The Shortcomings of E-Learning 1.0 and the Emerging Possibilities of E-Learning 2.0 (Jun 07)
By Gary Woodill

By its very name, e-learning must involve learning. That is certainly the hope and message of e-learning providers, who want to sell their products and services to corporations, educational institutions, and the general public. The web sites of e-learning providers are replete with claims of effectiveness, huge savings, and transformations in individuals and organizations.

Yet, the e-learning industry is in crisis; there is a rapidly growing critical literature on the shortcomings of the first wave of e-learning. A study of 40 Global companies by the Forrester Group found that, unless forced, the majority of workers in the study (68%) would not voluntarily sign up for online courses. Even when online courses were compulsory, over 30% of the workers still refused to sign up (cited by Dublin and Cross).

Another study indicated that, of those who do sign up for a course, between 50% and 80% never finish the course (Delio). A recent detailed analysis of the literature (over 100 articles) on the shortcomings of e-learning indicates many problems at all stages of implementation (Romiszowski, 2004).

These include:

Initial Design Issues

• Lack of identification of a real problem or need for e-learning
• Lack of analysis of the problem or need even when it was identified
• Poor overall strategic design decisions in areas such as structure of the course, methods and media to be used, and course management and evaluation

Instructional Design and Development Issues

• Lack of detailed instructional design
• Failure to develop important instructional design elements such as authoring or graphic design
• Lack of evaluation and revision of the instructional design resulting in no reiterative improvements

Dissemination and Implementation Issues

• Problems in production, reproduction and distribution
• Poor implementation and use of the e-learning that was delivered
• Long term management and evaluation problems

In my view, there are several additional inter-related reasons for the shortcomings of e-learning to date. These include:

Speed to market – In the several years before the “dot-com crash” that began in March 2000, there was a rush to market by vendors, and a rush to adoption by technophiles and early adopters in a number of large companies. For the most part, the e-learning industry has not bridged the gap between marketing to early adopters and the more sceptical and pragmatic majority of business executives and institutional leaders. The e-learning industry is stuck in the “chasm” (Moore, 1999) at the front end of an emerging technology adoption curve. The sceptics are able to point to its many shortcomings, thereby slowing the momentum of adoption of e-learning systems and content.

A focus on new technology, not on instructional design – I carried out an informal content
analysis of the web sites of all 1080 “e-learning providers” found at [www.brandon-hall.com](http://www.brandon-hall.com).

Seventy-six companies had disappeared or merged, leaving 1004 company web sites to analyze. The most startling result of my scan was finding that of the 1004 companies, only 73 mentioned learning theory, instructional design, instructional strategies, pedagogy, or teaching methods. Yet 100% of the sites talked about their innovative technologies or services. While the term “learning” is used everywhere in the industry, there is little evident interest in or exploration of the nature of learning or teaching. I also reviewed most of the leading texts on e-learning and found that, with a few notable exceptions, the same pattern of lack of focus on instructional design also holds true.

**Boredom** – we know how to bore people in a classroom, now we know how to bore them online! The principal reason why most people have trouble suffering through an e-learning course is that there is usually nothing to do but read, look and take a multiple choice test. There are usually no instructional activities that deeply engage the mind of the learners, and “interactivity” mostly consists of moving from one screen to another. This is especially problematic for the under-40 generation, which has grown up with fast-paced videogames, movies, and television programs. Reading a lot of text on a screen simply doesn’t cut it for them.

**Lack of understanding of learning and teaching processes** – learning is a complex activity, and good teaching is a craft that takes many years to hone. The skill of a good teacher is in knowing the best thing to do to advance a given learner to the next stage of understanding a specific kind of learning task. Yet much e-learning content is not designed by educators, and experienced educators are often not part of development teams.

**Lack of understanding of the unique teaching advantages of electronic media** – teaching with interactive electronic media can produce learning environments that are unlike any that have been produced in traditional classrooms. The use of high speed networked computation, available on a 24 hour basis, can simulate both real and imaginary worlds. The possibilities of world-wide (or local) collaboration with anywhere from two to millions of people on any topic raises the issue of how to build positive collective intelligence in a world that desperately needs it. The use of smart algorithms, massive storage and retrieval facilities allows the growth of “adjunct intelligence”, an external repository of knowledge that can improve human capabilities and performance.

Zemsky and Massy (2004) see the problem of the failure of e-learning to deliver as one of “thwarted innovation”. Using the example of the automobile industry, they describe several stages of technology innovation. First, there is great fluidity in markets and product designs, and many different solutions and combinations of ideas are proposed. Many of these are dead ends which will die off, as not all innovations can be sustained. Gradually, a dominant product design emerges, and everyone who is still in the business produces a minor variation of the new design. Once the dominant design has been settled, a supporting infrastructure is designed and tested. The infrastructure proliferates as standards for connecting the parts of the infrastructure are decided, allowing the technology to expand into all geographic areas where there is demand and for which potential returns justify costs. The whole cycle repeats itself whenever a significantly new and innovative technology is introduced that promises to correct the failures and disappointments of the current technology.

Zemsky and Massy contend that there are issues with e-learning linked to four assumptions:

1. If we build it they will come - this is simply not true
2. The kids will take to e-learning like ducks to water - not quite true as a certain level of preparation is necessary
3. e-learning will force a change in the way we teach - not by a long shot
4. e-learning will build bridges across learning communities - this remains to be seen
In spite of the above analysis, I am optimistic that things will get better in the use of technologies to help people learn. This is because a large number of new content formats and technologies are coming on stream that greatly improve the online learning experience. As this research report documents, there are over 50 content formats and more than 80 new technologies that will have a significant impact on e-learning in the near future. These new possibilities are not being directed by anyone - rather, they are emerging from the minds and efforts of thousands of people around the world. The phenomenon of emergence is something that comes from complex adaptive systems (Johnson, 2001) such as the organization of all the people worldwide who are interested in improving e-learning and learning in general. The new versions of e-learning (“e-Learning 2.0”) are self-organizing, and may very well lead to surprising possibilities. My objective in this document is to report on the many emerging possibilities for the immediate future of e-learning.

Many of the new possibilities are still in the research and development stage, while others are being commercialized by a few companies. Given the speed of technological change, I believe that many of the content formats and technologies reported here will be commonplace within five years. At the same time, some of these possibilities will not be viable and will fall away into disuse, or, will be radically changed from what they are today.

**The Promise of E-Learning 2.0**

According to Stephen Downes, E-Learning 2.0 is a term he coined in 2005 to designate “the use of Web 2.0 technologies in education” (Dec 14, 2006, Podcast). That definition seems simple enough, but Downes is also convinced that we are at the beginning of a revolutionary moment in learning where changes in Web technology – Web 2.0 in turn makes possible revolutionary changes in learning (hence the need for the term E-learning 2.0, a term by the way that David Jennings has dubbed “the bastard neologism offspring of e-learning and Web 2.0 technologies”). In Downes’ vision, Web 2.0 empowers individuals to follow their own paths and make their own connections and communities in ways that previous technologies and applications could not accomplish. The social networking affordances of Web 2.0 technology move learning away from the current iteration of learning online, where it is being driven by the needs of institutions (via courses, time tables and testing) to a new level where the needs, wants and connections of each and every the individual learner emerge as the driving forces.

With such a marvelous invention, why are we still trying to recreate the boredom of classrooms as an online experience? We need to imagine and experiment with the many possibilities of this new educational tool set. For example, the new fields of information visualization and auralization (Spence, Tufte, 2006) have not been explored in depth by e-learning providers. Yet, there is a growing literature in this area and further developments in the digitization of touch, taste and smell are on the horizon. The near future (within 5 years) will see educational experience created by computers that are embedded in clothing, on flexible sheets that can be carried around like paper, found in mobile phones, seen on large scale wall displays and activated in “smart objects”. E-learning companies who want to stay ahead of the development curve will start to investigate these technologies now. Because of the dominant “page” metaphor, much of what is on screens today is in two dimensions. This is about to change within the next year as 3-D technology takes over the graphical user interface. Think of the monitor as a stage where front to back display becomes as important as side to side. Or, as the computer becomes invisible (Norman, 1999), think of the dramatic possibilities of programmable clothing, furniture, wall displays, and robots all mixed together in one room. Already there are 3D computer displays that don’t require special glasses and lots of examples of embedded computing.

Cognitive mapping and the collective generation of ideas are all within reach, assisted by networked computer technology. Much of the collective knowledge of humans now resides somewhere on the Internet. The intertextuality of linked documents and multiple voices has created a new environment for humans to both create and store knowledge. This environment and tools for navigating through it are not usually part of current e-learning offerings, but they will
be in the near future.

The world-wide networking of computers has resulted in radical new possibilities of communication in education. From online conferences with experts to international e-mail collaboration with peers, the possible educational uses of networked computers have hardly been explored. The dream of integrated education, where learners work on large-scale problems that involve many different disciplines can now be realized through networked communications, but a new curriculum and credentialing system will need to be developed to support this active form of learning.

Much excitement was generated in the 1980s by the development of the LOGO computer language as a “constructivist” learning environment (Papert, 1980). The theory of “microworlds” as places to learn by exploration and discovery generated a great deal of writing. But with the move to online learning the emphasis on creativity in educational computer environments seems to have died. Yet one of the oldest ways for humans to learn has been through play and storytelling. We need to explore the narrative possibilities of the new media combined with true interactivity in developing e-learning (Meadows, 2003). Such story-telling does not have to come from a “teacher” but can be based on peer-to-peer sharing as well. Most videogames and computer simulations have a “storyline” and the player can immerse him or herself in creating the story. Not only has story telling become popular, but, with multi-player games, a learner can be in the story, participating and influencing its outcome, as other players join in. Virtual environments can also be physically demanding, with extensive physical movement taking place while users “play the game”. These will all become part of the education and training mix in the near future.

Humans have astounding but limited abilities. Computers can extend our abilities in many different ways. While we tend to think of prosthetics as devices for people with disabilities, the computer, in fact, can extend all of us in terms of our senses and ability to manipulate and control the world around us. Through virtual reality it can create new experiences that are not possible in the “real world.” This is especially true when we think about organisms (including humans) and societies as evolving “complex adaptive systems”. As complex, adaptive systems, not only users, but also the software used to generate a virtual, online world can learn. As this new generation of software gets to “know you”, it becomes more useful in delivering the right e-learning experiences to support your development.

The computer revolution is moving learning out of schools and corporate training classrooms and into the workplace. Just-in-time training and performance-based training are hot areas of development for e-learning. And, with new flexible learning management systems and personalization technologies, individualized learning is now a real possibility.

Perhaps the most radical change in learning, brought about by networked computer technology, is the increasing opportunities for collaborative work. Shneiderman (2002) calls for “an active learning approach to education that integrates the new computing to create collaborative team experiences based on ambitious, authentic, service-oriented projects” (p. 112), facilitated by new software tools. His approach to building learning experiences with computer support is based on four steps: a) collect, b) relate, c) create, and d) donate. Such an approach challenges the usual organization of the classroom in that the teacher’s role is truly that of a facilitator and not “the expert”.

Finally, learning is moving from a mostly imposed curriculum in most educational settings to a kind of mixed market of courses, competency based skills training, and self-directed learning based on one’s personal journey through both the “offline” and online environments. New systems of tracking achievements are now available that gather all manner of credits into one personal portfolio (Lévy, 2001).

To be successful, a new pedagogy for e-learning must take all the above possibilities into account. It must use new insights from neurological research, factor in the multiple dimensions of learners, pay attention to the complexity of the learning spiral, and emphasize the unique
characteristics of electronic networked media in order to produce e-learning experiences that are engaging, generative of new insights and useful. The next generation of learners will need all their individual and collective ingenuity to deal with what appears to be a world of accelerating crises and change. The current failure of e-learning content to interest and motivate learners, especially those under-40, is a failure of imagination and an unwillingness to apply effective methods of teaching to the online environment. By understanding and embracing new and creative uses of computer technology, we can make e-learning work.

The diversity of emerging e-learning content formats becoming available today indicates that the “online learning landscape” is highly varied and in a state of flux. Given the many interesting ways to connect people with learning materials and with each other, there is really no reason to continue with the “page turning” model of e-learning. At the same time, the design of e-learning has become more complex and requires a new set of instructional design skills. Effective teachers know that “content”, used in its broadest sense as an educational task or experience that has some impact on the learner, needs to be placed in context and needs to be adapted to the learning abilities, interests, and level of previous knowledge of the learner. Instructors and instructional designers want to be able to draw educational content and experiences from a wide variety of sources in many different formats in order to create online educational experiences geared to the individual needs of learners.

By educational content I mean any online experience or task that leads to learning. Traditionally, educational content tends to be seen as the stuff in textbooks - words and pictures, sometimes supplemented by the content of educational films and videos. Online content has the potential to be so much more experiential than this. In traditional education, students listen to a presentation or read a book, practice a skill, and are then tested by a teacher. The new model of digitally mediated education goes well beyond this in that it can immerse the learner in integrated collaborative learning tasks:

“…the focus is now on learning mental models through the cooperative and collaborative construction of knowledge based on discussion and guided exploration, and on learning cognitive strategies through the observation of experts who demonstrate how to solve non-trivial problems and explain why they are doing what they are doing. When it comes to practice, the focus is on experiential learning from rich learning tasks, and on student guidance and scaffolds to support their problem solving performance. As for tests, formative performance-based assessment is becoming increasingly important because this provides meaningful feedback that may help students to improve their learning processes. (Jochems, van Merriënboer, and Koper, 2004, p. 3-4)

Content may be developed by a teacher or an instructional designer, or it may be something that is posted to the Internet by a person without a professional background in education. An instructor or instructional designer may direct a learner to the content, or the learner may be in charge of his or her own learning and find meaningful educational experiences by serendipity, by referral from a peer, or by looking for it using increasingly powerful search engines. Tosh and Werdmüller (2004) argue that online education should be based on the “creation of a learning landscape where learners engage in the whole process both academically and socially [and this] should increase the opportunity to build one’s learning instead of just being the recipients of information.”

What will this new “learning landscape” look like over the next few years? The diversity of content formats currently emerging will be part of it, as well as, a host of new technologies and services.

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