ALN/WBI: An Introduction And An Application To The Accounting Information Systems Course

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Abstract

ALN (asynchronous learning networks) and WBI (web-based instruction) are mediums for delivering course information over the Internet. While "course distance learning" has been in place for a number of years, ALN/WBI courses (where an entire course -- lecture notes, tests, homework -- is transmitted through the web) is a relatively new idea. This paper introduces the concepts of an ALN/WBI course to the accounting information systems (AIS) course in four ways. First, eight features of an ALN/WBI course are illustrated and examples of how they can be used in an AIS course are shown. Second, the most prevalent advantages and disadvantages of an ALN/WBI course are described. Third, this paper highlights some administrative questions. Fourth, some research issues in this area are discussed.

I. Introduction

ALN (asynchronous learning networks) or WBI (web-based instruction) can be defined as using the World Wide Web as a medium for delivering course material, administering tutorials and quizzes and communicating with students and other interested individuals. ALN/WBI courses provide the capability for a student to learn anywhere and at any-time. ALN/WBI courses also offer rapid feedback, on-line simulations, laboratory capabilities and a host of other unexplored possibilities.

The use of "distance learning" by educators is certainly not a new idea. Correspondence courses, through the use of audio- and video-tapes and course books, have been around for decades. Courses offered through closed-

circuit television also have a lengthy history.

Using the Internet to aid instruction is a more recent phenomenon. Everything from syllabus to course notes to homework assignments to hypertexted financial statements and journal articles are available on many accounting instructors' web pages.

Even more recent is the possibility of teaching an entire course, or series of courses leading to a degree, entirely on-line. The proliferation of these courses has arisen quickly in departments where there is a high degree of technical computer hardware familiarity. Over the last few years, departments such as computer and electrical engineering have been using the power of the Internet to teach entire classes.¹ Accounting has not, at least not yet. Certainly, one of the first courses in the accounting curriculum

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of the first courses in the accounting curriculum to use the Internet should be the accounting information systems (AIS) course.

Many instructors in accounting are either ignorant of or only somewhat familiar with the possibilities in ALN/WBI course. This paper intends to show how the typical characteristics of an entirely web-based course could be applied to the AIS course.

Furthermore, many accounting professors are unaware of the advantages and disadvantages of an ALN/WBI course in AIS. Many administrators are unfamiliar with the issues that need to be addressed when creating ALN/WBI courses. This article will enumerate on some of these issues.

Finally, to date little empirical research has been done in accounting on the ALN/WBI course in AIS or in accounting or business in general. In the future, researchers will report on the uses and effects of ALN/WBI courses in business and accounting.² As a start in this area, this paper lists some possible areas for these researchers to consider.

The remainder of this paper is organized as follows. In section two, the key characteristics of an ALN/WBI course in AIS are presented. In section three, the advantages and disadvantages of an ALN/WBI AIS course are discussed and some administrative concerns are addressed. Some opportunities for future research in this area are highlighted in section four and section five offers a conclusion.

II. Key Characteristics

Though still relatively few in number, accounting courses (and AIS courses) offered over the Internet are almost all "password protected," so that only enrolled students can access the material. Consequently, little has been written to date on the characteristics of an ALN/WBI AIS course. However some book publishing

companies and for-profit educational institutions make some chapters publicly available. From examining these sources, there are certain key characteristics of the current ALN/WBI course in AIS:

Course Lecture Notes -- this element is the most critical and perhaps most difficult and problematic element for the AIS course. Each chapter within the course begins with the student's reading of the required chapter in the textbook and the chapter lecture notes (which might include hot-links to relevant AIS, auditing or management accounting journal articles). Usually most on-line course at various points within a chapter will propose working some homework problems and then present the answers. In general, the student has only these notes as well as the textbook and any outside reading material for a majority of the course's instruction.

Bulletin Board For Course News -- this feature includes posting of homework and perhaps further lecture notes on areas in which a substantial portion of students is having difficulties. It can also include non-confidential messages from student to student and student to instructor. Advanced bulletin board systems allow messages to be indexed. For example, all questions/ answers/comments like continuous online auditing or data entry procedures can be placed in one file in such a system.

Chat Sessions -- these sessions are actually synchronous messages between instructor and students in a "chat room." In the AIS course, a chat session can be used on some technical area (such as redesigning or reengineering an internal control system) where there is substantial amount of student uncertainty. Another use of the chat session is to debate some issue in accounting for which there may be no correct answer (like the cost/benefit tradeoffs of implementing a new AIS system or some ethical dilemma faced by an IS practitioner).

efficient and easy to use (after some initial training) and usually confidential. The main drawback with email is that communicating is labor intensive, particularly if a number of students ask the same question or similar questions and the instructor needs to retype the message on many occasions (at which point a chat session/bulletin board posting would be a better option.)

Student Progress -- this capability allows students to automatically check their grades/scores on homework, projects, and tests and quizzes. In addition, most programs also provide a student with a "probable" final grade at any point during the course (an "up-to-the-minute" grade);

Creation, Timing And Immediate Grading Of Quizzes And Tests -- most online course programs allow the instructor to test students. Usually the testing device will provide the instructor with the date the student took the test along with score the student received (if the test is multiple choice or true/false). Often the test/quiz can be graded immediately by the computer, giving the student instantaneous feedback. Most programs also provide the instructor with the length of time (in hours and minutes) the student used for taking the examination. This control feature may help to prevent unauthorized usage of materials (notes, textbooks, etc.) when taking the examination.

Audio/Video Play-In -- in the AIS subject area, this capability might be the most critical element of the course. Some topics, like internal control or document flowcharting in the AIS course, are difficult to explain

without some "eye-hand" communication from the instructor. In this portion of the course, sound and/or video, along with text and lecture notes, may be necessary for some students to completely comprehend the information.

Syllabus And Calendar Information -- this information can be as simple as the syllabus for an on-campus AIS course and a generic calendar. More advanced syllabi may link specific class projects (like reading and analyzing the control procedures of a particularly corporation or writing a paper on AIS ethics) to a specific URL (like the General Motors web page or the AICPA web page).

In theory, from both the instructor's and students' perspectives, it is possible to substitute an entire "live, on-campus" course with an ALN/WBI course. Table 1 shows the translation of regular classroom activities for the student from a traditional format to an ALN/WBI format.

Table 2 shows the translation of regular classroom activities for the faculty member from a traditional format to an ALN/WBI format.

There are two ways to use an ALN/WBI system for the AIS course – purchase

Table 1
Translation of regular classroom activities to an ALN/WBI environment in the AIS course from a student learning perspective

<i>Paradigm</i>	<i>Traditional</i>	<i>ALN/WBI</i>
Learning by listening	Lecture	On-screen lecture Audio/video clips
Learning by doing (or discovery learning)	Library searches	Web searches CD Rom searches
Problems/homework	Not immediately graded	Immediate feedback
Learning through discussion and debate	Done in class	Done through chat sessions and asynchronous email

Table 2
Translation of regular classroom learning to an ALN/WBI environment
in the AIS course from a faculty teaching perspective

<i>Paradigm</i>	<i>Traditional</i>	<i>ALN/WBI</i>
Imparting facts	Lecture	Web-based notes Real Audio On-line video
Inviting discussion	In classroom	Chat sessions Emailing
Performing problem solving	In classroom and	At home/library
Encouraging critical thinking and debate	Done in class	Done through chat sessions and asynchronous email

ALN/WBI system for the AIS course – purchase the rights from a book publisher or create your own system using some type of software platform.

Some college textbook publisher have available (or will in the near future) some accounting courses (including AIS course). Most of these are available as a complement to the textbook of book publisher. The lecture notes are already written for each chapter and usually can be modified by the accounting instructor (assuming some Hyper Text Markup Language (HTML) knowledge by the instructor). Generally the lecture notes follow the text closely and incorporate some of the exhibit (pictures, graphs, etc.) from the textbook. These "canned" programs also include a bank of test questions, some discussion or practice problems, and homework assignment (usually with suggested answers).

Another way to develop an ALN/WBI course in AIS is for the instructor to create his/her own content. While this may be much more time consuming to the accounting instructor, it does allow for a larger degree of flexibility. Currently a number of course providers sell rights to their generic on-line course programs

(like WEBCT, Learning Space, TopClass, and ToolBook II). The professor will write the lecture in a wordprocessing format, then convert it (or have someone with expertise in computer programming) to Hyper Text Markup Language (HTML) using some third party editor (like Page Mill 2, HomePage or FrontPage are three such converts). The HTML lecture notes (along with tests and homework problems) can then be uploaded to a

course-based program.

III. Advantages and Disadvantages of ALN/WBI Courses

Some of the advantages of ALN/WBI courses include:

- location and time independent delivery of course material. This may be of critical importance to a student (particularly the Master of Business Administration (MBA) or Master of Science (MS) in Accounting);
- the ability to serve a large number of students at a potentially reduced cost to the student;
- a similar, familiar interface during engagement (student/computer and faculty/computer);
- virtual elimination of the need for physical classroom space (and building maintenance);
- course faculty may be free to teach from a location far from the home campus;
- on-line courses make it more convenient for members of the professional community to participate. For the AIS class, accountants and AIS consultants from public practice and private industry can join in a course chat session or correspond through email;

- potentially seamless navigation between lecture notes and "real world" examples (in business articles and journals like *Journal of Management Information Systems*, or in practitioners' web pages (like the CISA and the IMA).

Some Of The Disadvantages Of ALN/WBI Courses Include:

- it may eventually prove impossible, despite the best efforts of students and faculty, to replicate the "live, on-campus" learning experience;
- there may be a higher dropout rate than in an actual on-campus course (though this has not been empirically proven in the AIS course) ;
- the higher fees charged for some ALN/WBI courses may actually be subsidizing the cost of on-campus courses and some ALN/WBI students may become resentful of this situation;
- these courses will be developed primarily in the Western world and spread to all parts of the globe. This may inhibit cultural growth of other societies;
- lack of face-to-face interface with the instructor and other students;
- most tests and quizzes will be administered open book/open notes, and often untimed. Thus, there will be a problem of maintaining the integrity of the examination.

In addition to advantages and disadvantages for students and faculty, administrators will also be faced with a number of issues. Administrators of institutions that hope to use all or some part of an ALN/WBI system of courses need to realize, like any unproven system, questions are everywhere:

- ALN/WBI is evolving very quickly, so what seems like "technologically advanced" today may become "obsolete" in a few years;
- the course is highly computer dependent (both in terms of hardware and software).

The effort might require a substantial amount of support from non-accounting departments (like computer science or electrical engineering);

- institutions and their faculties must be committed to an ALN/WBI based education system. This fact almost certainly means that faculty must have training in basic computer programming language (like HTML);
- the use of and reliance on video (and to some extent audio) capabilities is limited by the bandwidth of the instructors' and the students' computers and connections, and these capabilities are still evolving;
- the costs of course creation need to be rigorously evaluated against their benefits, and successful uses against failed uses (but not in a short time frame, since there will be a "learning curve" for both faculty and students);
- the experiences of a few successful ALN/WBI in AIS do not translate into an ALN/WBI accounting degree program (for instance, Graves (1997) anticipates that most colleges will take on some form of selectively moving to offering some online courses where it adds value to the institution's core programs);
- accreditation issues are everywhere, such as the required "contact hours" between instructor and students, students residing across state lines and across jurisdictional lines of regional accreditation agencies;
- there are risks of copyright violations on the Web as well as on any supplemental course material (incorporating textbook material into lecture notes, accessing CD-ROM's);
- much like a library provides auxiliary support for on-campus teaching, administrators must realize that there also must be a support system for WBI/ALN courses. For example, the AIS might be required to have electronic programs (like SAP); digital image collections (like journal articles from practitioner journal like *Management Accounting*; full text databases and reference and help systems);

- "adult" students have a different set of needs than the "traditional college age" (18-22 years old) student. In fact, at many colleges, an adult education department has been established. ALN/WBI students may also have a different set of needs so that a "ALN/WBI department" may also become necessary (either as a stand-alone department or as an extension of the adult education department.)

IV. Research Issues:

Research questions in this area abound. To date, very little research has been done in the accounting education field (though some research has been conducted in non-accounting academic fields). In the future, more and more empirical research questions will be asked and their results made available. Ten of these questions for future research in the accounting area include:

Can all the materials from an AIS course be transferred to text/course notes? Are there some topics (flowcharting of internal controls structures, defining critical paths of document flows) which need a mixture of asynchronous and synchronous (chat sessions, email, video conferencing) learning? In terms of course offerings, for example, Heterick (1998) examined social science courses and found that some courses could be offered over the Internet while some others should remain in an on-campus environment.

Can this course be "scaled-up" (more students added with no loss of intimacy for students)? It is known that intimacy is lost in small classes in a traditional, on-campus environment when the class size increases. Some researchers also argue that this intimacy can be maintained to some extent through broadcast video lectures (Bourne, et al., 1998). Can an ALN course in AIS maintain its intimacy when it is administered to a much larger group of students?

Do the costs of creating an online

course in AIS offset the benefits (or vice versa)? Do distance learners learn better or worst than on-campus learners? Lancaster (1998) examined general business courses and found that distance learners retain information longer than regular students.

Will females react differently to this learning environment than males? Tannen (1994) found that males are more likely to consider the computer conferencing systems as a place to get and give information, while females see it more as a place to pose questions and come to a consensus. On the other hand, a study by Ory, Bullock and Burnasha (1997) investigates male and female student uses of and attitudes about ALN after one year and found no significant gender differences. Depending on which is true, will certain parts of the on-line AIS course be more easily understood by males? Will other parts understood better by females?

Will ALN/WBI learners retain information better than other students in a traditional setting (some preliminary evidence finds that they do (Lancaster, 1998)) or can they complete the course in a shorter period of time?

Can an appreciation of cultural/ethnic diversity be maintained within these courses? (For instance, Beere, et al. (1998) created a program that linked a predominantly white university with a traditional black college in an ALN/WBI course and found a greater acceptance of racial differences than in a traditional, on-campus setting.)

Can the debate over the "gray areas" found in an AIS course be maintained (questions such as which inventory system is "best" given a particular business's situation, what is the quality of the data being generated, how is it best to audit this paperless system, etc.)? How efficient and effective will these debates be? Sproull and Kiesler (1995) examining psychology courses, found that it takes longer to reach consensus in brainstorming and problem-solving

situations including those within a "gray-area" content. On the other hand, Jaeger (1995) discovered that collaboration and independent thinking among students were positively affected by distance education.

Some researchers have found that individuals' successes or failures in an ALN/WBI course may depend on the extent to which students were able to cross the threshold from feeling like an outsiders to feeling like an insider (see, for example, Wegerif, 1998). What characteristics or factors in the AIS course allow this crossover to occur?

Like any practice in its infancy, ethical issues abound. What is the most effective way of assessing knowledge to prevent cheating? Investigators in other subject areas have also asked public policy questions: how can the handicapped learner be accommodated, or the poor student who cannot afford the latest technology (see, for example, Woodbury, 1997)?

What characteristics or aspects of the on-line course encourage successful learning? What is the optimal use in the AIS course of a chat session or a bulletin board? From personal experience, Klemm (1998) listed eight ways for teachers to elicit more participation in on-line conferencing: 1) require participation; 2) form learning teams; make the activity interesting; 4) require more than just opinions; 5) structure the learning activity; 6) require a written assignment; 7) peer grading and 8) clearly define quality contributions.

V. Conclusion

The Internet and the World Wide Web are causing teachers to rethink the nature of teaching. The usage of financial statements, corporate reports and journal articles from the Internet is widespread in accounting courses today. In addition, the possibility exists for an entire ALN/WBI course in AIS.

There are strong indications of tremendous growth in ALN/WBI activity. There is a realistic possibility that this technology in some form will become an integral part of teaching in the near future. Understanding the advantages and disadvantages of ALN/WBI as well as many unanswered administrative concerns is going to become very important to the faculty of the accounting and AIS courses.

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Endnotes

1. For a review of the early history of ALN/WBI courses in other subject areas, see Goldberg, et. al. 1996.
2. In fact, it is not unlikely that a separate journal in the ALN/WBI education in business or accounting may appear in the next few years.

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