

**Lessons Learned from Electronic Business:  
An Educational Model of Innovation, Conceptual Change, and Collaboration**

(Track Area: E-Learning & Innovations in Teaching & Learning)

Dr. Anne Nelson  
High Point University  
Earl N. Phillips School of Business, Department of Computer Information Systems  
244 Cooke Hall  
University Station, 833 Montlieu Avenue  
High Point, North Carolina, 27288 USA  
336.841.9109 phone • 336.841.4596 fax  
[nelsonaf@hotmail.com](mailto:nelsonaf@hotmail.com)  
<http://home.triad.rr.com/anelson>

William H. M. Nelson III  
NMA, Incorporated  
Management Information Systems Consulting Firm  
1146 West End Boulevard  
Winston-Salem, North Carolina, 27101 USA  
336.723.0745 phone and fax  
[nmainc@hotmail.com](mailto:nmainc@hotmail.com)  
<http://www.nmainc.vista.com>

**Lessons Learned from Electronic Business:  
An Educational Model of Innovation, Conceptual Change, and Collaboration**

**EXTENDED ABSTRACT**

As business races to embrace the new technology of the Internet, education, too, must electronically foster the development of resources by people who live and work in diverse locations and educational environments. The goal of this paper is to discuss an educational philosophy that serves a sundry population seeking educational excellence. Lessons learned from Electronic Business and current tools available for accomplishing this task will also be reviewed. To meet the rigors of the New World Community concept, education, like Electronic Commerce and Electronic Business, must embrace the virtual environment and provide a holistic platform that will allow its products to be delivered through enhanced and non-traditional methods.

**Keywords** -- Non-traditional education, online education, distance learning, electronic education, E-education, EE, VEE, MOO, MUD, conceptual change, collaboration.

## **Introduction**

The potential of the Internet to foster collaboration and conceptual change between people who have never met face-to-face is great. Business understands this. Education must now embrace the opportunities afforded it by the Internet and ready itself to brace the challenges. Many states in the U.S. are now mandating online and non-traditional education as a component of the educational delivery system. The online education has been mandated for several reasons. Primary is that it provides a forum in which students and teachers can pursue an integrated, interdisciplinary curriculum. It is a medium for the free exchange of ideas in a non-physical setting, placing emphasis on ability and achievement. Critical thinking skills are encouraged and emphasized in an integrated and practical approach to education. As an equal opportunity institution it does not discriminate on grounds of ethnicity, creed, gender, age, sexual or political preference, nationality, economic status, or physical disability. Scholarly research and publishing is recognized as a necessary adjunct to quality teaching, but places priority on teaching and does not make research or publication a necessary condition of employment, job retention or promotion.

## **Conceptual Change**

What makes the electronic education (E-education or EE) different from other more traditional modes of education? By existing in a virtual environment without the costs of maintaining a physical plant, EE can offer a high-quality educational experience at the student's

convenience, regardless of time or place. The virtual nature of EE makes asynchronous delivery available 24 hours a day, seven days a week. Asynchronous is "not synchronous" or not happening at precisely the same time. Through asynchronous learning technology, faculty can supplement classroom teaching with additional information about the course. Examples are lecture notes, links to related Internet sites, multi-media applications of audio and video, homework problems and solutions, on-line reference materials, on-line quizzes, immediate grading and feedback, as well as being more available to students electronically. Asynchronous learning offers the students an additional venue to access information at their convenience, to communicate with each other or the instructor, to exchange information in group discussions, and to collaborate in problem solving sessions remotely. The instructor can monitor and guide the discussions as needed and gauge students' progress as well, if not better, in asynchronous learning as in a more traditional learning environment. Preliminary data suggest that the use of interactive computer-mediated communication technology in the classroom significantly enhances the learning process by increasing student performance as well as faculty productivity.

Asynchronous instruction does not require the simultaneous participation of all students and instructors. Students do not need to be gathered together in the same location at the same time. Rather, students may choose their own instructional time frame and gather learning materials according to their schedules. Asynchronous instruction is more flexible than synchronous instruction. Moreover, in the case of telecommunications such as email, asynchronous instruction allows and even may encourage community development. Forms of asynchronous delivery include email, listservs, audiocassette courses, videotaped courses,

correspondence courses, and World Wide Web-based courses (though WWW will probably offer synchronous formats in the near future).

The advantages of asynchronous delivery include student choice of location and time, and (in the case of telecommunications such as email) interaction opportunities for all students. A disadvantage to consider with email-based interaction is the considerable written exchange.

The vision of EE starts with asynchronous learning and a new vision for education - one based on the Internet - and one that integrates both asynchronous and synchronous learning. While instructors know how to use traditional tools like a chalkboard, overhead projector, to lecture, teaching online eliminates most of the cues good teachers use to monitor their student's progress. As instructors cannot see their students, in this environment, puzzled looks and even the simplest interaction filters through abstracted typed text. In such an environment, showing a student what to do takes time, typing, and very precise language. These do present some problems in the interaction between instructor and student, but they are overcome in a short time. As the technology improves over the next few years this problem will soon be eliminated as audio and visual Internet links are developed and improved.

Regardless of the teaching environment, instructors generally use a lecture approach in real life and tend to deliver electronic lectures online. As this is a little more difficult to do in this environment, the first tools created or transported from other MOO's (Multi-user, Object Oriented environment) were the classroom, slide projector, notice board, and of course, the

lecture. The lecture allows instructors to pre-load their thoughts, instructions, and communications and then deliver them line by line to their students.

In essence, the lecture epitomizes the paradigm shift required to restructure traditional education into a Virtual Educational Environment (VEE). The difference between the two can be compared to the evolution of automobiles from the horseless carriage to the modern car.

### **Advantages of Working in a VEE**

Much like the horseless carriage, the 'lecture' approach to delivering instruction in a VEE tries to adapt a well-known approach to a new technology with varying results. The lecture is very effective when instructors pause to allow a dialog to develop and incorporate other teaching tools into it. The ability to access powerful tools such as the World Wide Web and Gopher browsers, simulations, tutorials, and most significantly, the VEE itself are a very compelling teaching device. The online browsers make gigabytes of information available to students, while tutorials and simulations can provide 24 hour a day access to detailed, information presentation, practice and feedback.

The VEE itself serves as a most important resource to students. It can be changed to respond to the requirements and desires of the learning community, by creating new spaces to match the curriculum and activities. Students can also add rooms and create objects to illustrate their conceptual understanding or to assist others in gaining such insight.

For example, a MBA student may create a demonstration and prepare a hypertext document relating their ideas to management theory. This becomes a portfolio of work for assessment. Traditional evaluation, if desirable, including multiple choice, fill in the blank, and matching exercises can be built with relative ease.

### **Disadvantages of Working in a VEE**

Like most human creations, VEE's have their drawbacks. The current technology limits interpersonal interactions to text alone. Even worse, participation in the VEE depends on typing ability and knowledge of the English language. The command structure confuses even veteran MOOers, and the text output from players in the same location mixes together into a continuous stream of indecipherable babbling. Learning to survive in this demanding environment may take time, and not suit the tastes or learning styles of some people. The greatest limitation is the lack of good research into the niceties provided by interactive learning environments. Hopefully, in the near future, most of the disadvantages will vanish as the technology improves, where all that will be missing is the lack of face-to-face person-to-person interaction

### **Amalgamating Education**

The concept of a Lab School attached to a University is not a new one. Many Colleges and Universities had Lab "Businesses" attached to make the experience of a business setting, by

business students, convenient for short term observation prior to them going into the field. In more recent times, with the escalating cost to maintain faculties, Colleges and Universities can no longer afford the luxuries of having a Lab "Business" close at hand. This however, is not the case with VOU. The fundamental philosophies are to provide services to the learners and create a unique learning environment through cooperation.

### **The Challenge**

There is currently little knowledge available of adult learning, micro worlds, distance education and instructional systems as they relate to online education. Thus, usually adaptation of what is known to create the best learning environment possible, given our resources is the norm in non-traditional learning.

The best part of building a new technology involves testing the limits of the medium. The technology horizon is heading toward a graphic user interface (GUI) that will illustrate VEE using brilliant pictures, icons, symbols and motion video with sound. The VEE will blend seamlessly with the World Wide Web, Gopher, E-mail, and video conferencing. Students will be able to talk to their instructors, see their fellow students, and create their own version of reality using the graphic interface. While this may seem unrealistic and far-fetched, software tools such as Placeware by former PARC Xerox technology guru, Pavel Curtis, is already available and in much use. For EE to succeed, it must continually test the limits of the online medium, while delivering information-age technology and high quality instruction to the student clients.

Other EE's currently use the MOO environment as a source of delivery. Also created by Curtis, this environment allows interaction between faculty and students. Research has established that MOO environments have unique social characteristics that would facilitate a pedagogical format. MOO's are virtual online environments designed for live interaction and collaboration. MOO stands for Multi-user domain (which means that many users can log on simultaneously), Object-Oriented (which refers to the type of program the MOO core uses).

MOO's can be used for synchronous communication through a more efficient interface than most chats provide. MOO's are much more than an online "place" to converse with others. Since MOO's are object-based, users can create rooms and objects that become permanent elements of the new learning environment. This means that instructors are able to build online virtual classrooms, textbooks, slide projectors, and even robots that can be used for delivery of course material. Students, too, can create objects for exciting online learning projects.

A MUD (Multi User Domain) is very similar to a MOO. A MUD environment is programmable using a language called LPC. Learning on the MUD can be as private or as public as necessitated by the instructor, student, or class. Additionally, a MUD environment enables MUD-mail for personal messages and bulletin boards for public discussions. MUD also allows the ability to create interactive event simulations.

The joint effort of EE by both educators and students is a fascinating model of conceptual change and collaboration. By using the lessons learned from Electronic Business, current tools available for accomplishing this task, and the potential of digital communications, what was once a "What if..." scenario is now, for educators who are ready to take a proactive stance with regard to getting a seamless education community online and a sundry population seeking educational excellence, a virtual reality.

## References

- Duckett, G., Wallet, K. & White, L. 1995, Gateway To The World For American Rural Education, a position paper for the GENII Lab School (a branch of Athena University).
- Duckett, G., et.al. 1995, GENII Welcomes K-12 Teachers to an Online Lab School, News@VOU, Athena University, v1, n1.
- Duckett, G., et.al. 1994a, The GENII Project: Giving Classroom Teachers "A Ticket To Ride" On The Information Superhighway, in The Information Superhighway: Implications for Education, McDougall, A. & Thiessen, D. (eds), Computing In Education Group of Victoria, Melbourne.
- Duckett, G. et.al. 1994b, GENII: An Internet Welcoming Committee for K-12 Teachers, Presented at the Research and Pedagogy in Cyberspace: A Conferencing Workshop for Teachers On Using the Internet, November 7-11, 1994, hosted by Virtual Online University.
- Gerson, D., 1994, Ivory Bytes? Building the New Schoolhouse, Presented at the Research and Pedagogy in Cyberspace: A Conferencing Workshop for Teachers On Using the Internet, November 7-11, 1994, hosted by Virtual Online University.
- Painter, W.Jr., 1994, Strangers in a Strange Land: Academics on the Net, Presented at the Research and Pedagogy in Cyberspace: A Conferencing Workshop for Teachers On Using the Internet, November 7-11, 1994, hosted by Virtual Online University.
- Wallet, K., Duckett, G. & White, L. 1995, Do K-12 Teachers Need a Gateway to the World and Beyond?, at Third Annual Conference On Rural Datafication: Routing The Information Highway Down Main Street, May 1995, Indianapolis, Indiana.