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# Structuring Courses for Asynchronous Learning Networks

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## Abstract

Drexel University is delivering a graduate degree in information systems by asynchronous learning network (ALN). Students in this program never attend a face-to-face class. This paper discusses methods of structuring course material for delivery in this environment.

## Introduction

ALNs can be characterized by their support of "anytime, anyplace" education. Figure 1 contrasts this approach with other means of education delivery based on time and place characteristics [Ellis, 1993]. ALN students do not meet in traditional, face-to-face classes. They can be on campus, nearby, or across the country. Similarly, students can choose when they work. Full-time students can do all of their work during the day, while part-time students may do all their work at night or on the weekends.

The College of Information Science and Technology at Drexel University began a long-term initiative in early 1994 to develop ALN technology and build on earlier projects in computer mediated communication such as [Hiltz and Turoff, 1993].

The Drexel initiative began with a period of limited offerings of ALN classes for selected courses in information systems in our undergraduate and graduate degree programs. During this phase we developed the infrastructure needed to support ALN course delivery, developed a delivery environment, and developed approaches to organizing course materials for ALN presentation. We also conducted a round of initial measurement to provide a basis for preliminary evaluation and future ALN development.

In the current phase of the Drexel initiative, we are offering an entire graduate degree via ALN. The first group of students in this program began their course work in fall, 1996. The degree they are completing is identical to the degree offered on-campus in traditional classes, but these students will never have to attend a class on-campus. All their work will be done via ALN.

Other notable features of the Drexel initiative include:

- **Commercial product infrastructure** - We are using commonly available commercial products to provide our ALN facilities. Our initial efforts have centered on IBM's Lotus Notes, with some limited use of SoftArc's FirstClass. We are using Intel-based servers to host the ALN. The servers are accessible via the Internet or dial-up line.
- **Industry partnership** - We have established a partnership with the I/S organizations of several Fortune 500 companies for phase two of our project. All the students for the initial offering of the degree via ALN will be employees of those companies.
- **Tool integration** - We are working to select and integrate commercial information systems tools with the ALN environment and then use them across the curriculum.

## Course Delivery Environment

Over the time that we have been offering courses by ALN, our course delivery environment has evolved. In general, we have been working with the following types of ALN services for a course:

- **Individual Communication** - each person has a mailbox on the system. While most of the students use Internet email, a few are not regular users. Having email within the ALN provides a uniform mechanism for person-to-person communication. This is particularly useful for dealing with attachments. The problems that sometimes arise in sending files from one mail system to another can be eliminated.
- **Group Discussion** - Discussions are a key ALN activity even though, in this context, discussion takes place asynchronously. Participants connect to the ALN at a time they choose, read what others have written, and make their own contributions. The ability to interact regularly with both the instructor and other students is a hallmark of ALN separating it from technologies like computer-based training (CBT) in which students work alone. We have provided several options for group discussion. There is a general discussion area for the entire class. This area is used for assigned and ad hoc discussion of course content. In addition, for team activities, we provide private discussion areas for each team.
- **Online class materials** - All the course materials are available online including schedules, syllabus, and project guidelines. Readings are available online except when copyright issues cannot be addressed. Grades are also posted in this area.

	Same Place	Different Place
Same Time	Traditional classroom	Video conferencing
Different Time	Programmed Instruction	Asynchronous Learning Networks

**Figure 1. Differentiating Educational Delivery by Time and Place.**

- In our initial ALN courses, we have made a consistent effort to provide all the course materials online whenever possible. While students find this convenient, a high percentage of them print most of the online materials and work with them from paper anyway. After observing this trend we have changed our approach and now work from printed matter for much of the reading material.
- **Assignment submission area** - Assignment submission is set up as a separate area to establish separate access control for the assignments. Specifically, when students submit assignments, they are accessible to the instructor only. After all teams have made their submission, the instructor has the option of granting access to all the students.
- **Diary** - We have tried providing an online diary for both the instructor and each student to allow participants in the course to record impressions about the course experience. Participants made little use of these diaries, and so we have not continued providing them for all courses.
- **Autobiographical sketch** - It is more difficult for all the participants in an ALN class to get to know each other. To help with this problem, we have each student provide an informal autobiographical sketch. We encourage participants to include some personal information such as hobbies or outside interests in addition to the usual description of experience and academic background. We add a picture of the person to each biography and make all the sketches available for browsing online.

This set of ALN services seems to provide reasonable support for a variety of courses and also provide a basis for creating a common look and feel for the ALN workspace across courses.

## Course Organization

In addition to having a usable delivery environment, there is a need to create a course organization that supports remote students. Our approach is to build extensive structure into the course materials and activities. Our general experience with ALN offerings is that the course activities must be completely defined and clearly structured before the course begins. Making additions or adjustments during course delivery is difficult to do without creating a lot of confusion among the students.

One of the key issues in developing the structure for class activities is to decide whether there are any points of synchronization of activities across students. Several models are possible. One approach is to have no synchronization, and let students complete course activities on their own schedule (or on a schedule bounded only by the end of the term). This model supports self-paced instruction, but it limits collaborative learning since students could become widely dispersed over the set of course activities.

An alternative model includes synchronization points but allows asynchronous activity between those points. This has the reverse effect of limiting self-pacing but promoting collaborative learning. We have adopted this second model for the Drexel courses since we wanted to promote collaboration among students. At a practical level, this means that each course product and activity has a schedule. A discussion topic is defined with an opening and closing date. Asynchronous discussion takes place within the discussion window. Similarly, team products have fixed due dates so that they can be made available for peer review and browsing.

## Student Reactions to ALN

Our preliminary analysis shows many positive results for ALN courses. Based on a set of 82 student evaluations, some strengths and weaknesses of ALN appear. Some of the strengths of ALN courses are apparent in issues such as:

- **Convenience** - As expected, students find the "anytime, anyplace" flexibility convenient. 87% considered ALN more convenient.
- **Instructor access** - 95% felt that they had better access to the instructor. 43% felt that they actually communicated with the instructor more.
- **Collaborative learning** - 93% found it useful to see the ideas and assignments of other students

On the other hand, possible weaknesses of the ALN approach are indicated by points such as:

- **Face-to-face contact** - 51% indicated that they missed the in-class lectures of traditional courses.
- **Level of effort** - 40% felt that they had to work harder in the ALN course.
- **Level of comfort** - 21% felt more inhibited about participating in ALN discussions.

We are also seeing interesting differences in student perceptions in ALN classes relative to corresponding traditional classes. Interesting results in the first pair of corresponding classes matching 18 students in the ALN degree with 21 in the traditional degree include:

- **Course goals** - 100% of the ALN students and 73% of traditional students felt that the course goals were clear.
- **Asking questions** - 93% of the ALN students and 100% of the traditional students felt that they had good opportunity to ask questions.
- **Subject interest** - 94% of the ALN students and 82% of the traditional students felt that the course increased their interest in the subject.
- **Motivation** - 88% of the ALN students and 86% of the traditional students felt that they were motivated to do their best work.
- **Time** - 74% of ALN students and 24 % of traditional students reported spending 10 hours or more per week on the class.

The overall impression that emerges is that ALN students are as positive or more positive about the quality of education they are receiving than the students in traditional classes. The issue of time is one that we plan to investigate further, including the trade-off between absolute hours spent and flexibility gained in scheduling, and trying to factor-in travel time for traditional students. Travel time is not included in the estimate quoted above.

As the project continues, we will be able to provide additional detail about students' perceptions of ALN. In addition, we will be adding our analysis of methods of delivering ALN courses, cost factors, and results of the course delivery relative to traditional means.

### References

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