

LEARNING NETWORK DEMONSTRATION: DELIVERING BUSINESS EDUCATION IN A DISTANCE LEARNING ENVIRONMENT

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ABSTRACT

Distance learning has come a long way since Sir Isaac Pitman initiated the first correspondence course in the early 1840's. Today, Internet-based learning systems, often referred to as asynchronous learning networks (ALN), have reached the state of development for significantly improving the quality of business education. The one-size fits all approach of the past is being replaced by customized learning systems that are tailored to meet the specific educational needs of the student. More specifically, ALN provide an ideal vehicle for moving from a teaching-centric towards a learning-centric educational paradigm. The purpose of this demonstration is to introduce an Internet-based distance learning system that is designed to improve the delivery and effectiveness of business education with a particular emphasis to working adults.

KEYWORDS: *Distance learning demonstration, business education, Internet, simulation.*

INTRODUCTION

The demand for students who can compete in the expanding global marketplace is growing rapidly. Many students need both flexibility and off-line support in undertaking a business degree program. These dynamics call for new and innovative systems for providing educational content in a distance-learning environment. In particular, the working business student is interested in a practical curriculum that focuses on results and convenience. One approach in meeting these requirements is to provide knowledge transfer via asynchronous learning networks (ALN). Today, distance learning in higher education and industry is experiencing rapid growth (Bertagoli, 2000).

Current estimates suggest that the Internet will become the primary delivery vehicle for MBA programs (Driver, 2002). Students who have been exposed to web based learning tend to favor this education on-demand delivery format (Lundgren, 2003). A basic goal of ALN instruction is to provide continuity among all elements of the business course and an organic perspective on the learning process. In asynchronous learning content and know-how are provided outside the walls of the traditional classroom at a time and place of the student's choosing (Jorgensen, 2002). A primary benefit of Internet based instruction, particularly for working students, is to reduce reliance on the three pillars of traditional instruction: fixed location, fixed time and fixed learning pace (Smith, 2001).

SYSTEM DESCRIPTION

One of the major issues in designing ALN is to incorporate enough versatility to insure that they are capable of meeting new and often unanticipated requirements. This is particularly the case for business education where events and markets are changing rapidly. One example is the current focus on business ethics. Appropriate materials on business ethics could be introduced into the course via the ALN on a near real-time basis in contrast to traditional methods. This capability underscores one of the powerful features of ALN technology. A conceptual overview of the ALN design highlighted in this demonstration is featured in Figure 1. This diagram is intended to illustrate the integrative nature of the learning process between the student, the course, the curriculum, the body of knowledge and the changing requirements of the business community. An important component of this integrative approach is ongoing performance diagnostics and feedback. One promising technology to support this assessment are artificial agents (Cheung, 2003). Among other things, agents offer the capability of developing customized lesson plans.

Students can access the learning system on a worldwide, 24-hour basis and the instructor can update course material on an ongoing basis. The ALN serves as both a two-way "distributor" as well as integrator of course content, assignments and goals. Figure 2 highlights the integrative as well as customized nature of the learning net. Students have direct access to course materials and supporting systems from one convenient site. Specific key components of the ALN design include: e-book (Chen, 2003), e-library (Connaway, 2001), computing applets (Creaser, 2002), virtual facility tours (Pettijohn, 2002), business simulators (Thomas, 2002) and on-line testing (Woodfield, 2003). On-line testing, in particular, provides an effective vehicle for providing real-time feedback. Many students found that this interactive testing process contributed directly to improving their overall understanding of the subject material. One of the primary reasons for this is a layered feedback system. Specifically, this testing system provides: 1) the correct answer, 2) a tutorial on the question subject content and 3) a web link to additional subject material. The exam questions for each topical area, e.g., forecasting, are randomly generated from a large test bank. This approach supports one of the major tenets of an effective learning process namely variety. The instructor can use the test results for both direct counseling as well as for additional content design.

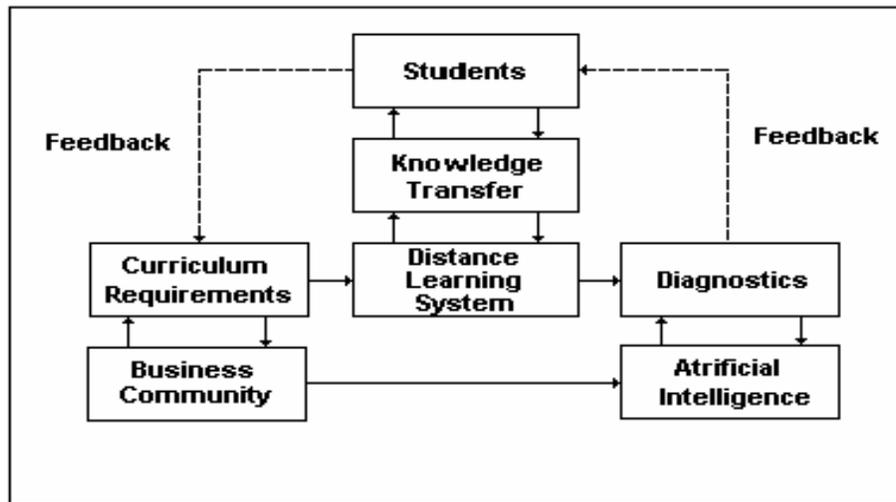


Figure 1 – Overall ALN Concept

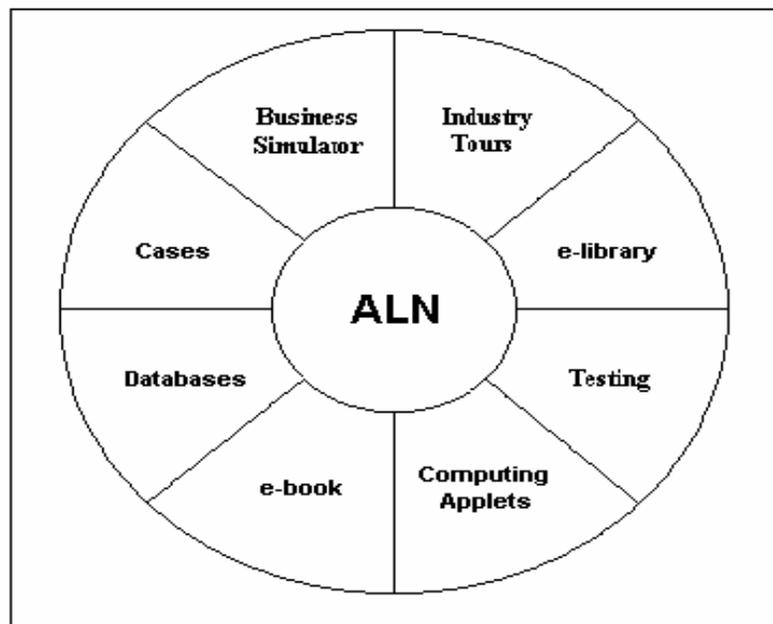


Figure 2 - ALN Course Design Structure

ALN, like the one presented in this demonstration, are receiving increased attention throughout the academic community (Coppola, 2002). Presented in the following is some specific feedback gleaned from student usage of ALN described herein:

- Students remained current with the assignments and content even while on extended travel status.
- Students increased their use of Internet and library assets.
- Students found the facility tours helpful in understanding basic management principles in a variety of settings.
- Students developed a more realistic view of actual business applications through access to large-scale databases, e.g., bureau of labor statistics.
- Students valued the insights gained into the dynamics of business management via on-line business simulations.
- Students appreciated the availability of all course material at one easily accessible location.
- Students felt that real time testing increased their understanding of the subject material.

The next section features a demonstration of the ALN outlined above.

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SYSTEM DEMONSTRATION

The primary purpose of this demonstration is to illustrate how ALN work. Convenience and ease of use are essential ingredients in ALN applications. Figure 3 illustrates a standard session user interface screen. This learning menu appears after the user has logged-on to the ALN. The user can then select the

specific learning assignment by simply clicking on the desired title. For example, a PowerPoint overview on forecasting can be obtained by selecting the lecture notes. This menu includes both the weekly (session) assignments as well as the supporting content material. The ALN system also features document exchange and a chatroom which helps facilitate the development of team presentations.

Date	Wednesday, September 03, 2003	
Time		
Assignments	Name	Due Date
	1. BLS Internet Exercise	9/3/2003
	2. Business New Briefs (Adamu)	9/3/2003
	3. Forecasting Lecture Notes	9/3/2003
	4. Forecasting Practice Exam	9/3/2003
	5. Forecasting Readings	9/3/2003
	6. Judgmental Forecasting Overview	9/3/2003
Materials	Title	Material Type (Format)
	Forecasting - Chapter 10 (400.29K)	(doc)
	Forecasting Analysis Applet	(website)
	Forecasting Homework Summary Answers (26.00K)	(doc)
	Forecasting Lecture Notes (202.50K)	(powerpoint)
Forecasting Practice Exam	(website)	

Figure 3 – ALN System Menu

Figure 4 presents an example e-book chapter. Navigation throughout the e-book is facilitated using the tool bar shown at the top of the screen shot. For example, the reader can jump from one section to another section using the arrow keys. The

chapter can be read on-line or can be stored in a cache for off-line reading. Additionally, the student can digitally annotate the e-book. That is, a student can highlight text segments with their own words that can then be saved for subsequent review.

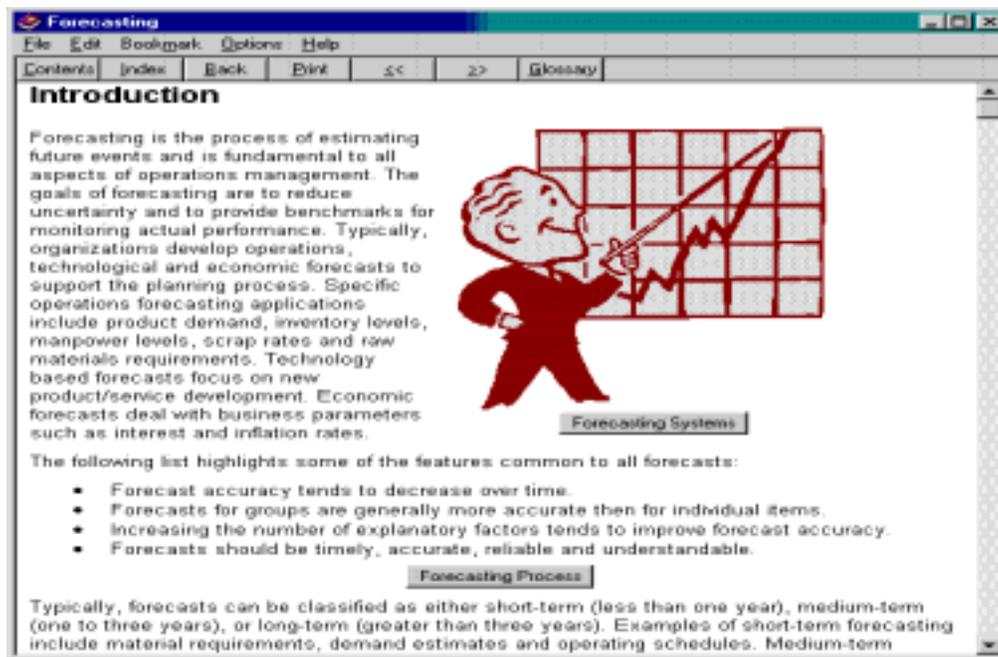


Figure 4 – Example e-book Chapter (Forecasting)

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This is analogous to the classical technique of highlighting segments of a p-book with a yellow marker except that additional insights by the student can be added. Further, e-books provide a seamless connection between numerical data, computing and operational demonstrations such as industry

tours. Figure 5 shows a sample virtual facility tour. This one demonstrates how Yamaha builds musical instruments. There are a wide variety of similar tours on the Internet that can bring increased realism to the course.

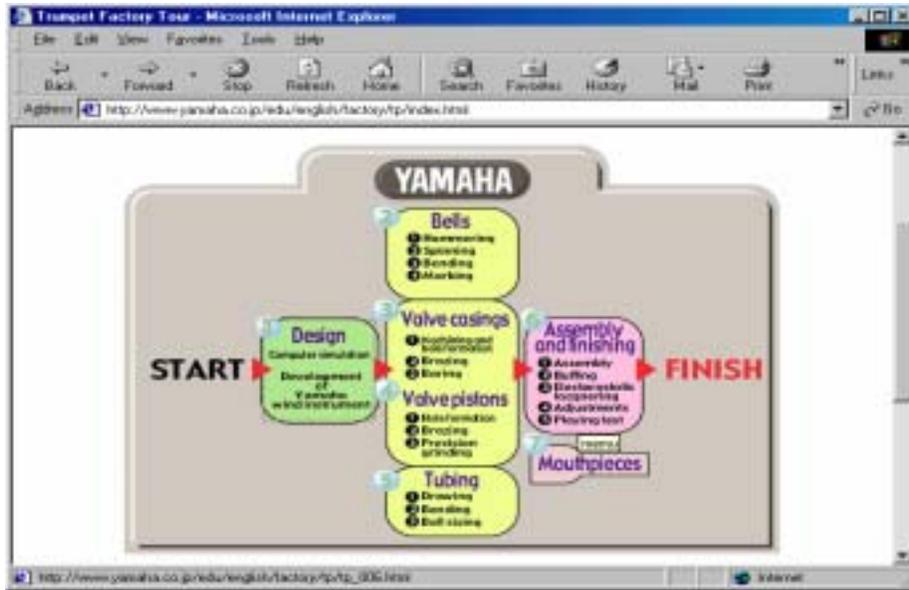


Figure 5 – Sample Virtual Facility Tour (<http://www.yamaha.co.jp/edu/english/factory/cl>)

Presented in Figure 6 is an example computing applet used in project management analysis. Virtual computing is a process wherein the actual computations are performed on the Internet. This has a number of advantages over traditional courseware

including the ability to provide real-time updates. The applets can be integrated with the e-book in that data sets from the e-book can be copied directly into the applet for easy of use and manipulation.

The screenshot shows a 'Project Management' applet interface. It includes a table with columns for 'Task', 'Most Options', 'Most Early', 'Most Parameters', and 'LP'. Below the table, there are fields for 'Critical Time' and 'Critical Tasks', and buttons for 'Evaluate', 'Results', 'Clear', 'Report', and 'Help'.

Task	Most Options	Most Early	Most Parameters	LP
A	2.00	2.50	6.00	
B	2.50	2.00	2.50	A
C	1.00	2.00	3.00	B
D	1.50	1.50	2.50	A
E	0.50	1.00	2.00	C,D
F	1.00	1.00	1.00	E
G	1.00	2.00	3.00	F
H	3.00	5.00	10.00	E
I	3.00	4.00	3.00	H
J	2.00	2.00	2.00	O,J

Critical Time: 19.50 Critical Tasks: A-B-C-E-H-I-J
 Standard Deviation: 1.455 Probability Analysis

Buttons: Evaluate, Results, Clear, Report, Help

Figure 6 – Example Computing Applet (Project Management)

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Figure 7 shows an example business simulation that can be used as part of the overall course design. This one is used to introduce the principles of supply chain management. Students can transition from reading about supply chain management via

the e-book to the simulation and then back again simply through a series of mouse clicks. Business simulation have been found to be particularly effective in developing both individual and team management skills (Lamont, 2001).



Figure 7 – Example Business Simulation (MIT Beer Game - <http://beergame.mit.edu>)

Figure 8 illustrates the real-time testing capability of the ALN. Test questions are randomly drawn from a large test bank. Real-time testing with feedback is an integral part of each lesson plan as well as midterm and final examinations. Ongoing

evidence indicates that there is a strong correlation between student practice testing and overall course performance. Many students find Internet testing an important learning vehicle

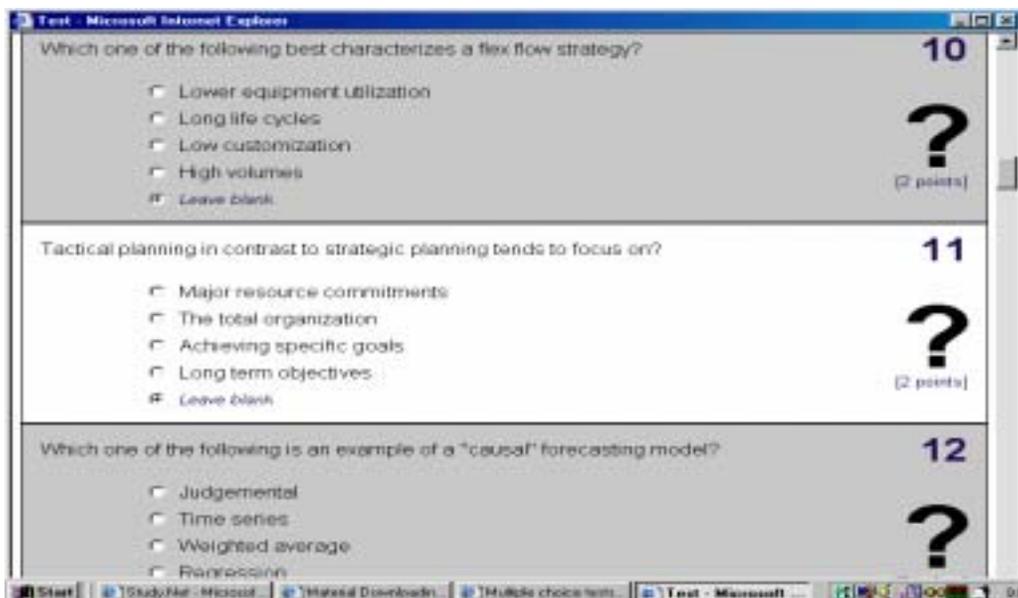


Figure 8 – Real-Time Testing Format

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The content resources illustrated in this demonstration (e-book, virtual tours, computing applets, simulations and testing) are only a few of a large and growing Internet capability. Additional support resources include digital cases, e-library, databases, real-time videos and search engines. The real power of ALN is to mix and match these resources into an integrated learning system.

CONCLUSIONS

The primary purpose of this paper was to demonstrate an operational asynchronous learning network (ALN). This system is designed to deliver high quality business educational content at a time and location of the student's choosing. Presented in the following are some specific conclusions drawn from the ongoing use of ALN.

- Internet based distance learning usage for business education is on the rise. ALN provide a fundamentally new approach in providing effective management education to students particularly working adults. The ALN strategy outlined herein is designed to significantly alter the three pillars of traditional instruction: fixed time, fixed location and fixed learning pace with a flexible and customized learning process. In particular ALN has emerged as an ideal system for delivering MBA type programs (Kathawala, 2002).
- An essential feature of ALN design is real-time feedback. This capability provides both the instructor and student with direct feedback on subject areas that require more attention. Providing the broadest range of feedback and tutorial instruction optimizes the opportunity to gain insights into modern business analysis and decision-making processes. Furthermore, using an ALN type design students can revisit the same assignments until the required proficiency is reached. ALN supports collaborative learning that often has a positive impact on the overall educational experience (Graham, 2001).
- The experienced gained from the use of ALN indicates that business students remained current with the assignments even while on extended travel status. Furthermore, students increased their use of Internet and library assets. Also, students appreciated the available of all course material at one easily accessible location. The continued use of the ALN has revealed that many students prefer the combination of Internet based materials delivery with in-class team interactive projects such as group presentations (Shih, 2003).
- The ALN demonstrated in this paper provides an integrated approach for delivering business content in a distance-learning environment. Specifically, the ALN combines an e-book, e-library, virtual facility tours, computing applets, cases, business simulations and on-line testing into an integrated learning experience that is rich in variety and robustness. One key to the future expansion and use of ALN in business education is to improve overall system reliability (Perreault, 2002).
- The use of distributed intelligence often referred to as synthetic or artificial agents represents the next

technological phase in the evolution of ALN. Distributed intelligence permits the interaction of humans, machines and knowledge in ways that provide a more realistic as well as challenging learning experience. Specifically, agents can be used to design customized lesson plans based on performance (Schank, 2003).

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