Necessities for Effective Asynchronous Learning

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INTRODUCTION

Distance education programs/courses in some format have been available to students since the 1840s. Throughout most of this time there has been controversy over the effectiveness of such programs/courses (IHEP, 1999; Matthews, 1999). The concept of online teaching and online asynchronous learning (ASL) started in the 1980s and is an area of rapid growth (McMullen, Goldbaum, Wolffe, & Sattler, 1998). In a period of 3 years, from 1995 to 1997, the number of schools in the United States (US) developing such programs increased by almost 200% (Morse, Glover, & Travis, 1997). The US Department of Education (2001) reported that in 2000-2001 there were more than 2.8 million enrollments in college-level degree granting programs in Internet- and Web-based distance education courses in the US.

Several companies are producing software packages that allow faculty to develop courses that can be presented in an asynchronous distance learning format. Most of these products allow students to use a Web browser to take the course, but all use proprietary software for course development and administration. They vary widely on the investment in time, money and computer assets required for implementation, and they place restrictions on what and how material can be presented and the types of interaction provided.

This article provides an extensive literature review to form the basis for a discussion of the background of asynchronous education and distance learning, the capabilities needed for an effective distance education program, and how they apply to the asynchronous learning environment as implemented in Web-delivered education. A discussion of student expectations and use of these tools follows. It ends with general observations about the use of online ASL in the future.

BACKGROUND

Throughout much of their history, distance education courses have tried to duplicate the in-class experience through synchronous technology-delivered education. Synchronous communication, video and other resources have been added to courses as soon as technology has made them available. Stanford University's Stanford Online is an excellent example of this effort (DiPaolo, 1999). Abernathy (1998), Binde (1998), Farrington (1999) and Theakton (1999) all discuss some of the current issues involving the use of technology in distance education and its potential to revolutionize education. Simonson (1997) and Foley (1998) present findings that online courses can be just as effective as classroom education. Middleton (1997) discussed research that indicated that distance education is only 80% as effective as classroom-based instruction. Motamedi (2001), Clark (1999) and Frederickson (1999) present the results of several studies of ASL online courses which could make no consistent claim on the effectiveness of distance education courses, as the level of student preparedness, technical problems, poor course organization and so forth produced conflicting results. Mark Kassop (2003) describes that in many ways ASL courses match or surpass face-to-face learning.

MAIN THRUST OF ARTICLE

From the material above, it is obvious that there is wide variation in the outcomes achieved by various online programs. This section looks at key elements to be considered in the curriculum design process in developing an online program by reviewing the technology, pedagogical issues, process and support issues. Skinner (1968) was one of the first to describe the minimum characteristics for what he called a teaching machine. His focus was on the capabilities

of the machine and the program. He felt that the machine should:

1. Force students to compose responses rather than merely select answers from a set of alternatives.
2. Be designed to allow students to advance in simple steps.
3. Be capable of displaying text, charts, graphs, pictures, models and possibly auditory information.

Aronson and Briggs (1983), Gagne and Briggs (1974) and Overbaugh (1994) identified nine major characteristics that must be present if education is to take place. Their focus was not on the type of instruction, but rather what must be addressed if instruction is to occur. The characteristics are as follows:

1. Gain attention of the learner.
2. Inform the learner of the course objectives.
3. Stimulate recall of prerequisite learning.
4. Present the required stimulus material.
5. Provide learning guidance.
6. Elicit some measurable performance from the learner.
7. Provide feedback about performance correctness.
8. Assess the performance.
9. Enhance retention and transfer.

Seligman (1992) identified five areas that he considered critical for quality in a distance education program. They focus on the process and administration rather than the educational issues or hardware requirements.

- **Area 1:** The materials must be user friendly, academically respectable, able to be used by the average student, interesting in content and layout, and relevant.
- **Area 2:** The learning materials and any peripheral media or equipment must be easily available to students.
- **Area 3:** Any tutors and all students need to be familiar with distance-learning methodology and practice.
- **Area 4:** The whole system must be managed effectively.
- **Area 5:** Monitoring, evaluation and feedback must be viewed as important.

Lever-Duffy (1991) pointed out that the goal of delivering effective instruction should include the idea of integrating technology to address some of the key objectives of distance learning. His points were:

1. Give students access to the instruction without restrictions of time or location.
2. Avoid isolating learning from the benefits of the interaction with instructors and peers.
3. Utilize as many methods of delivery as possible to address the learning styles and needs of students.

Aronson, Briggs, Gagne and Overbaugh focused on basic issues of learning and the steps that must be carried out if education can take place. Skinner and Seligman brought up some key technical issues that also must be addressed for success. Finally, Lever-Duffy discussed issues of time, space and variety for maximum usage. When laid out as above, it is obvious that there are many redundancies. For ease of consideration, the 20 factors described above can be summarized as follows: (The letters and numbers in parenthesis relate to the author and number from their list.)

1. (sel3) Tutors and students must be familiar with distance learning and practice.
2. (sel2, ld1) Provide access to instruction without restriction for time or place.
3. (ld2) Avoid isolating the learning from the interaction with instructor and peers.
4. (oag1, ld3, s3) Present material in a wide variety of ways, including text, graphics, video and audio to gain attention and to allow a variety of learning styles to use the system.
5. (oag2) Inform the learner of the course objectives.
6. (oag3, s2) Stimulate recall of requisite learning so students can advance in logical steps.
7. (sel1, oag4) Present materials in an interesting, user friendly, academically respectable style, able to be used by the average student.