating interesting interactive content for online courses has finally gotten easier. If you already have content created in Microsoft Word you can quickly and easily change your handouts to a professionally designed interactive Web lesson.

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EXAMINING LESSONBUILDER

First I should mention that LessonBuilder was created in Java Web Start. This is important because using this medium the program will work on both Windows and

Macintosh platforms. The program is not a Web application; rather, it is a desktop application. This allows you to work in the program even if you do not have access to the Internet. Figure 1 shows the application window. Notice how it looks similar to Word 2003 in its appearance. The tools should be readily apparent to most.

You may type directly in the window to create your content, or you can copy from your word processor and paste into the window. When you paste from Microsoft Word, the program will remove all of the Word background information. It does retain the formatting, such as boldface and italics, as well as bulleted or numbered text and heading styles. Also, any graphics that you might have included in your word handout are also included when pasting into LessonBuilder.

NAVIGATION

Creating navigation in LessonBuilder is simple; you can create navigation within a page or navigation between pages. To create navigation within a page, there are two required steps. First the heading or section title must be a style. This style can either be

a page heading, subheading one, or subheading two. The styles are chosen by clicking on the styles option on the LessonBuilder toolbar. If you have used heading styles in Microsoft Word, those styles are converted into the styles shown in Table 1.

The second step is to activate the on-page display. This is accomplished by showing the properties dialog box and selecting the Titles and Layout tab. The dialog window is displayed in Figure 2.

Just select the "On This Page" sidebar, and you will have on-page navigation. Page navigation is also activated on this window. LessonBuilder remembers your choices, so if you create a second lesson it will use the same options as your first lesson. This can be helpful to achieve a consistent look for all your Web lessons.

Creating page navigation in LessonBuilder is done by placing the cursor where the new page should start, then using the keyboard and pressing Ctrl+Enter. This should be easy to remember because it is the same way you create new pages in Microsoft Word. If the line immediately after the page break is a page heading style, then when the student points to the page number, when viewing this page on the

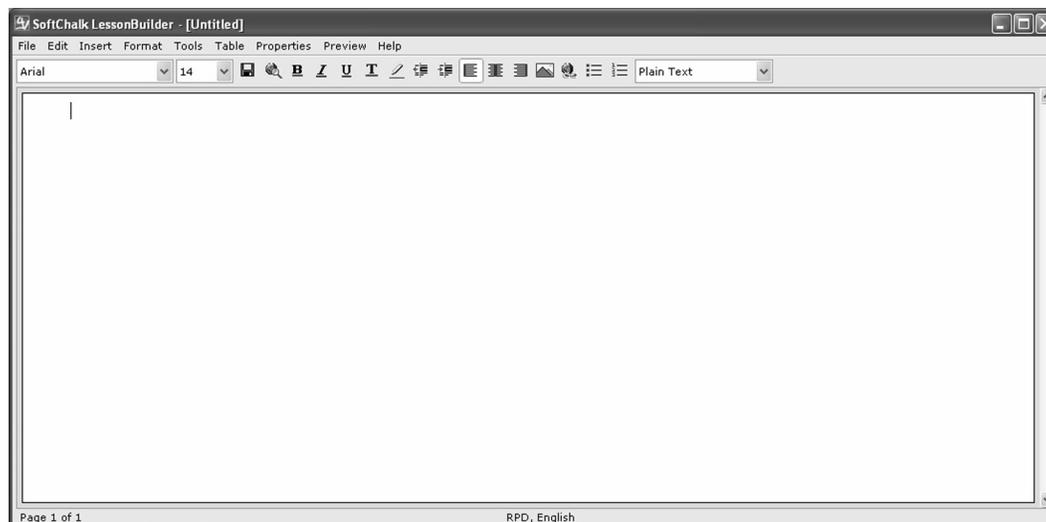


Figure 1.

Table 1. Converting Styles from Microsoft Word to LessonBuilder

Word Style	LessonBuilder Style
Heading 1	Page Heading
Heading 2	Subheading 1
Heading 3	Subheading 2

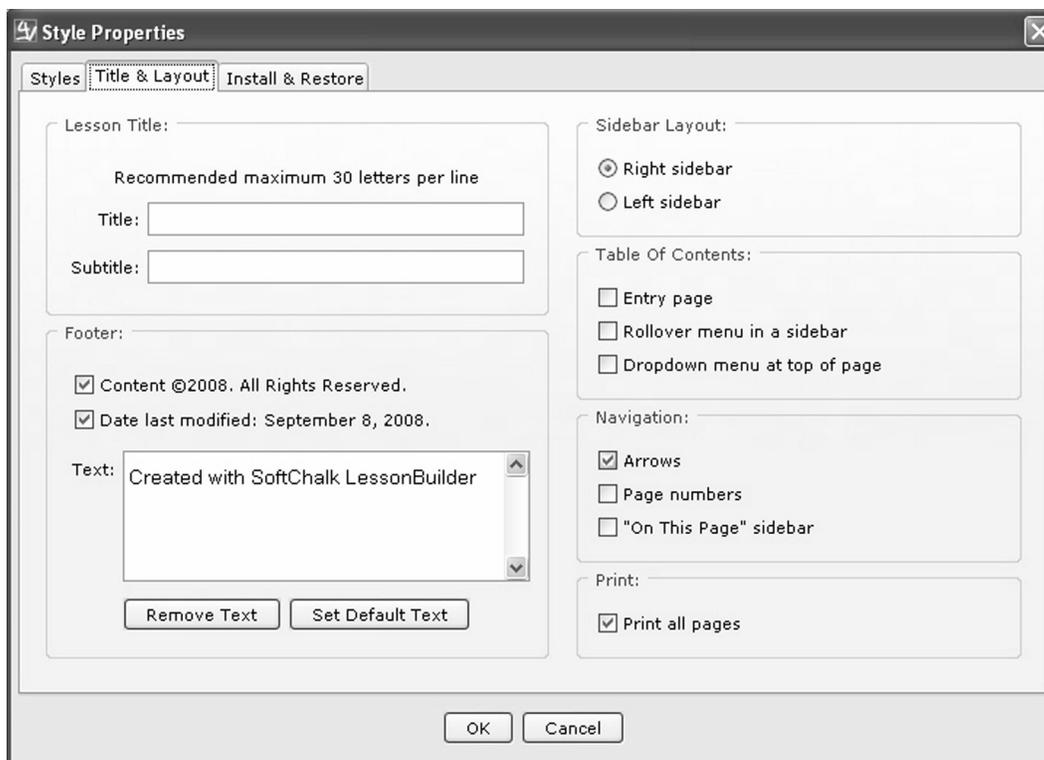


Figure 2.

Internet, the page heading text will appear. If the line is not a page heading style, then it will simply display page #.

It is important to note that, in the LessonBuilder document, you will see the page breaks. This will appear as shown in Figure 3. You will not have to open multiple pages, because all of the pages of your lesson are shown in one document. LessonBuilder creates the separate Web pages, but all editing is done within the main document.

LESSON STYLES

LessonBuilder is similar to Microsoft PowerPoint, in that it gives you the ability to choose from many different Web page styles. You choose a look from a list of over 40 styles, and your entire lesson is changes to that style. Figure 1 shows that the current style is Pens banner. Notice the current style name is located at the bottom center of the LessonBuilder window.

To change the style, open the Style Properties dialog window (see Figure 4)

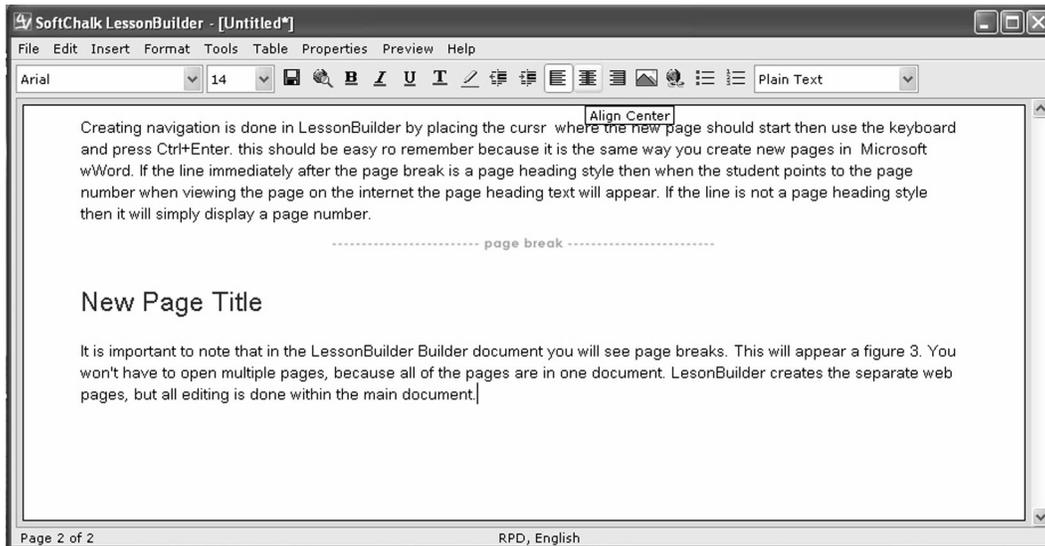


Figure 3.

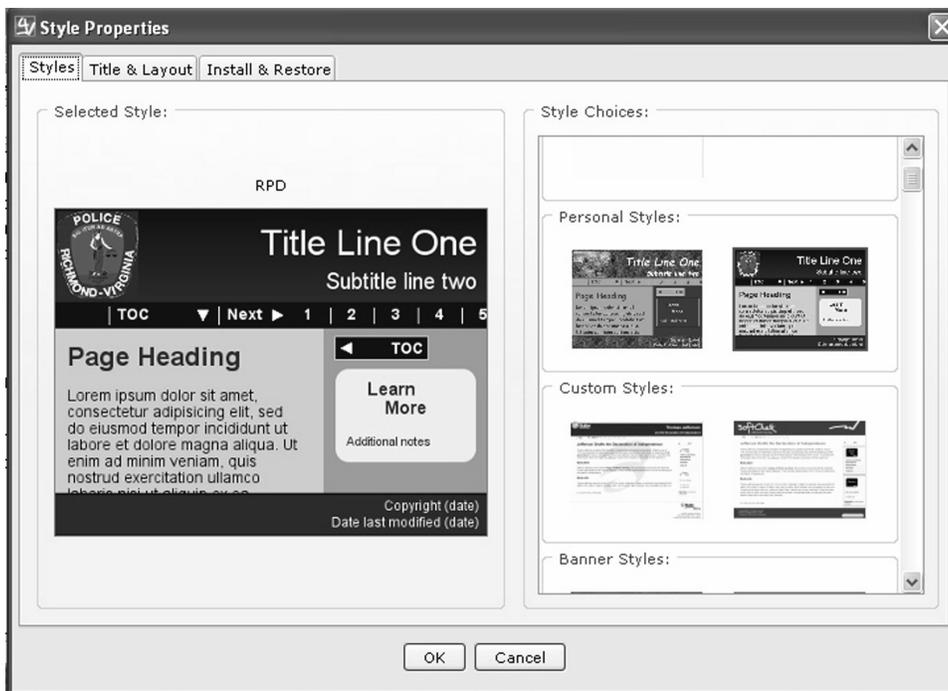


Figure 4.

and scroll through the styles. Click on the style you would like and then choose OK. Rather than a long, drawn-out process, the LessonBuilder creators have decided to

make most of their choices and options very easy.

If your school would like the school's branding added to the Web pages, this is

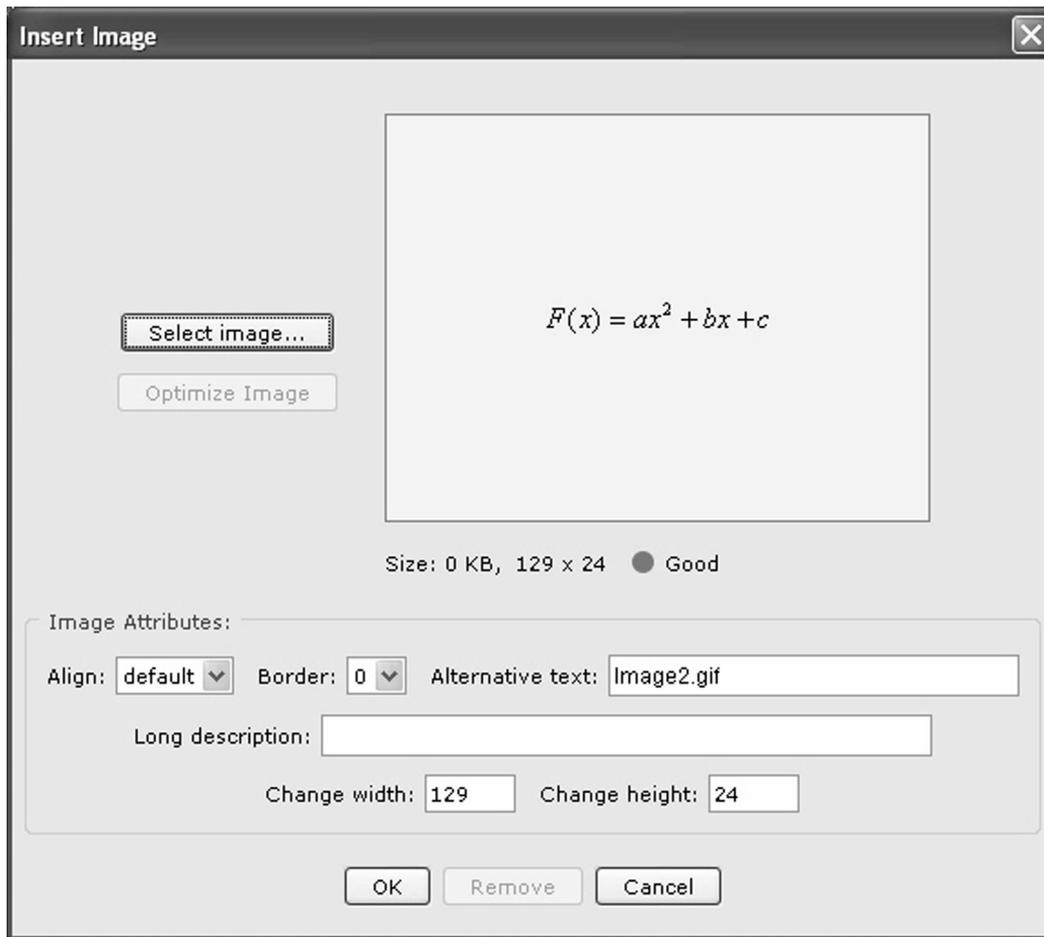


Figure 5.

available. Although you do not have the ability to modify or create your own styles, SoftChalk will create a custom style just for your school. This custom style would then appear at the top of your styles list and will give your entire school a consistent look.

INSERTING A GRAPHIC

LessonBuilder allows you to place standard Web-ready graphics on your Web pages. There is no graphic editing capability in the program, so your graphic will have to be ready for placement. Since this will be on the Web, you will have to have your graphic stored as either jpg, gif, or

png. Once your graphic is ready, insert it in your lesson by choosing Image from the Insert menu. This will display the insert image dialog box (see Figure 5). After you select the image to be inserted, you should change the default location for the image. Changing the default location to left or right will allow text to wrap around the image. If you do not want text to wrap, then you will need to add blank lines to move the text off the image.

The long description option should be used to describe what the graphic represents. The long description options are read by screen readers, thus making your lesson Americans with Disabilities Act com-

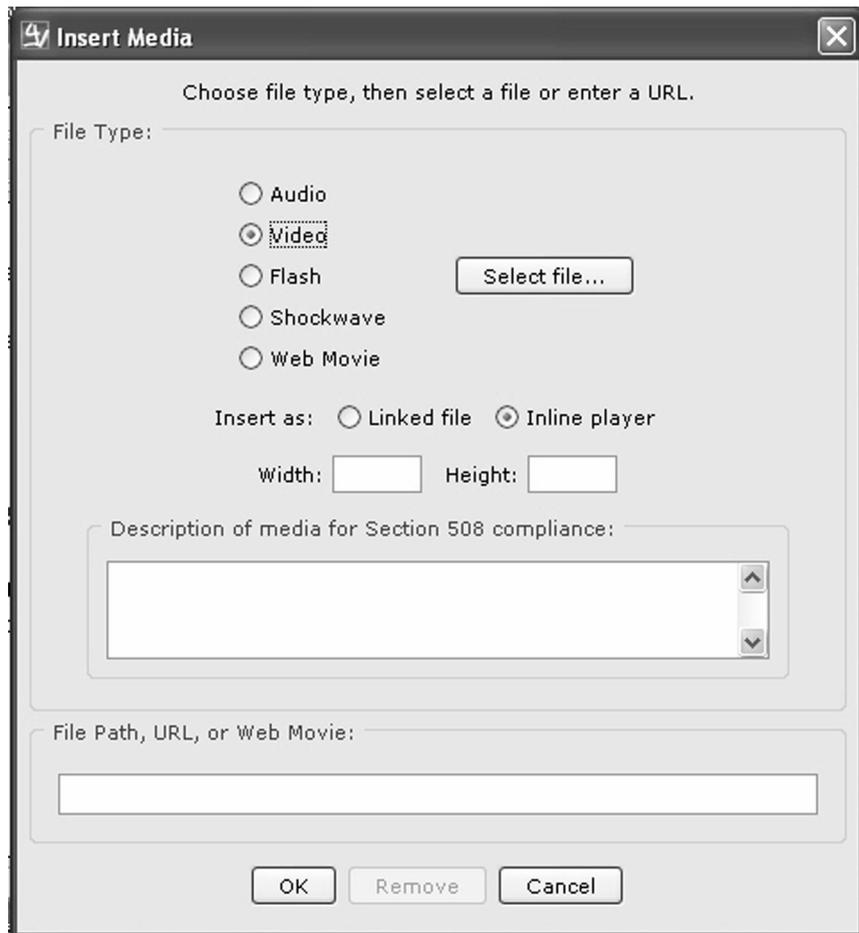


Figure 6.

pliant. You can change the height or width of the image. I found this a little awkward, because the units are in pixels. The options for an image may be edited by right-clicking on the image and then choosing Edit Image. You may also find the display in the LessonBuilder window a little annoying. The graphic does not show in the position selected, nor does it show the wrapped text. After talking with many LessonBuilder users, I have come to the conclusion that this is not a major drawback.

INSERTING MEDIA

LessonBuilder will allow you to insert different types of media into your lesson.

You may include audio files, video files, Flash files, and Shockwave files. If you have access to a streaming video server, you may also include the streaming path to add that content to your lesson. You cannot edit the media in LessonBuilder. To insert media into a lesson, you place the cursor and then choose Media from the Insert menu (see Figure 6).

If the file you want to use is located on your local hard drive or school server, you will select the type of media and then select the file. There are two options for displaying the media you select. It may appear in a separate window if you choose "Linked File," or it may appear in your cur-

rent lesson window, if you choose “Inline Player.” If you do select inline player, you will have to indicate the width and height of the video. This may involve some guesswork, so you may have to try several different values until the video fits. If you are going to use a streaming video server, you should still select Video as the type, and also if it is to be inline or linked, then you will type the URL for the video. The video options may be edited by right mouse clicking on the object and then selecting Edit Media.

INTERACTIONS

One of the key features of LessonBuilder is the ability to easily create interactions with the students. The interactions may be as simple as a quiz or as complex as a graphic hot spot roll-over.

TEXT POPPERS

A text popper is a simple interaction. The student rolls over a word and another window pops up. (Note: It is important that some of the security settings in Microsoft Windows Explorer be changed to allow this to happen.) An example of a text popper is shown in Figure 7. The text

popper may include a graphic, an equation, a hyperlink, and even audio or video.

To create a text popper, all you need to do is select a word or phrase, then choose Text Popper from the insert menu, fill in the form, and you are done. See Figure 8 for an example.

To enhance the text popper by including other media, just right mouse click anywhere in the definition window. Then, choose the option from the menu.

QUIZ QUESTIONS

Making sure your students understand the material presented is an important aspect of any instruction. With LessonBuilder you can create self-assessment questions anywhere in the lesson. These questions could be true/false, multiple choice, short answer, matching, multiple answer, and ordering. The questions may include graphics or equations, as well as media files. When students answer the question, they immediately get feedback to let them know if their answer is correct or incorrect (see Figure 9). The feedback the students receive is changeable, and the students will see their cumulative score for the entire lesson.

LessonBuilder is SCORM- (Sharable Content Object Reference Model) compli-

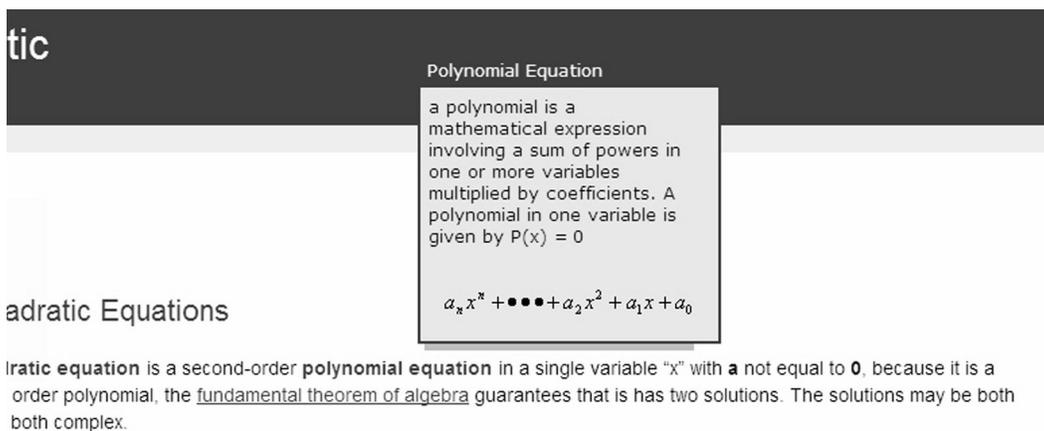


Figure 7.

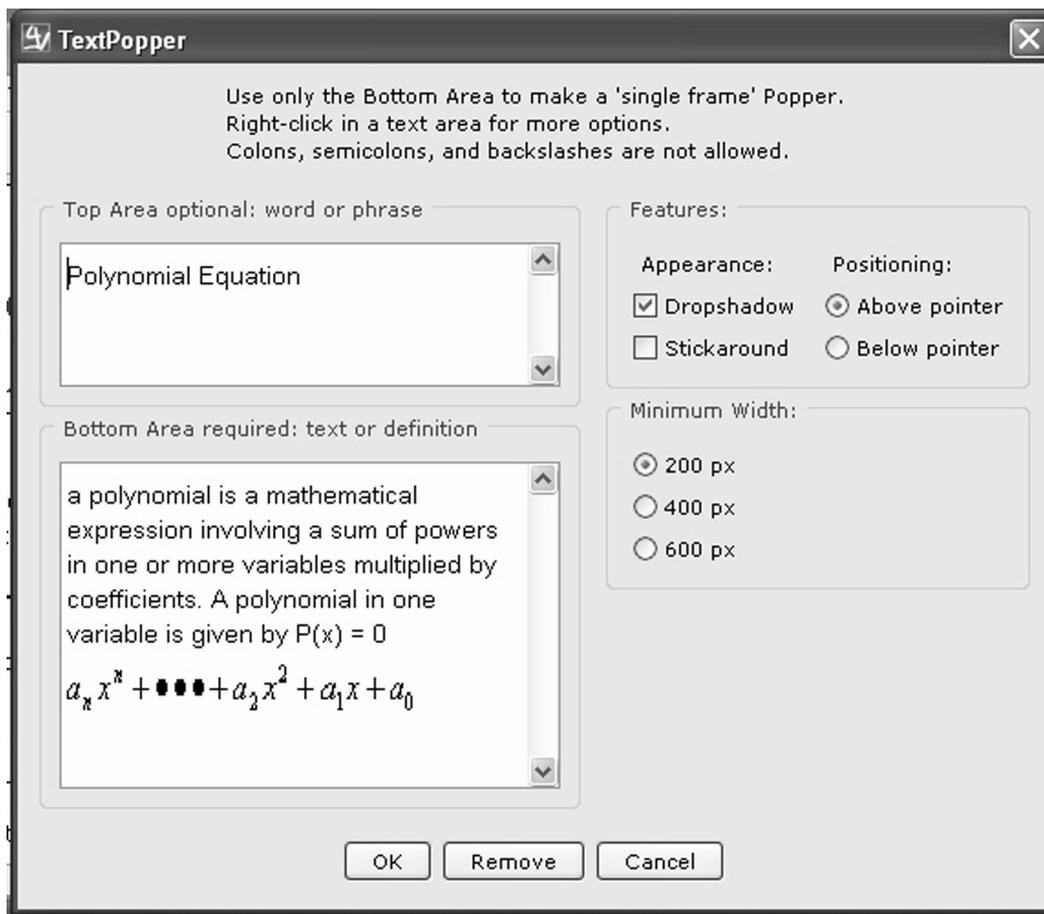


Figure 8.

ant, so if you are using a SCORM-compliant learning management system you can have LessonBuilder place the score into the learning management systems' grade book. It is important to realize that LessonBuilder is not online testing software. The questions that you generate are for self-assessment. You cannot create a bank of questions and have LessonBuilder randomly insert the questions.

To create the question, you choose Quiz Popper from the Insert menu, then choose the type of question you want to select. One option you can select is whether or not to hide the question. As shown in Figure 9, the question is not hidden. If the question were hidden, the student would

only see the icon "Quiz Me." You also have the ability to change the point value for the question and allow the students to try answering the question more than once if they get a wrong answer.

ACTIVITIES

Another exciting feature of LessonBuilder is the ability to quickly create Flash-based activities without learning Flash. There are eight different activities in LessonBuilder. Some are text based and others are graphic based. The activities can be created by filling in a form for the text-based activities, and following a guide for the graphic-based activities. Figure 10 shows a typical form for a text-based activity.

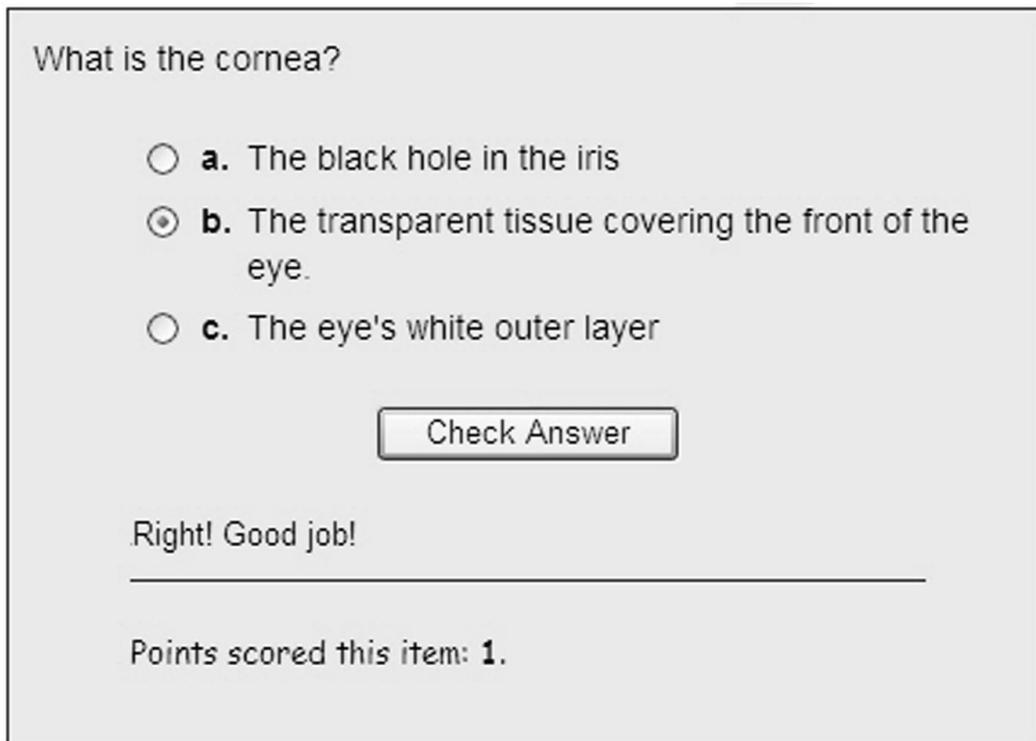


Figure 9.

You just have to type the words and then the clues to create a crossword puzzle. The activities in LessonBuilder may also be graded. This allows you to create activities and have them be part of the participation grade that would be entered in the grade book in your SCORM-compliant learning management system. The options that are available are: allow your student to restart the activity, determine if the activity should open in a new window or be part of your lesson window, and determine the point value of the activity.

The SoftChalk Web site shows demonstrations of how to create all of the activities. I encourage you to go to their Web site to see how easy it is to create interesting, interactive activities.

FINISHING A LESSON

Once you have finished your lesson, the final step is to get the lesson into your

learning management system. LessonBuilder once again has made this task simple. First, you package the lesson. The package process allows you to select either a zip file or a SCORM file. If you want your lesson to be entered into the grade book you choose SCORM; otherwise, choose zip. Once the lesson has been packaged, you then upload the file into your course management system. LessonBuilder has been tested with most of the popular systems—Moodle, Desire2Learn, Angle, Blackboard, and WebCT.

CASE STUDIES

I have contacted SoftChalk and received their permission to display their case studies that talk about the benefits of using LessonBuilder. The following is an excerpt from one case study.

The Maricopa County Community College District is one of the largest higher

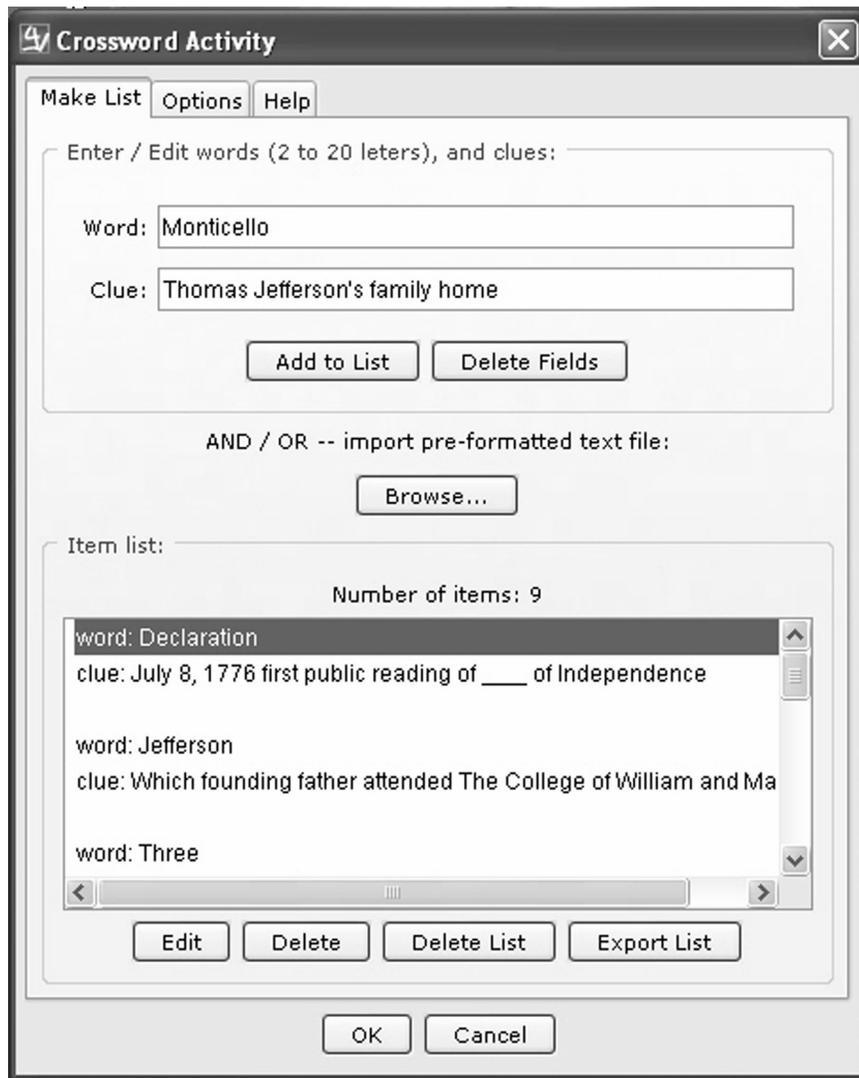


Figure 10.

education systems in the world and the largest provider of health care workers and job training in Arizona. Ten colleges make up the district, and although they have not agreed on any single Learning Management System they did unanimously select SoftChalk's LessonBuilder as the preferred tool for building instructional content and for developing Reusable Learning Objects (RLOs).

According to Roger Yohe, director of the Center for Teaching and Learning at

Estrella Mountain Community College, LessonBuilder is used to design course templates that are essentially "ready-to-go." This allows the college to quickly add high-demand course sections based on enrollment trends. While it is important to faculty at Estrella to present students with consistencies in course syllabi, they objected to the "one-size-fits-all" nature of the templates that had previously been designed in a word processing application.

The implementation of LessonBuilder solved the problem and enabled both a standard and diversity by using a combination of software features, particularly cascading stylesheets.

An English Department faculty member at Glendale Community College, Mary Jane Onnen, utilizes the LessonBuilder software in another unique manner. She has been using LessonBuilder in her developmental reading class for the last several years. Previously, she had used the SoftChalk software to reformat "text-dense" reading selections, adding subtitles and developing comprehension questions for students. This past semester she had her students do basically the same thing, and found it to be a great way to assess how carefully the students read the material. Students turned in their assignments developed with LessonBuilder and then the instructor annotated the page to provide them feedback. Students were intrigued by the process and the SoftChalk product, which resulted in the purchase of an institutional Student License package for the college.

The increasing development of a wide range of teaching tools amongst faculty in the district led to the development of the Maricopa Learning Exchange (MLX), a repository for reusable learning objects (RLOs) (see www.mcli.dist.maricopa.edu/

[mlx](http://www.mcli.dist.maricopa.edu/mlx)). The MLX provides an easy way to upload learning objects into a database that can be searched by all faculty in the ten colleges that make up the district. SCORM compliance is an important requirement, both for creating content that is easily transported and used in other technologies, and for tagging RLOs for searching purposes. With its built-in SCORM compliance, LessonBuilder easily fulfills these requirements and integrates seamlessly with the repository.

CONCLUSIONS

Creating attractive Web lessons no longer has to be a tedious and labor-intensive operation. As the case studies above show, the uses of LessonBuilder are many. LessonBuilder can be used to create reusable learning objects and SCORM-compliant content. It can be used in a completely online environment or in a blended class. It can be used by a design expert or a novice teacher. In short, you will find your experience with LessonBuilder to be a productive one. You really can take a handout and create a professionally-designed Web lesson within an hour.

If you would like more information about SoftChalk LessonBuilder, you can visit their Web site located at <http://www.softchalk.com>



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Technology in Motion

The University of Montevallo's Regional Research and Education Inservice Center

Katherine S. Davis

INTRODUCTION

Surrounded by computers and other portable devices such as video games and smart phones, adolescents in today's society spend more time surfing the Web, building Web sites, communicating through instant messaging, wikis, e-mails, and writing blogs than they do watching television. Administrators and teachers must continue to reach this generation of students and employ them with twenty-first century skills. In order to do so, teachers need to be adequately trained to facilitate courses with technologi-

cally advanced students. Improvement of teaching is not simple, but it remains a demanding task. Grabe and Grabe (2004) stated, "Thinking about the future is important for educators. And preparing students for that future requires some consideration of the skills that students will need and the rapidly evolving role of technology in educational practice," (p. 2). The research literature on educational technology has identified a number of important contextual factors that influence how technology is implemented in educational settings. The Education Development Center discovered teacher participation in quality professional development, teachers' access to technology, and pedagogical beliefs influence teachers' use of technology and their instructional practices (Martin & Shulman, 2006). For the purpose of this article, technology professional development for educators in a K-12 learning environment is examined at the University of Montevallo's Regional Research and Education Inservice Center. The University of Montevallo is Alabama's Public Liberal Arts University.



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PROFESSIONAL DEVELOPMENT

Professional development is designed to prepare and support educators to help all learners achieve high standards of learning. The mission and principles of professional development are summarized in Table 1 (Goals, 2000).

Table 1. Ten Exemplary Characteristics of Professional Development

-
1. It focuses on teachers as central to student learning, yet it includes all other members of the school staff.
 2. It focuses on individual, community, and organizational improvement.
 3. It respects and nurtures the intellectual and leadership capabilities of teachers, principals, and other individuals in the school community.
 4. It reflects high quality research and practices in teaching, learning, and leadership.
 5. It enables teachers to become more proficient in subject content, teaching strategies, uses of technologies, and other essential elements of teaching to high standards.
 6. It promotes continuous inquiry and development embedded in the daily life of schools.
 7. It is planned collaboratively by those who will participate in and guide that development.
 8. It requires substantial time and additional resources.
 9. It is driven by a logical long-term plan.
 10. It is ultimately evaluated on the basis of its impact on teacher effectiveness and student learning; and these assessments guide subsequent professional development efforts.
-

The University of Montevallo's Regional Research and Education Inservice Center expands on these exemplary professional development characteristics by meeting the needs of practicing teachers and administrators. Through numerous workshops and training sessions provided by the Inservice Center, practicing professionals acquire content knowledge, skills, and techniques that enable them to move from novice to expert. The sessions meet National Staff Development Standards through programs that are rigorous, data-driven, research-based, intensive, and ongoing. Established by the Alabama legislature in 1984-1985, the University of Montevallo's Regional Research and Education Inservice Center is one of 11 centers providing professional development to K-12 educators in designated public school systems. The Inservice Center implements and facilitates statewide initiatives such as National Board Certification Training, Alabama Leadership Academy, Alabama Science in Motion, Alabama Technology in Motion, Alabama Math, Science and Technology Initiative, as well as Alabama Reading Initiative. In this article, Technology in Motion is examined.

TECHNOLOGY IN MOTION

The Alabama State Board of Education identified eight critical areas in which the University of Montevallo's Regional Research and Education Inservice Center could provide professional development. One of the eight areas needing improvement was technology. In order to address this need, Alabama State Superintendent of Education Dr. J. B. Morton worked to create Technology in Motion (TIM), which became Alabama's initiative for free technology professional development for educators. Technology In Motion (n.d.) provides:

job embedded professional development for teachers to promote the use of technology in teaching and learning. The program offers services, materials and training that support teachers' professional growth in effective teaching practices, the creation of technology rich learning environments and project based learning. (n.d.)

Alabama's technology initiative presents materials, services, and training that sustain teachers' professional development in effective teaching practices as well as to create a foundation for technology-rich

learning environments and project-based learning. In 2000, when the program began, the purpose was to convey basic computer instruction to K-12 classroom teachers. The training philosophy of TIM is that teachers and students learn by accomplishing real-world tasks. Therefore, the hands-on, job-embedded classroom activities are practical and relevant.

Initially, TIM specialists traveled throughout the state with an instructional manual and 40 Macintosh iBooks to facilitate workshops. In recent years, the iBooks have been replaced by PC laptops, and TIM specialists now incorporate handheld devices and digital cameras into their instruction. The PC laptops have an advantage of wireless connection to the Internet and CD burners. Through face-to-face courses, online courses, e-learning, and professional learning groups, TIM supports the teacher technology standards created by the Alabama Board of Educa-

tion in 2004. As shown in Table 2, the standards were designed for professional personnel in the areas of technology integration, use, and technology instructional leadership (Alabama Department of Education, 2006).

TECHNOLOGY IN MOTION WORKSHOPS

Professional development offered through TIM improves teaching and learning while enhancing Alabama's workforce skills. At the University of Montevallo's Regional Research and Education Inservice Center, Janet Taylor, the instructional technologist, provides job-embedded professional development opportunities for educators to encourage the use of technology in learning environments. Taylor collaboratively plans workshops with school or district personnel to support the local school plan, and/or the local school district plan in

Table 2. Technology Professional Development Topics for Teachers and Administrators

<ol style="list-style-type: none"> 1. Identify and evaluate technology resources and technical assistance, (i.e., those available on-line and on-site within a school and district setting). 2. Assess advantages and limitations of current and emerging technologies, and on-line software content to facilitate teaching and student learning. 3. Develop and implement a classroom management plan to ensure equitable and effective student access to available technology resources. 4. Model safe, responsible, legal and ethical use of technology and implement school and district acceptable use policies including fair-use and copyright guidelines and Internet user protection policies. 5. Design, implement, and assess learner-centered lessons and units that use appropriate and effective practices in teaching and learning with technology. 6. Use technology tools (including, but not limited to, spreadsheets, Webpage development, digital video, the Internet, and e-mail) for instruction, student assessment, management, reporting purposes, and communication with parents/guardians of students. 7. Facilitate students' individual and collaborative use of technologies (including but not limited to, spreadsheets, Webpage development, digital video, the Internet, and e-mail) to locate, collect, create, produce, communicate, and present information. 8. Design, manage, and facilitate learning experiences incorporating technologies that are responsive to diversity of learners, learning styles and special needs of all students (e.g., assistive technologies for students with special needs). 9. Evaluate students' technology proficiency and students' technology-based products within curricular areas. 10. Use technology to enhance professional growth (e.g., through accessing Web-based information, on-line collaboration with other educators and experts, and on-line professional courses).

addition to presenting programs at national conferences such as Florida Educational Technology Conference. In 2007-2008 Taylor's workshops included: Delightfully Digital, Photo Story 3 for Windows XP, Windows Movie Maker 2, i-Safe, Kidspiration, Inspiration, Webpage Do's and Don'ts, PowerPoint I, II, and III, Alabama Virtual Library and Alabama Learning Exchange. This article focuses on Microsoft Windows Movie Maker 2 and Intel Teach to the Future.

WINDOWS MOVIE MAKER 2

Microsoft Windows Movie Maker 2 is a free video-editing tool included with Windows XP. The program can be easily downloaded and is well-supported online with detailed tutorials and newsgroups for novice individuals learning how to polish home videos. Tutorials offered online address the following "how-to" topics: transitions, special effects, titles, credits, music, and narration. During Taylor's workshop educators spend between 2 and 3 days on learning to navigate Windows Movie Maker 2 software. Initially, the session began as a 2- or 3-hour workshop, but quickly transitioned into a longer time segment as participants' interest grew. Activities during the workshop include guided instruction on the content of Windows Movie Maker 2, free time for exploration, one-to-one instruction, and a video creation. Videos created by participants may include existing video footage and/or still pictures. In addition, participants learn how to add titles and transitions to their videos.

In the summer of 2006, two elementary school teachers from Hall Kent Elementary School in Birmingham, Alabama participated in a similar Movie Maker workshop. Jerome Isley (personal communication, March 28, 2007) enjoyed learning how to create movies with audio, music, and video arrangements. His time during the workshop was well-spent and motivating. Upon returning to school in the fall of

2006, Isley incorporated Windows Movie Maker and Photo Story into a unit of study on haiku poems. Students in his class studied haiku poems, wrote their own version of a haiku poem, and created a skit to further explain their creations. Isley compiled students' work in Movie Maker to produce a short video. In turn, the video was submitted and shown at Homewood City School's Technology Expo and Showcase held on February 27, 2007. Isley described Taylor's workshop as "A great workshop for someone who inspires to share their students' learning," (personal communication, March 28, 2007).

Dee Hellmers, another second grade teacher at Hall Kent Elementary School, confirmed Taylor's love for instructional technology by stating, "She feels strongly about the use of technology and its ability to excite students and teachers alike," (personal communication, March 29, 2007). As a veteran teacher, Hellmers continues to search for innovative ways to keep teaching invigorating for her as well as stimulating for second grade students. Taylor's workshop on Movie Maker and Photo-story fit that bill for Hellmers. She utilized these programs to teach geography. Hellmers explained her students loved watching the video segment, while she found it a great way to introduce additional travels and travelers. "Kids are drawn to technology like magnets," stated Hellmers (personal communication, March 29, 2007). After attending the technology workshop, she suggested teachers will be drawn to technology in the same way that their students will be. Hellmers concluded, "Teachers will be persuaded to reflect upon how they can integrate technology more in their own classrooms" (personal communication, March 29, 2007)

The stories of Isley and Hellmers reveal how technology is not a substitute for teachers and educators. Instead, technology when implemented effectively can improve teaching methods and motivate students.

INTEL TEACH TO THE FUTURE

Intel Teach to the Future is a global endeavor to assist veteran teachers and preservice teachers integrate technology into instruction and enhance student learning. Participating educators in the program receive extensive training and valuable resources to promote effective technology use in the classroom. Teachers interact with one another and learn how, when, and where to incorporate technology tools and resources into the curricula with a focus on developing students' higher-order thinking skills. In addition, participants are coached on how best to create assessment tools and align lessons with educational learning goals and national standards. The program utilizes the Internet, Web page design, as well as student projects. Taylor, also a Senior Trainer for the Intel Teach to the Future program, stated teachers enjoy taking existing lessons and finding ways to incorporate technology so that students walk away from the lessons with a focus on new technologies (personal communication, March 27, 2007).

Since its creation in 2000, Intel Teach to the Future has trained over 3 million educators in 40 countries and is committed to reaching 13 million teachers by 2011 (Intel Teach Program, n.d.). The Intel Teach Program is a proven, worldwide professional development program that helps educators augment twenty-first century learning through the effective use of technology. V. McHale, a master teacher from Teaneck Public Schools in New Jersey stated,

In general, when implemented effectively, the "Intel Teach Program Essentials Course is having a strong, positive impact on many pre-services teachers, teachers educators, and teacher education institutions," (Deakin University Faculty of Arts, 2008, p. 2). Professional development resources for K-12 teachers consist of the following courses: Getting Started, Essentials, Essentials Online, Thinking with

Technology, and Advanced Online (Intel Teach Program Portfolio, n. d.)

The Education Development Center conducted the 2006 Instructional Practices and Classroom Use of Technology Survey with over 1,000 teachers, some of who participated in Intel Teach to the Future and some of whom did not, to investigate whether three of the key research-based factors—participation in quality professional development (specifically Intel Teach Essentials), teachers' access to technology, and their pedagogical beliefs— influenced teachers' use of technology and their instructional practices. Results from the survey indicated that Intel Teach to the Future Essentials participants in general (94.4%) and master teachers (97%) used technology in their practices more than nonparticipants (86.1%). In addition, Intel Teach to the Future Essentials participants in general (95.4%) and master teachers in particular (98.4%) used technology with their students more than nonparticipants did (90.7%) (Martin & Shulman, 2006).

CONCLUSION

What is one challenge Alabama educators in a K-12 learning environment face with incorporating technology into their classrooms? How can schools speed up the rate of diffusion of an innovation such as technology? Taylor affirmed administrators and teachers face two essential problems when adopting new innovations relating to technology: inspired teachers and time/money. First, it is essential that teachers are inspired to use a variety of technology tools. This prerequisite of inspiration is confirmed by Abedor and Sachs (1978) when they stated individuals must achieve a certain level of individual readiness before instructional innovation can be successful. Factors affecting individual levels of readiness may include attitudes (which are positive toward self, teaching, and change), values (which places importance on teaching and student learning), beliefs

(that instructional improvement is possible and worthwhile), skills (in organizing and delivering information), and knowledge (of subject matter, innovations, and teaching methods, as well as strategies). When teachers acknowledge these factors, then individual readiness will be obtained; in turn motivating teachers to integrate technology. The second problem described by Taylor is time and money. Teachers need adequate amount of time out of the classroom to communicate with other professionals and learn how to effectively integrate technology. When time and communication channels are provided by administrators the rate of diffusion with technology will increase (Rogers, 1995). In addition to time and inspiration, administrators must provide funding for necessary equipment and other hardware devices. If teachers maintain individual readiness, the schools in which they work must also possess organizational readiness in order for the innovation of technology is accepted. Organizational readiness can be defined as a combination of characteristics that influence the acceptance or tolerance of an innovation in the school. Characteristics leading to organizational readiness are structure (which allows open and free communication and group problem solving), rewards (for teaching or related activities), norms (that support innovation), resources (to support innovation), and policies (that permit trial of innovations) (Abedor & Sachs, 1978). Taylor also noted that

You can have all the time and money in the world to instruct teachers on how to use technology in their classrooms, but if those teachers are not inspired to do so, then they most likely will not implement technology into the curriculum. (personal communication, March 27, 2007)

The improvement of teaching with technology is not an easy task. It requires a long-term commitment personnel and money. The University of Montevallo's Regional Research and Education Inser-

vice Center, as well as TIM, play a significant role in helping Alabama educators improve teaching, in addition to speeding up the rate of diffusion of technology integration by providing free professional development to teachers in a K-12 learning environment. The programs offered by TIM enable educators to become and remain proficient in the use of technology so they can better facilitate learning. Through the numerous workshops and training sessions provided by the Inservice Center, practicing professionals acquire content knowledge, skills, and techniques to help them address the needs of adolescents in today's society.

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The Roles of Contemporary Faculty, Unbundled

Chris Policastro

WHAT IS A TEACHER?

Time and technology have had a serious impact on education. Whether in the traditional classroom, at a distance, or any blend of the two, academic technology has made teaching much more exciting, but it has also been overwhelming and often frustrating for many teachers who just are not ready for it, or do not have the time to take advantage of it.

With the shift from teacher-centered to student-centered learning, the functions of both teachers and students have endured continuous change. The teacher used to be

the center of the class; now, the students are the center of the class, and this is a major change for many teachers.

The meaning of learning has changed as well. It no longer implies that students are learning from the teacher. Students often learn from each other, from other members of the educational community, and from a variety of other resources as well. One student may be knowledgeable in a particular subject/topic, and another student in another subject/topic. At any moment, a student might be teaching and/or learning. So, while all of this technology enhanced, student-centered learning is taking place, what is the teacher doing?



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WHAT DOES A TEACHER DO?

Years ago, this question was easy to answer—a teacher does everything involved in teaching a class, from planning the course, through assessing its objectives. In some cases, this is still true. However, in a typical course today, especially those with online components, many teachers are discovering that they need to learn and do so much more in order to keep up with the demands of their fast-paced, high-tech consumers—that is, their students.

When making a comparison to traditional classroom instructors, Simonson (2005) refers to today's online instructors as "skeuomorphs—elements of design that have lost their original function, but are nevertheless retained. If we look at the teacher's changing role superficially, as some do, one might conclude that teachers

have no real purpose anymore; they are skeuomorphs” (p. 40).

Although our present-day teachers may not *seem* to be acting like their predecessors, they are still teaching, albeit in a different way. The demands on contemporary faculty are changing and along with these changes have come new roles with very different expectations (Bermant & Knight, 2002). Some of these roles are embraced, while others are not welcomed at all. Let’s review some of these roles.

DESIGNING COURSES

The days of basing an entire course on textbooks and supplemental materials are becoming few and far between. Today’s students want to be engaged in exciting learning activities. This means that faculty are often designing their courses themselves, or at least gathering materials from a variety of sources.

When designing courses, faculty may work as part of a design team to establish the content for the course. This typically includes the selection of materials, activities, assignments, and so forth. The development team might consist of curriculum developers, instructional designers, assessment designers, and subject matter experts (faculty members and/or professionals from the field).

DEVELOPING COURSES

Faculty are frequently asked to incorporate online components into their courses. With little training in academic technology and its pedagogical implications, they often add technology to their existing courses without understanding how it might impact the teaching and learning experience. In some cases, the faculty alter the course and its content to “fit” the available technology, thereby changing the original instructional objectives (Paulson, 2002).

When developing a course, faculty may work as a part of a development team to determine which academic technologies

and pedagogical techniques are best suited for the course, with an emphasis on the delivery of the course—traditional, online, or blended. The development team might consist of faculty, multimedia designers, and audio-video technicians, as well as members of the design team. This role is often filled by instruction technologists.

MANAGING COURSES

With courses being offered in numerous sections, and being delivered in a variety of ways (traditional, distance, blended) and by various faculty, it is crucial to ensure that every section of the course is delivered consistently. This includes making sure the course sections are delivered in accordance with institution, program, and design standards.

When delivering many sections of a course, faculty (and other personnel) may work as a part of a delivery team, led by a course manager. In addition to recruiting the members of the team, the course manager may also train, mentor, and evaluate the members of the team. It is important to promote an environment in which every member of the team works toward the common goal of providing every student with a consistent and quality educational experience.

DELIVERING COURSES

With the shift from teacher-centered to student-centered learning, the function of both students and teachers seems to have inverted. Students frequently learn from each other, as well as from other academic resources, such as the Internet. Consequently, course delivery is often referred to as course facilitation. Nevertheless, the course material must be “delivered” to the students, and it is still the teacher’s responsibility to supervise this process, regardless of its format.

When delivering a course, faculty may work as a part of a delivery team, led by the course manager. A course may be delivered

by full-time faculty, adjunct faculty, professionals from the field, or any combination thereof. It is especially important that those who will be delivering a course are familiar with student-centered learning, as well as the academic technology that will be used in the delivery process.

MEDIATING COURSES

Mediating a course involves working with students to help them appreciate course content in ways that are meaningful to their personal understanding and suitable for their individual learning styles. This process is a subset of the delivery process, and is essential for high-quality instruction. Mediation is becoming the most influential aspect of the overall learning experience today, especially with the use of online discussion and chat forums.

When mediating a course, faculty may work as a part of a delivery team, led by the course manager. A course may be mediated by full-time faculty, part-time faculty, adjunct faculty, or any combination thereof. Graduate teaching assistants often assume this role as well, since most faculty are simply too busy, and some are not comfortable with interpersonal interaction required for successful mediation.

ASSESSING COURSES

Along with the movement toward student-centered learning is the concept of student-centered assessment, in which students are encouraged to engage in self-assessment on their path to assuming responsibility for the quality of their own work (Dick, Carey, & Carey, 2005). Student-centered assessments are linked to instructional goals and an explicit set of performance objectives that are derived from those goals. In addition to informing the instructor how well the students were able to achieve each instructional objective, these assessments also indicate to the designer exactly which components of the

instruction worked well, and which need revision (Dick, Carey, & Carey, 2005).

When designing assessments for a course, faculty may work as part of the design team to confirm that assessment items correspond one to one with the performance objectives. It is important to ensure that the performance required in the objective matches the performance required in the assessment item (Hagerott & Ferezan, 2003). The design team might consist of curriculum developers, instructional designers, assessment designers, and subject matter experts.

EVALUATING COURSES

Evaluation, both formative and summative, involves making the course as efficient and effective as possible, and is perhaps the most important aspect of the course design process. Formative evaluations occur throughout the design process, whereas summative evaluations are conducted after the design is complete.

Although we typically think of students evaluating courses and faculty, peer evaluation of faculty is also becoming an important aspect of the overall evaluation process. These evaluations provide faculty with guidance and feedback about their ability to teach their courses. They also provide opportunities for professional development in educational technology and in the application of best practices of online teaching and learning in their courses (Mandernach Donnelli, Dailey, & Schulte, 2005). These evaluations are typically conducted by faculty in the course management role.

ACADEMIC ADVISING

At some institutions, academic advising is offered through a centralized advising office. In most cases, however, faculty are still required to advise many students, and it is often too much work for them to handle effectively. This is why the movement towards the centralized advising office

began. Contemporary students simply require more attention than most faculty are capable of providing. Nevertheless, the typical faculty member is accountable for academic advising, and it must be considered one of their roles.

WHAT IS UNBUNDLING?

Although the concept of unbundling was first introduced in education decades ago (Troutt, 1979; Wang, 1975), it was not proposed as a solution to the multifaceted role of faculty until recently. This is primarily due to advancements in academic technology and the increase in online education, especially at a distance. Basically, unbundling involves assigning the diverse roles of faculty to those who are best suited for them. Rather than incorporating the responsibility for all technology and competency based functions into a single concept of “faculty member,” faculty roles are disaggregated and assigned to distinct professionals (Paulson, 2002). This applies to full-time faculty, part-time faculty, adjunct faculty, professionals in the field, teaching assistants, and support staff.

WHY WOULD WE UNBUNDLE?

Although unbundling is often proposed by administrators as a means of reducing operating expenses, there are other benefits that are equally important. By assigning the varied roles to those who are best suited for them, the entire process of instruction becomes more efficient. Additionally, unbundling provides educational institutions with an opportunity to rethink traditional instructional methods by comparing different scenarios. This may help them to identify faculty-role assignments that are unproductive, and enable them to redistribute role assignments in an effort to increase the efficiency of their instruction (Paulson, 2002).

HOW DO WE UNBUNDLE?

Once an institution decides to unbundle their faculty roles, how might they identify who is best suited for the various roles? Several factors may be used to determine the assignment of these roles. Experience, both in education and with technology, and hierarchical status are some of the typical considerations. Politics may also be an influential factor.

When determining how to allocate faculty roles, experience is likely to be the primary deciding factor. If a faculty member has experience with pedagogical theory and practice, then he or she will likely be well-suited for the course design role. If a faculty member has experience with academic technology and its pedagogical implications, then he or she might be well-suited for the course development role. Faculty with proven managerial/leadership experience will be well suited for managing the faculty who will be delivering courses. The approach becomes quite obvious—determine the experience of faculty members and assign them to the roles that require that experience. This also provides the less experienced faculty with a means of promotion that is not simply based on time. As faculty gain experience, they can assume more complex roles.

The hierarchical status—full-time, part-time, adjunct, and so on—of the faculty will also be a deciding factor. Part-time and adjunct faculty typically are not involved in the course design and development processes. They are more likely to be involved in delivery and mediation processes. As they gain more experience and exposure at a particular institution, they may have opportunities to become full-time faculty, as well as opportunities to assume other roles.

As is true in many areas, politics are sure to be involved in unbundling at some point. Faculty with higher rank and/or tenure may request, or possibly insist on being involved in roles that merely suit their preferences. In such cases, it is imperative

that administrators ensure that roles are assigned according to knowledge and experience, or the process of unbundling may be destined to failure.

UNBUNDLING EXEMPLIFIED

Academic institutions typically offer a variety of course formats, such as lectures, laboratories, and seminars, and each of these may employ distinct models of instruction. Academic technologies enable even more delivery methods by utilizing synchronous and asynchronous applications. The array of possible configurations is endless. Paulson (2002) provides the following example of how some of the unbundled roles (referred to here as activities) might be implemented in a typical undergraduate lecture course:

Subject matter is determined by a departmental committee (the *design* activity) and defined largely by required course sequencing. Either the committee or a designated faculty member selects textbooks and readings to link with materials used in other courses. These readings, which shape the content of daily lectures and assignments, comprise a large portion of course *development*. A senior faculty member lectures to large groups of students twice a week based on specified texts the students presumably will have studied (the *delivery* activity). Graduate teaching assistants (TAs) lead smaller discussion sections throughout the week (the *mediating* activity). TAs also frequently grade quizzes, term papers, and examinations (the *assessing* activity), often suggesting final grades that faculty members of record rarely change. In this familiar scenario, senior faculty members perform only a few of the basic activities alone. Committees, other non-faculty staff, and print/media material accomplish this. (p. 126)

CHALLENGES OF UNBUNDLING

In an unbundled environment where they may be participating in multiple teams,

faculty are likely to be on-campus for at least five full days per week. This creates challenges when recruiting both full-time and adjunct faculty who likely have preconceived notions of the traditional faculty role (Hagerott & Ferezan, 2003). Some will embrace the freedom to focus on a few, distinct roles. Others will hesitate to relinquish the many roles they have grown accustomed to over the years.

The potentially substantial changes in faculty roles that are attributable to unbundling will inevitably have an impact on faculty cultures (Paulson, 2002). How faculty will respond to the proposition of reorganizing the very essence of their livelihood depends on how it is implemented. Will administrators be able to provide the proper balance and distribution of faculty and roles, while simultaneously satisfying personal needs, subduing political agendas, and so on?

FUTURE OF UNBUNDLING

Unbundling, as applied to faculty roles, is a fairly new concept, and warrants future research. During typical research studies, the faculty and role data that are typically collected at various stages in the course development process is based on personal experience or observation, and is often incomparable (Paulson, 2002). Unbundling can help make these studies more effective by enabling researchers to identify the specific instructional activities for each role and establish standardized definitions for them. Subsequently, decisions can be made about each activity, such as whether and when it occurred, how long it took each faculty to complete it, and how much it cost (Paulson, 2002). Unless and until such an approach is taken, research results will be of little value.

CONCLUSION

The incessant demands of contemporary students mandate a high level of account-

ability from educational institutions. With student enrollment constantly increasing, administrators are always looking for opportunities to utilize their limited faculty more efficiently. The demands on contemporary faculty are also continuously evolving, and many faculty are realizing that they need to assume more roles in order to keep up with the demands of their fast-paced, high-tech students.

By unbundling the numerous roles of faculty, we ensure that each faculty member is performing only the roles he or she is best suited for. This will undoubtedly increase their productivity, effectiveness, and efficiency, as well as improve the educational experience for their students.

Finally, the unbundling process will provide many exciting opportunities for instructional technologists as well. Many faculty will welcome the opportunity to work with instructional technologists when designing and developing their courses. This will also free more of their time to do what they do best—teach!

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The LCMS and the Evolution of Corporate Training

Thomas G Schmidt

INTRODUCTION

The last decade has seen a “series of e-learning innovations that have reshaped the learning landscape” (Adkins, 2006). Due to the large number of innovations and the broadness of “the learning landscape,” the focus for this article will be on computer-based systems incorporated by businesses in their efforts to improve the effectiveness of customer and employee training. One of the more recent innovations is the learning content management systems, or LCMS.

The move to electronic-based training in the business environment has been sporadic. The early 1990s saw an increase in the development of computer-based training, but was mostly comprised of material gleaned from existing instructor-led courseware and refashioned to be accessible on the computer. The content was static with multimedia still a novelty, but was available 24 hours a day, 7 days a week (barring technical problems) (Oakes, 2003). The late 1990s took advantage of the growth of the Internet to move the training onto a network and hence be accessible from the personal computer.

The early twenty-first century saw the burst of the dot-com bubble and with it the

lowering of expectations of many businesses in the potential for advances in the e-learning field. Many companies lost money through ill-advised investments in electronic training initiatives and over-ambitious goals (Gold, 2003). This brief downturn is now viewed as a correction in the marketplace, and improvements in e-learning software were recognized with advances in systems tailored to aid in the development of interactive training simulations and other material specifically designed to be used on the computer.

MANAGEMENT SYSTEMS

The learning management system, or LMS, evolved to allow an organization to track the learning activity—electronic and classroom-based—occurring within its system. An LMS is focused on the learner, allowing learners to keep track of their individual skills and helping them in locating and registering for their desired material. An LMS also helps administrators track the learners—the material the learner has enrolled in and the skill they have acquired. The LMS normally has no built-in method of creating content.

Recognizing this lack, outside suppliers arose that could take a company’s learning content (traditionally delivered in the classroom) and create and manage that material in a Web-based format. Outsourcing their material in this manner was just a short-term fix for an organization—they still lacked the ability to quickly change the

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material, and sometimes lost ownership of the materials altogether once they were developed in an electronic format.

From this arose the LCMS. These systems are a corporate version of traditional course management systems originally developed for higher education. While some vendors offer systems which are a combination of an LMS and LCMS, there is a central difference between the two. The LCMS is more focused on the creation, management, and packaging of content, or the components of e-learning. Most can import content from programs like Microsoft Word or Powerpoint.

An LCMS also includes an authoring tool that allows the developer to create content. As stated by Rushby (2005), "in the world of corporate training we have seen a retreat towards simpler learning sequences that can be constructed semi-automatically" (p. 359). While it would be preferable to have a team of designers creating highly interactive software tailored to a company's needs, such options are only cost-effective if the pool of learners is very large. With the LCMS authoring tool, a subject matter expert to rapidly design, create, deliver, and measure the results of e-learning material. This reduces the cost

for an organization to deliver their proprietary knowledge to learners, on demand.

LEARNING OBJECTS

Central to the LCMS is the learning object. A learning object has been defined by Rehak and Mason (2003) as "a digitized entity which can be used, reused or referenced during technology supported learning" (p. 21). Each learning object is focused on a learning objective, and includes material to support that objective and to promote the achievement of the objective through practice and feedback (see Figure 1).

A learning object can take many forms—a simple text document, a slideshow, a recording of a lecture, an animation, or instructional simulation, among others. Central to the creation of a learning object is development of a precise learning objective for that object. If the objective is too complex, it might be best to break the learning object into separate parts. Regardless, with a well-defined objective, a developer is more able to make clear the focus of the object to the learner, and can better assess whether the objective has been met upon completion of the module.

Associated with each learning object, and key to the functionality of the LCMS, is

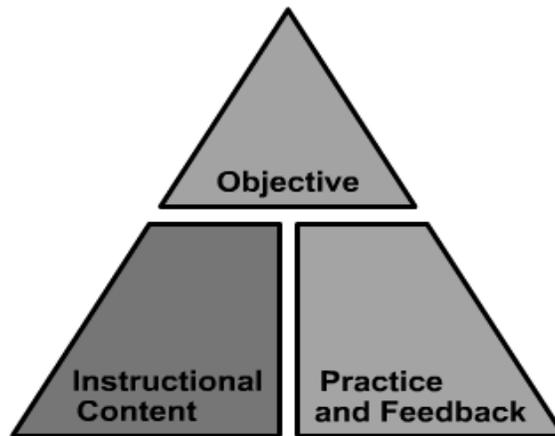


Figure 1. The learning object.

a set of information called metadata. The commonly used definition of metadata is “data about data.” Similar to keywords that allow a search engine to find a Web site, metadata includes information that enables the LCMS to link learning objects together to create a sequence of objects relevant to the goal of the instructor or student (see Figure 2). For example, a chemistry professor (or his or her graduate student) can create a learning object for each element in the periodic table, then, using the LCMS and each object’s metadata, link these objects in different ways—the noble gases, the metals, et cetera—depending on what was the focus that week.

Standards are beginning to be accepted regarding learning objects, the most widely used today being the Sharable Content Object Reference Model, or SCORM. Hequet (2003) defines it as “a set of specifications for developing, packaging and delivering e-learning” (p. 47) and goes on to state that “SCORM specifications prescribe a structure that separates course content

from course functionality in a way that makes it less costly to make changes to either” (p. 47). These standards allow a business to create a learning object that can be easily moved to other formats (e.g., CD-ROM) when necessary, and make it easier for companies to share their learning objects.

BENEFITS

Hall and Hall (2004) list several notable benefits to businesses that invest in an LCMS:

- **Faster Development.** The authoring tools offered by most LCMSs uses a what-you-see-is-what-you-get environment. This allows content developers to create and publish online learning objects quickly, advancing the potential for just-in-time learning. For example, when a new product is created, a detailed description of the product can be created online, and then accessed

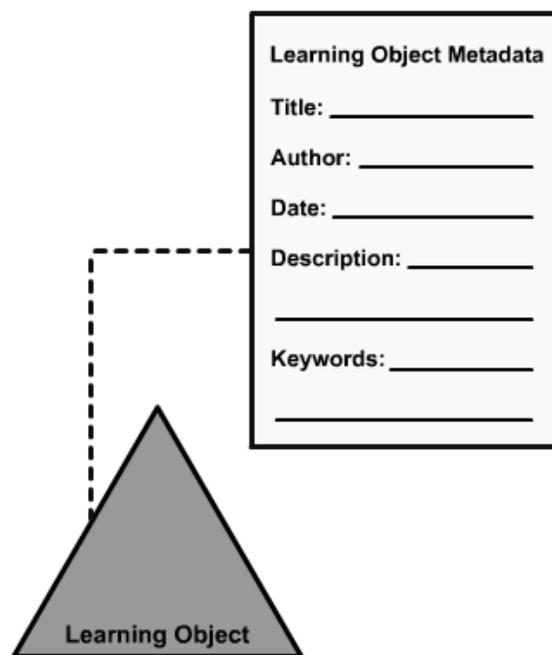


Figure 2. Metadata.

worldwide by salespeople or customers on demand.

- Collaboration. Through a system of “check-in, check-out” included in most LCMSs, content developers located at disparate sites can work together on the creation of the same learning object. This allows for peer review of material for accuracy and depth.
- Reuse. One of the primary appeals of the LCMS is the capability of searching for content and then reusing it in a new scenario. The example cited is a case in which a large corporation creates one learning object to teach safety regulations. This module can then be used in multiple courses over time—the hiring of new employees, or refresher courses for older employees.
- Quick, global updates. To continue with the example regarding reuse, in a situation where the safety regulations were to change, the module could be updated with the new information at one site, and then locations worldwide could access the updated module immediately.

These are only a few of the benefits an LCMS offers. While the initial cost outlay might be high, this cost can be recouped through the timely delivery of e-learning to individuals that is customized to their knowledge and expertise. Developing such customization in the past has been difficult due to the cost, and experienced employees often found major parts of their training superfluous. Another long-term cost reduction will be found in the reduced need to pull all associates together in a large-scale training session—the representatives will be able to get the information where they need it, when they need it.

CONCLUSION

We can look at the LCMS as an evolutionary step in the management and creation of electronic learning leading towards an object-oriented way of thinking about online instruction. Instead of the standard image of training session with a starting point, middle, and then ending point, we can look at training as composed of related chunks of knowledge that can be linked together or viewed alone. Consumers or employees can enter the training at almost any point and continue until they have gained the knowledge they need. Developing clear instructional goals for each of these learning objects will be crucial in guiding their creation, and the ease of navigation through the database to the desired learning object will distinguish the quality of the competing LCMSs.

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Distance Learning Opportunities

Expanding Cognitive Landscapes

Dawn Poulos

What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention, and a need to allocate that attention efficiently among the overabundance of information sources that might consume it.

—Herbert Simon (1971)

Educators work in an information economy where the commodity they most need to do their jobs, the attention of their students, is in ever-scarcer supply. In competition with all the other things that invite a learner's attention, instructors have a challenging cre-

ative task ahead of them. They have to attend to the learning needs of individuals with different levels of interest in the subject matter, or different levels of familiarity with it. They may need to reach night owls in the morning or engage morning people in the evening. Further, even the most motivated of adult learners may have much of their spare attention consumed by current events they follow closely, favorite television shows, or perhaps family matters. These days, even media and entertainment professionals have a tough job getting attention above the noise.

Learning new information requires much more than mere attention. Using information previously learned, adding to and integrating it into a practice of decision making, requires yet more effort. Educators, to be truly effective, need to stimulate metacognition and cognitive adaptability, a learner's awareness of his or her own thinking and the ability to adjust it to new information. This task requires both skill and time, two other commodities that are always in short supply themselves.

Distance learning has become increasingly popular as it is an obviously effective way to maximize both the instructor's lesson preparation time and the learner's



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availability to the material. However, determining where the learners needs convert into market demand presents a challenge. In addition, once a demand is noted, the distance learning organization is then tasked with trying to meet the learner's moment of need while struggling to create content (i.e., learning materials) "on the fly" in order to meet that need. What is the best method to ensure that the supply meets the demand? Reusability can be the answer to this problem.

Reduce, reuse, and recycle. The well-known environmentalist mantra becomes a necessity when managing the scarce and expensive resources that go into composing distance learning courses.

REDUCE

First, let's explore the concept of reduction. How many person-hours can realistically be devoted to a project? Both the creation of fresh instructional material and its adaptation to new forms is time consuming. According to Chapman (2007), 34 hours of development time is required for each hour of instructor-led training (ILT).

Of course, subject specific results may vary with some training taking more or less time. Once a training course has been developed, often for a live classroom setting, it will need to be transformed again into a distance learning course. In 1999, Judith Boettcher, executive director of the Corporation for Research and Educational Networking, released averages for how long this process took for college courses. She and her colleagues determined that it took an average of 18 hours worth of development time, with a normal range of between 5 and 23 hours, to turn an hour of live lecture into a Web-based training course (Boettcher, 2006).

Again, actual time will vary. And though there are better tools available today, content creation will always take up a significant share of development time. Lesson plans, measurement tools, and

guide materials must be readapted. The material will then need to be tested for pacing and clarity in its new format. The work of creating and evaluating the training materials should clearly not be skimmed on. So where does the reduction come in?

Primarily, in making sure that course materials, once laboriously designed and reformatted, can be transferred with maximum ease from one format to another. This enables the author to save the limited instructional design time for the most challenging tasks.

REUSE AND RECYCLE

A significant factor in whether material can be easily reused is whether or not it can be found and identified for what it is. Useful examples of this come from fields as disparate as archeology and software design.

In archeology, the term provenance refers to the full, documented history of an artifact. Where it was found, who found it, who's owned or cared for it, where it's been displayed, and what's been known or discovered about it. With this history, small pottery fragments can help tell detailed stories. Without it, intricately detailed objects of art can be reduced to mere curiosities. This is why the looting of archeological sites is considered such a serious international crime, because it literally steals pages out of human history that might be revealed by trained investigators.

What valuable things are lying around poorly marked in your organization's files? Provenance, or origin and history, is obviously a consideration when dealing with material created by others. But what about one's own material? When one instructor or instructional designer is producing course material that they are the primary keeper of, a person can assume that they'll remember their own work and filing notations.

It is a standard refrain in software design that if you do not document your code, even you won't be able to read it.

The relatively simple code that goes into a plain Web page can be all but indecipherable without much trial and error when it's been poorly laid out and undocumented.

Documentation can be as simple as adding comments or lines of text that do not affect what a user sees. Something that minimal can mean the difference between it taking minutes or hours to find a mistake or make a change.

If course content needs to pass through many hands or be stored for a long time without use, it needs provenance and documentation. In the world of distance learning technologies, this is accomplished through the addition of metadata. Metadata often includes origin information, and even more importantly, relevant keywords and descriptions. What does this material cover? Who is it for? What's its version?

Down the road, the metadata plays a critical role in helping the organization to facilitate collaboration not only within a department, but among scattered training divisions, especially teams around the world. New software programs are available now that offer simple and easy-to-use programs for metadata systems to be established, making it easier than ever for a group to benefit from their data's categorization, collaboration, and content reuse. Consequently, courseware can be built more efficiently without the usual stumbling blocks for most learning programs such as multiple authors, multiple languages, and different editors. The reuse of content and processes can stem across many output types that can then be blended into a variety of learning programs. For example, the opening paragraph from a PowerPoint presentation created in one language from the European division may complement a manual written by another division in Asia, and then worked into an online program in another area of the world.

NEED AND OPPORTUNITY

It's mostly a small, local news story when it happens. Schools across America are cutting language learning, sports, music, or arts education. Renewed emphasis on "basic" education downplays the importance of these sorts of programs. As lamentable as elementary and secondary school teachers must find this, a bare bones, need-to-know approach is as common in corporate training as it is in other forms of corporate communication.

Did you ever hear the story of the discovery of the structure of benzene? Friedrich August Kekulé had a dream of a snake curled into a circle, eating its own tail. From this, he gleaned the final insight that was crucial to determining that the substance benzene, a compound with six carbon atoms and six hydrogen atoms, was arranged in a ring of six carbon atoms held to each other with a uniquely strong, symmetrical bonding structure, and one hydrogen atom bonded to each, projecting outside the ring.

What experiences did he have that such an image was accessible in his subconscious? How did he come to be able to apply it? We can't know. But this common mythological symbol, widely used throughout many cultures that would have been studied in the course of a classical education, must have been known to him. His experiences must have been broader than the many years he'd spent studying the molecular bonds of carbon.

The same idea can be applied to modern day training. The more people learn, the more they discover how to learn and the more their formal training can be blended into their life experiences. When a ready mind meets material of interest, whether that interest comes out of curiosity or need, a memorable lesson creates a whole new universe of information from which a person can gather insight. Individuals might not articulate it quite that way, but when they're ready, they will seek out new

learning experiences, many of which will come from a distance learning program.

ADULT LEARNERS

It might seem like it sometimes, but people do not get issued computer manuals at birth. Some older learners may need more of an introduction to these technologies in order to pick them up quickly. However, it is more a matter requiring additional exposure to the technology than lack of capacity to learn it.

Older learners are becoming more familiar with the technology that is available these days. iStrategyLabs (2008) reports that for the 10 months between October, 2007 and June, 2008, Facebook's own demographic data showed that their 35-54 year old user segment grew 172.9%. Over the same time period, the 25-34 and over-55 age groups grew in excess of 97%. This growing audience wants to learn and is apparently open to trying out new experiences.

MANAGEMENT TOOLS

Your organization probably has its own ideas about what specific technology tools to use. You best know your own resource constraints, in terms of time and money, and that of your existing technology infrastructure.

While technology-delivered training has become mainstream in many organizations, most are still not fully leveraging the power of reusable learning content to meet their instructional needs. What would you do if you had to develop and deliver personalized, distance learning programs to 900,000 employees, located in 34,000 different locations globally with a complex set of variables—and that changes in training must occur on a location-by-location basis? The key is reusability.

For distance learning organizations with growing installed bases, the trick again is

managing their program's success without giving away the farm in terms of costs and time involved with creating the programs. There's a trifecta of factors involved:

- timing the content development toward the learner's exact moment of need—to be there when the learner is ready to receive information (*Reduce*—saving development time);
- storing/filing (metatags)/networking the data (*Reuse*—pulling content quickly); and
- blending components from other areas without losing time re-creating the content (*Recycle*—content reusability).

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ADDITIONAL RESOURCES

- Anne Frank lesson. <http://www.teachandlearn.ca/blog/2008/06/02/avoid-school-talk-part-1/>
- Collier language. <http://www.thejournal.com/articles/22396>
- History of SCORM. <http://www.learningcircuits.org/2005/jul2005/ellis.htm>
- Informal & Web 2.0 Learning Practices Survey. <http://informl.com/2008/06/11/informal-web-20-learning-practices-survey/>
- XML for CMS. http://www.xyleme.com/files/File_Share39/docs/white_papers/XML_for_Content_wp.pdf

Distance Education Research How Can it Help

Michael Corry

Most agree that, when examining the big picture, distance education is still in its infancy and growing. As it grows and transforms, it is important to review the available research to make sure valuable resources are spent in an effective manner. If we follow this

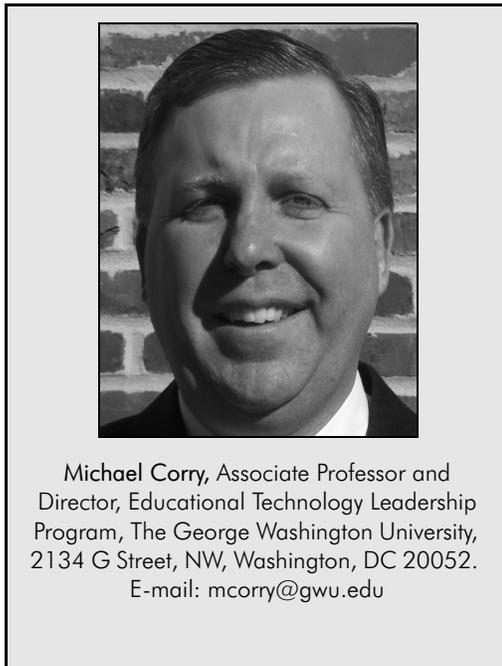
approach, mistakes can still be made along the way, but the prudent use of research will help alleviate major problems and provide more success stories and fewer failures.

DISTANCE EDUCATION RESEARCH TOPICS

Let's start by discussing the variety of research topics currently being discussed. A good overview of the types of research topics being addressed include:

- the philosophy and theory of distance education;
- distance education students;
- subject matter presentation;
- communication and interaction among students and their support system;
- administration and organization;
- economics;
- technologies; and
- history of distance education.

Each of these areas is being researched to some degree; however, there is still much research to do in almost every area. Therefore, if you are a researcher, I would encourage you to pursue any of these areas. The field is still very wide open and



inviting. Three of my favorite areas of research that are beginning to produce some valuable fruit are distance education students, interaction, and distance education technologies.

RESEARCH INTO DISTANCE EDUCATION STUDENTS

The area that seems to have gotten the most research attention is distance education students. More specifically, learning outcomes have been the focus on much of the research efforts. The age old question is “Do distance learning students achieve mastery of the content as well as face-to-face learners?” On average, it appears that face-to-face and distance learners achieve about the same when it comes to learning outcomes.

Obviously, this gives fuel to both to those who are prodistance education and those who are opposed. However, those who are prodistance education point to research showing that there are a lot of nonlearning outcome benefits that distance learners can enjoy. Mostly, these come in the form of “barrier removal.” Some of these barriers include physical, fiscal, time, et cetera. When these barriers to achievement are removed, opportunities to learn are greatly increased.

INTERACTION IN DISTANCE EDUCATION

Another area of distance education research that is important to the quality of distance education offerings is “interaction.” The interaction within a class results in the development of a “community of learners.” The research has clearly shown that a sense of community and the development of a community of learners is important to learning. This is true in face-to-face classes, but even more so in distance education due to the feelings of isolation that can accompany distance learners. Learning communities can be natural relationships that emerge from interactions.

The essential question is not whether communities are important to learning, but how we can design and develop distance education materials that will result in meaningful and appropriate communities of learners.

Since interactivity is one of the fundamental concepts that will guide the design and development of distance learning, it is important to understand that the most basic type of interactivity in education and training is that which occurs between the learners and the instructors or facilitators. However, the concept of interactivity in distance education extends beyond the arena of human-human interaction to include that of interaction with media itself (human-computer interaction). Research into both of these areas is beginning to provide us with some direction. With more time and research, this will provide us with tremendous help when designing, developing, and delivering materials at a distance.

DISTANCE EDUCATION TECHNOLOGIES

When most of us think about distance education, we immediately think of the Internet and online courses. It is true that much of distance education these days does involve the Internet. However, the key to the effective instruction is to identify the technology that will be the most effective in helping the learner master the content. Common areas of distance education technologies that are being researched include:

- Web 2.0 tools, including blogs, wikis, and podcasts;
- correspondence study;
- prerecorded media;
- two-way audio;
- two-way audio with graphics;
- one-way live video;
- two-way audio, one-way video;
- two-way audio/video; and
- desktop two-way audio/video.

This list gives us a menu from which to choose. The research shows that all of these items have pros and cons. As you design distance education learning materials, the key is to remember to choose the technology that will help the learners the most, not necessarily the technology that you think is the “coolest” or easiest to fit into your class.

Overall, we are just beginning to dig into the variety of potential research areas that impact distance education now and will do so in the future. As a researcher, your imagination is your limit. Sometimes it is difficult to be the trailblazer into a new area of research but, with patience and perseverance, this type of research can be invaluable to the distance education community.

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And, for every hour a student is in class he or she should expect to spend about 2 hours outside of class preparing, reading, or studying, for a semester total of somewhere between 100 and 140 hours.

What about a class that does not have class session—an online class? If the course designer applies the same logic to an online class as to a traditional class, then, in an online course an average student should expect:

- Between 100 and 140 hours of “work” during the semester, or about 7-9 hours per week. This time would be spent reading, studying, writing, posting, viewing, listening, and chatting.
- A course that is organized around three major units, each with about five modules. Modules would be studied for about a week.

And, the instructor should also expect to devote between 100 and 140 hours of effort, organizing, posting, reading, grading, and interacting, or between 7-9 hours per week.

COURSE CONTENT

Effective online courses emphasize instructional content that presents in a variety of ways what students should learn. The key organizational document for the online course is the syllabus that gives most, if not all, the important information about the course content and organization. The syllabus contains the sequence of topics, course objectives, assignments, rubrics, reading and viewing lists, and other information needed by the student to “keep up and stay informed.”

Additionally, the perfect online course would use a course management system. It is hard to imagine an online course, especially a “perfect” one, without a course management system. The course manage-

ment system would be a meeting place, a virtual classroom, and the venue where instruction and learning interact.

Next, the online course must have a considerable amount of instructor involvement—even presentations, although lecturing by the instructor of the online course is probably not conducive to perfection. The instructor should introduce himself or herself, distribute periodic and regular organizational e-mails, personally contact individual students, make postings to threaded discussions, participate in chats, both spoken and typed, and make short and on-target presentations—single concept lectures.

Textbooks and other reading materials remain the mainstay for delivering content in most courses, including the online course. The average for a typical online course is two to three textbooks. The modern, well-chosen textbook can provide the content information for most courses.

Finally, the online course should have single-concept videos, audio explanations or descriptions, narrated visuals and other multimedia content. Also of importance are the contents of the virtual portion of the course—chats and threaded discussions, for example—that are built and constructed during the course.

ARTIFACTS OF LEARNING

Some would probably choose a different phrase than “artifacts of learning,” but most who study online education look for observable objects, things, and artifacts that are evidence of student learning. A comprehensive investigation of online courses yields the following general set of expectations for student assignments:

- Three major graded assignments, usually one for each major unit of the course. These major assignments can be exams, problem/scenario solutions,

research papers, group projects, or media productions.

- Approximately 10 minor graded assignments, such as discussion postings, chat participations, e-mails, wiki input, or blog postings.

These artifacts, or learning outcomes, are at the core of the perfect online course (and at the heart of almost any course, as instructional designers often tell us).

If the typical course is examined in more detail, and the major building block of the course—the unit—is examined, its organization might look like this:

- A video introduction to the unit produced by the instructor that in 5 minutes or less explains what this unit is “all about.”
- An audio explanation of the major assignment for this unit, made by the instructor and posted online as an audio file; this explanation would supplement the syllabus explanation and would be what students are referred to when they ask “what am I supposed to do?” Obviously, the assignment rubric would be explained in this “podcast.”
- A reading assignment of several hundred pages from one or more of the course textbooks, or a series of readings from the Web or from a course packet.
- A few short video viewings that highlight key ideas or that demonstrate important processes.
- A series of threaded discussion questions that build on one another to provide a sequenced construction of

information that supports the unit’s final assignment. Instructors are actively involved in discussions early in the unit, but reduce their involvement as students begin to grasp the content more completely.

- Chats, mostly between students working as individuals or in teams, in which between-student interaction is stressed. Instructors monitor chats, but are not overly involved.
- A few instructor presentations, either prerecorded or presented live using voice-over-Internet technologies.

This typical unit would last about 5 weeks, and would build on previous units of study and contribute to subsequent units. The three units in a typical online course would be the “three-legged stool” supporting the overall purpose of the course.

And finally, let us not kid ourselves; the perfect online course is a pipe dream—according to the dictionary again, a pipe dream is the result one gets from smoking one of those funny pipes, so let us be more realistic (and legal). The key to an effective course is the direct, purposeful involvement of a knowledgeable teacher; one with content knowledge, teaching skills, and design experience.

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Designing the “Perfect” Online Course

Michael Simonson

Dictionary definitions of the word *perfect* are universally similar: without defect, faultless. Certainly it is foolish to try to quickly define the perfect online course; a course without defect and faultless. However, with the current “rush to go online,” many instructional designers, distance educators, and training directors and being asked to design just such a course—an effective, rig-

orous, yet interesting online course—a “perfect” online course.

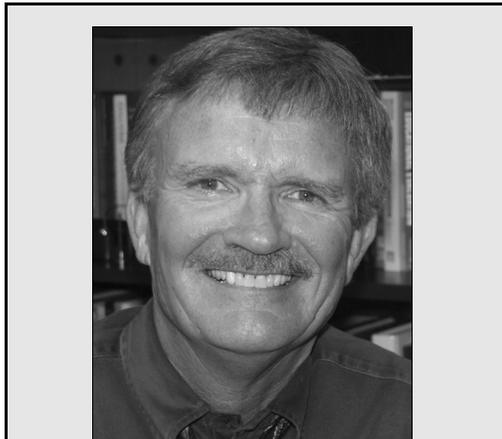
So, for the sake of the naiveté of those asking and the motivation of many distance educators to want to help, let us examine what the best practices literature seems to be indicating about online courses—good, if not perfect ones—and make a recommendation. (Actually, the components of an online course summarized in this column are derived from the recent edition of *Teaching and Learning at a Distance: Foundations of Distance Education*)

When designing an online course, there are three organizational categories to consider: course structure, course contents, and artifacts of learning. It might also be informative to look at the organization of the major subdivision of a typical online course: the course unit.

COURSE STRUCTURE

The typical college course is a three-semester, 15-week course with a title something like “Management of Service Centers,” or “Introduction to Educational Statistics.” Certainly most educators know that a three-credit college course will meet about three times a week for the 15 weeks of the semester, or for about 45 class sessions.

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