The Enabling Impact
of Information Technology:
The Case of the Ohio University MBA

John E. Stinson and Richard G. Milter

Ohio University

Abstract

This paper describes how information technology is used to enable an action-learning based MBA program. All graduate students in three separate sites have access to the OUMBA Information Network. Students and faculty collaborate electronically using Lotus Notes. Learning materials are provided electronically. Students present reports electronically. It is demonstrated how effectiveness and efficiency of learning and collaboration are enhanced via this application of technology.

Keywords — information technology, collaboration, cognitive constructivism, teamwork.

1. Introduction

In 1986, Ohio University initiated a radically redesigned MBA program. The redesign was prompted by the extensive criticism of MBA programs that was popular at that time and our own assessment of the quality of the educational experience we were providing students. The redesign was based on published criticisms of MBA programs, our discussions with leaders of potential employing organizations, and our own study of the future nature of business and the implied required characteristics of workers.

The initial innovation in the MBA curriculum was the institution of a year-long holistic "course" called integrated business analysis (IBA) and a companion year-long behavioral skill development program. The IBA used a problem-based learning pedagogy to simultaneously developed target knowledge, skills, and personal characteristics.

After seven years experience with the redesigned program, multiple assessments of its impact, and continued study of the evolving needs of the business community, we determined that it was time for another radical redesign. The present program was developed during the 1993-94 academic year and implemented in August of 1994. [For a more in-depth discussion of the development and implementation of the OUMBA see Milter and Stinson, 1995 and Stinson and Milter, 1995.]

2. The Ohio University MBA

The program, as it is now structured, is an intense 13-month learning experience, starting in August of the first year and concluding in September of the second year. The program uses an action-learning format with a theoretical base in cognitive constructivism. This design places learners into the type of projects and work situations that they will face as a leaders of information-age organizations in the 21st century. Students learn basic business concepts, but learn them in the context of their use, maximizing the ability to both recall and apply those concepts as they move back into the work world. Students develop the skills (communication, collaboration, teamwork) and the personal characteristics (initiative, creativity, personal responsibility) that have become requisite for success. Students develop a high level of comfort with information technology as they regularly access information through the resources of the internet, collaborate electronically over time and space, and develop and make professional-level computer-driven presentations.

The program centers around some 8-12 major projects. These projects tend to be large macro problems that address business holistically. Each project contains multiple smaller problems that students must address to managing the total learning experience. Students construct their knowledge of business practices by working their way through the problems. Student learning is aided by the ability to access appropriate content on a just-in-time basis. Students learn content at a time when it will be useful to them in their management of the learning problems. While some of the

problems are individual in nature, most of them are approached by collaborative learning groups.

While focusing on more macro problems and working with larger groups, the action-learning process used is a derivative of Reiterative Problem-Based Learning, which was developed by Howard Barrows (Barrows, 1985), and follows closely the concepts of cognitive constructivism (Savery and Duffy, 1994) and cognitive apprenticeship (Collins et. al., 1990).

3. The Action-Learning Process

In the action-learning process, students are presented with an ill-structured problem/situation without the benefit of prior preparation. They are challenged to frame the problem and decide upon action to be taken. Problems/situations may be presented in a number of different formats. Some are elaborate simulations of companies and industries while others are extended "Harvard-type" cases. Some are current situations reported in the business press while still others are real-life situations presented by cooperating companies. (This sections borrows heavily from Stinson, 1990.)

During the initial discussion of the problem, students are challenged to evaluate the knowledge they already have that relates to the problem/situation and to identify the knowledge they will need to acquire through inquiry, research, and self-directed study. A faculty tutor keeps the students on process, not by giving information or judgments but by asking questions. The first phase ends when students have committed themselves to the nature of the problem and how it is to be managed and have identified the areas they are going to study and the resources they plan to use in the study.

During the first phase, students will have 1) set learning objectives, 2) framed the problem, 3) developed hypotheses about action based on present knowledge, 4) noted actual knowledge they possess, 5) identified information needed, and 6) identified potential information sources. They are then released for a period of inquiry, research, and self-directed study.

At the beginning of the next iteration, students are asked to critique the resources they used to obtain information. They then address the problem/situation again using the knowledge and skill they obtained through their research. For a second time they frame the problem and develop hypotheses about action to be taken.

Students may have enough knowledge and skill to make a decision at this point, or they may raise additional learning issues that should be addressed before action is taken. The number of iterations necessary depends on the complexity of the problem/situation and the associated learning objectives.

As the final step in the process (intermittently during longer processes) students are asked to verbalize and synthesize what they have learned. Because so much of the learning is associated with problem solving, students may not be consciously aware of all they have learned. Further, they have developed their knowledge within a particular context. Students thus need to make their learning explicit and decontextualize their knowledge so that it can be used in a variety of settings.

Note that there are many variations possible. Students can work on problem/situations individually or in teams. Problem/situations can be rather simple (requiring only a short time to complete) or complex (requiring a whole quarter or semester). Students may end the process with a formal presentation of findings and recommendations to a panel of executives, or with a general group discussion which produces no single solution. These are only a few examples of numerous possibilities.

4. The Information Technology System

The OUMBA program fully incorporates and is dependent upon information technology. Home base is an "information-age workroom" totally dedicated to the program. Available in the workroom is a set of workstations on a local area network with a dedicated network server with dial-in capability. This server is connected to a wide area network and the Internet. This provides the capability to do real-time conferencing, collaborative writing, seamless file sharing, and E-mail, internally on the LAN and externally with our worldwide partners. Lotus Notes provides the backbone of the system. The standard software is Microsoft office. All students are expected to have access to a computer and, if they want to use the dial-in capability, a modem. The computer may use a Macintosh or Windows operating system.

Students have access to external data bases (Mead Data Central, OCLC, World Wide Web) and the ability to transfer electronic copies of major business magazines and newspapers to local data bases. Further, through the Internet, they can participate in global electronic conferences on topics of relevance to their study.

Learning modules have been established to support learning in the program. We are in the process of developing HyperMedia data bases and learning systems, including electronic copy of textual material, to support all learning modules. As developed, these are located on the local area network server.

The Ohio University MBA is also provided in a part-time format at locations 50 - 80 miles from our home campus for job-bound individuals. The part-time programs normally follows a Friday evening Saturday morning format, with meetings being held on the average of six times per quarter.

These part-time programs are also enabled by information technology. All part-time students have an address on the Ohio University MBA information net-

work. They dial into the network on a toll-free 800 line. As with the full-time program, part-time students and faculty communicate electronically. Notices are given and calendars maintained electronically. Learning materials are provided electronically. Student teams collaborate electronically. Students present reports electronically.

5. The Use of Information Technology

Information technology is central to the delivery of the Ohio University MBA. It impacts both the efficiency and effectiveness of the learning system.

Throughout the program, students receive assignments from and communicate with faculty electronically. They search electronic data-bases for information. They prepare and submit reports electronically. The formal presentations they make to faculty and to business people evaluating their progress are electronic and computer-driven, frequently incorporating multi-media.

To prepare for and finalize their global alliances project (our MBA students team with students from a local university and complete a consulting project for a local business during a two-week visit to another country. In the past those countries have included Hungary, Malaysia, India, Thailand, and Mexico), students collaborate with their in-country partners electronically before they arrive to work together, and after returning to the states they continue their collaboration to complete the project. We expect to move into the use of tele-conferencing as soon as it becomes economically feasible.

While all of these uses of information technology are important, the greatest potential is in our recent incorporation of information technology to enable group collaboration, and in the ability to search electronic data bases for information. During the program, most learning problems are approached in learning groups. Historically, this required that students meet face-to-face and share information related to learning issues and information related to the problem being addressed. Further, students needed to discuss their individual analysis and reach decisions regarding group positions.

Although students participated in team building and were trained in group decision making, most of their meetings were terribly inefficient. The meetings required that individuals come together at the same time in the same place (this was particularly difficult for part-time students). Further, the meetings normally involved start-up, wind-down and considerable social content.

While not eliminating face-to-face meetings totally, the use of Lotus Notes significantly reduces the amount of time collaboration is required. Notes "conferences" are established for each problem for each learning group. Within each major "conference" separate collaboration conferences are established. Typically these include:

(1) A learning issues conference. As learning issues are defined, they are stated as questions. As students find information and draw conclusions related to the learning issues they make entries in the conference. These are reviewed and comments can be expressed by all members of the learning group. Faculty members have total access to these conferences. These entries therefor become another source of evaluation of student learning.

(2) A data conference. As students determine what they need to know to manage a learning problem (information related to the specifics of the problem), the data needs are stated as questions in the conference. As individual students find information related to the data needs, they enter it into the conference where it is accessible by all members of the learning group.

(3) An action conference. In this conference, students express their conclusions about what should be done to manage the learning problem. Through this conference, students dialogue and start to approach conclusions about action related to the problem. Students also start development of reports and presentations in this conference. Faculty members review entries in this conference as another mean of evaluating student competence.

In addition, there are some ongoing conferences that are open to all faculty and students in all our MBA programs. These include:

(4) A general interest conference. In this conference students and faculty place information that is not directly related to the problem under study, but is related to the overall educational outcomes of the program. This includes information on, or reactions to, current business affairs, recent articles or books, good sources of information on the Internet, etc.

(5) Cafe OU. This conference, which was copied from NYU's Virtual College, is an informal chat area.

Bibliographies and annotated bibliographies are maintained in the Library portion of Lotus Notes. In addition, digital copies of some articles and news reports are also retained.

Most research, however, is done through the data bases available on the Internet and on local networks (OCLC, Nexus, Ohiolink). Both effectiveness and efficiency are enhanced via such access. Using these electronic sources, students access information that would be less available using traditional library sources (effectiveness), and they are able to access the information more rapidly (efficiency). Further, the process of

abstracting digitally is much more efficient than reading hard copy, taking notes, and typing the notes into the system.

While central to the learning system, use of the information technology requires some adjustment. Initially, many students (and most faculty) are uncomfortable using electronic collaboration. With reasonable training and supported experience, a majority of individuals find using such means extremely helpful. They are able to make their inputs and express their reactions at a time and place most convenient to them. People who are sometimes reticent to speak at a group meeting, frequently find it easier to share ideas and opinions electronically. Individuals who have a tendency to talk off-the-cuff at group sessions, tend to think through comments more thoroughly before entering them into the system. Further, the tendency to "add noise to the system" is discouraged by less than positive feedback from peers who have to spend time looking at meaningless material.

Some skeptics initially expressed a concern that use of the information technology would somehow dehumanize the program. This has not been, however, the general perception. Students and faculty know, see, and still occasionally meet with their collaborators. Further, as they become more familiar with the use of information technology, people generally start to express their own personalities and become better adept at perceiving the personalities of others.

Since we are very early in the implementation of the information technology system, our conclusions should be viewed as hypotheses rather than facts. Our initial experience, however, suggests that the use of information technology not only enables, but substantially enriches our MBA program.

References

Barrows, Howard S., How to Design a Problem-Based Curriculum for the Preclinical Years, New York: Springer Publishing Company, 1985.

Collins, Allan, John Seely Brown, and Susan E. Newman, "Cognitive Apprenticeship: Teaching the Craft of Reading, Writing, and Mathematics," in L. B. Resnick (Ed.) Cognition and Instruction: Issues and Agendas, Hillsdale N.J.: Lawrence Erlbaum Associates, 1990.

Milter, Richard G. and John E. Stinson, "Educating Leaders for the New Competitive Environment," in Gijselaers, Tempelaar, Keizer, Blommaert, Bernard, & Kasper (Eds.). Educational Innovation in Economics and Business Administration: the Case of Problem-Based Learning. Kluwer Academic Publishers: 1995.

Savery, John R. and Thomas M. Duffy, "Problem Based Learning: An Instructional Model and its Constructivist Framework," Educational Technology, August, 1994.

Stinson, John E. "Integrated Contextual Learning: Situated Learning in the Business Profession," ERIC Clearinghouse on Higher Education, number ED319330, RIE, October, 1990.

Stinson, John E. and Richard G. Milter, "A Grand Experiment: The Ohio University MBA," Working Paper, 1995.