Bourne describes Asynchronous Learning Networks, or ALNs, as on-line learning venues in which students generally spend about half their time interacting with other students in mostly asynchronous fashion, and the other half engaged in self-directed learning activities. Courses offered via ALNs have been shown to reduce costs by teaching larger numbers of learners, without a decrease in quality of instruction. Bourne offers strategies for different types of institutions to implement ALN learning environments. He also notes ALNs’ potential to increase higher education’s reach into new markets, including life-long learners and corporate education.

What Are Asynchronous Learning Networks?

Asynchronous Learning Networks (ALNs)* are on-line learning venues that emphasize people-to-people communication combined with traditional and/or information technology-delivered learning tools. The purpose of ALNs is to enable people to learn anywhere and at any time without the constraints of time and space. ALNs are useful in many educational arenas including on-campus education, off-campus education, and continuing education.

In 1993, the Alfred P. Sloan Foundation initiated a program on “Learning Outside the Classroom” and made grants to early adopters of ALN, including New York University and the University of Illinois. Soon thereafter, many more grants were made; ultimately, some 25 million dollars were invested in the research and practice of ALN. The credit for initiating this field goes to Dr. A. Frank Mayadas of the Alfred P. Sloan Foundation, who has almost single-handedly pushed the field forward to its current state.

ALN Components

While there is not yet any universal definition of

* The terms Asynchronous Learning Networks (ALNs) and Net-learning are used interchangeably in this essay. We interpret these terms to have identical meanings.
the component elements of ALN, figure 8-1 shows a possible apportionment between the elements that are currently thought to constitute ALN. The pie chart below shows about a 50/50 split between learning materials and interaction between people. Materials may include books and other printed materials, as well as information provided on Web pages and in computer-based training modules. In ALN, most interactions among people are asynchronous.

Conferencing

To provide asynchronous interaction between people, computer conferencing is widely used. Computer communication ranges from the use of e-mail, list servs, news groups, and threaded conferencing systems. The latter type of communication is particularly useful for organizing discussions around topics. A wide variety of flavors of computer conferencing systems are available; most have similar features, such as posting and replying to messages. Often, conferencing systems will provide the capabilities of editing and moving messages, posting multimedia, notifying participants of new message postings, and organizing discussions.

On-line Materials

Currently, most on-line materials are in the form of Web pages, often linked to discussion groups and places to try out examples. The enormous advantage of creating on-line materials is the reusability and simple modifiability of the materials. For example, an on-line course typically employs a standard set of Web pages that an instructor can easily modify. In these materials it is straightforward to link to explanations in other courses (for remediation, for example) or link to authoritative sources on-line.

All materials in an on-line course do not have to be on-line. Printed materials, including books and journal articles, are also perfectly suitable and can form a basis for assignment and submission of problems and discussions on-line.

Computer-based Training (CBT)

While CBT modules have not yet become widely used in ALN, it is expected that adoption of CBT modules will become commonplace as technology progresses. The generation of simulations that explicate difficult to understand points will help augment on-line reading materials.

Synchronous
Finally, even in an ALN world, there is room for a synchronous component in which people talk to each other in real time. Chat systems, telephone, and video point-to-point systems all provide this capability. While excellent for communication between two individuals, synchronous discussions do not scale up. In courses in which hundreds of people are active learners, only cacophony would result from use of a synchronous medium.

What Is the Role of ALN in Higher Education?

Starting from an initial hypothesis that ALN could reduce costs without reducing quality (the Sloan Foundation objective) and deliver education to anyone, anywhere, at anytime, research in ALNs has begun to show additional possibilities for higher education. For example, ALN should increase the capability of higher education to reach new markets, both for lifelong learners and for learners in industry. ALN appears to have the capability of increasing productivity and scaling up to permit teaching larger numbers of learners without a decrease in quality of instruction.

The Journal of Asynchronous Learning Networks (JALN) has become the major scholarly journal devoted to understanding ALN. Commencing with the first issue in early 1997, the JALN has focused on studies devoted to topics that include the economics of ALN, creating virtual universities, ALN and writing, ALN in engineering education, the social dimensions of ALN, and impacts of ALN in various settings. Each issue has a major issue-oriented article that discusses directions of ALN and related topics. Please see http://www.aln.org for the repository of articles.

The text below provides examples of how Vanderbilt University is currently using ALN to enhance the services it provides to students, faculty and staff.

ES130 (Engineering Science)

ES130 is the first course offered to engineering students at Vanderbilt University. The course is offered in 9 sections of 40 students each. Lectures and laboratories are provided on Web pages; professors use the materials for in-class discussions and demonstrations, students follow the directions in the laboratories to complete a series of twelve exercises. Figure 8-2 shows an example of the page of laboratory materials for ES130.
The findings from offering this course for three years show that (1) instructors require less preparation because the materials are completely developed, (2) new instructors can get up to speed much more quickly, (3) laboratories run smoothly since instructions are complete, filled with examples, and readily accessible on the Web, (4) modifying the materials (to customize or correct) is very easy and useful, and (5) students can review materials in their dorm rooms and complete about half the laboratories in their dorms.

Using a single set of Web pages for all sections of the course provided coherency among the sections, reduced the cost of preparation, permitted individualization, and encouraged the instructor team to easily contribute to the course pages.

EECE 274 (Electrical and Computer Engineering)

During the last several years, this senior/graduate course at Vanderbilt University has served as an incubator for ideas in Net-learning. The main page of the course, EECE 274, Introduction to Informatics Engineering, is shown in figure 8-3. The design of this page puts all the main elements that students need for the course in a single column of buttons. Figure 8-4 shows a portion of the assignments page. We have learned that students like to have all requirements for the course in one place, segmented according to what they are to do and when they are to do it. This page includes the capability for submitting homework, as well.

The EECE 274 course focuses on team activities in which small student teams build information products. Students use the course computer conferencing system for both public and private forums. The teams post results of their work in the public forums and communicate among themselves in private forums. A surprising result for an on-campus course was the very heavy use of the forum for group communication. Students often have a hard time participating in the forums. Another result was the very heavy use of the forums for discussion of course materials. Students often have a hard time understanding the course materials.

**Figure 8-3**

**Figure 8-4**
time meeting in groups, even on-campus, but the course conference utilization proved that students would use computer communications for group projects, when available. Another innovation was the inclusion of alumni in student groups. Alumni participated by providing project directions and working with each group. This type of activity would not have been possible outside of the ALN paradigm.

On-line Laboratories

Figure 8-5 shows an example of two screens from a simulated laboratory we created several years ago. The laboratory provides students with a set of experiments that duplicate their assignments in a physical laboratory. We found that students taking this computer-based laboratory prior to going to a physical laboratory were able to complete the physical laboratory in half the time. These findings are important, of course, because more efficient use of expensive laboratory equipment brings opportunities for cost savings.

Workshops

Figure 8-6 displays an example page from our on-line workshop, “Getting Started with On-Line Courses.” We first offered this workshop in the summer of 1997; since then over 800 people (primarily faculty members) have participated. The contents of the workshop include learning to use computer conferencing, comparative studies of on-line courses, basic HTML, Front Page, building the contents of an on-line course, and managing on-line courses. In the space of six weeks, faculty members create the skeleton of an on-line course. The workshop is very much activity centered; each section of the workshop involves a set of tasks, with specific steps for each task. Participants throughout the world have developed courses in almost every dis-

Figure 8-5

**On-line Laboratories**

- Benefits: Reduces in-lab time by 50%, can run labs in storm, provides access to simulation anytime, anywhere.

Simulated Workbench

Simulated Oscilloscope

Figure 8-6

**Workshop Topics and Methods**

- Pre-workshop activity is a self-study readiness activity called *Internet101*
- Each part of the workshop is opened sequentially week-by-week
- A central location is kept for all participants to view each other’s courses
- Students are organized by discipline into smaller groups for discussion.
discipline imaginable from forestry to midwifery. To find out more about this workshop, please visit http://www.aln.org.

Who Is Interested in ALN?

The simple answer to this question might be “Almost everyone!” However, this answer is not yet true, although interest in ALN grows dramatically each year. Reactions to Net-learning/ALN are varied—ranging from enthusiasm to skepticism to outright condemnation. We have empirical evidence about who is interested. In May 1997, the ALN Web group began to offer a workshop on-line about how to create ALN courses. The workshop has been repeated five times since the first offering. To recruit participants, we simply listed the course on our Web site and sent e-mail announcements to people who had signed our guestbook and others. The breakout of the first 600+ participants’ affiliations is shown below:

<table>
<thead>
<tr>
<th>Affiliation</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Professors and Staff</td>
<td>385</td>
</tr>
<tr>
<td>College Personnel and Staff</td>
<td>139</td>
</tr>
<tr>
<td>Industry</td>
<td>52</td>
</tr>
<tr>
<td>Professional Organizations</td>
<td>31</td>
</tr>
<tr>
<td>Government</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>609</strong></td>
</tr>
</tbody>
</table>

These results would likely be different if the announcements of the course had gone to a different population.

In the category of university professors and staff, we found that departments from many areas in university life were represented. The highest concentration was in education, nursing, and engineering. The college personnel and staff category included community colleges. The people from industry tended to come from training organizations. The professional organization category included such organizations as the IEEE and the East-West Center. Participants came from a dozen countries ranging from Korea to the Ukraine and the Canary Islands. Some institutions and organizations, such as Tulsa Community College and Mayo Clinic, sent many of their members to the course.

The Changing Role of Faculty in an ALN-enabled World

The Sage and the Guide

In the traditional lecture mode of deliver, a faculty member is cast as a “sage on the stage.” In an ALN-enabled world, faculty will become a “guide on the side,” spending most of their time working with students and preparing course materials. Naturally, the mesmerizing lecture will remain a staple of excellent teaching; however, Net-learning will enable such lectures to be delivered anywhere and at anytime to become part and parcel of courses held anywhere and mentored by any faculty member.

Changes in Time Required for Typical Faculty Tasks

Figure 8-7 shows a prediction for how a faculty member’s time allocation will shift in the upcoming five years. In the left column is an estimate of current time commitments of five components of faculty activity in education. The right column shows the shift that ALN allows. Time allocated for course architecture will likely remain about the same. Although significant time will be required to create
courses in a Web-delivered format, materials will likely become available via publishers or by coalitions of authors. Navigation will be built into materials, so course navigation time will be reduced. Lecturing can be dramatically reduced and mentoring greatly increased through the use of ALN. Finally, through automation, time for testing and evaluation can be reduced. Even after these changes, there should be additional time left over, primarily because of reduced time spent lecturing.

A Sample Economic Model for ALN Utilization

Little is known about the real costs of creating and maintaining Web-based courseware. However, I will attempt to provide a simple model of the economics of ALN by estimating times, costs, and revenue changes based on my own experience. Unfortunately, there are many variables, including class size, location of learners, and the cost and availability of staff and student assistants, which need to be taken into account. To simplify, I have made a number of assumptions to illustrate costs and revenues for one particular situation.

First, assume: (1) a typical semester course meets for 3 hours a week for 15 weeks, (2) instructor preparation can be estimated at 3 hours per traditional lecture, (3) student time is about the same as the instructor time requirement. In the lecture model, both the student and instructor spend about 10 to 15 hours per week per course or between 150 and 225 hours/semester. In the example below, a predominantly on-campus 40 student class, with one professor and one teaching assistant is assumed. Models with one professor and multiple teaching assistants can be very different.

Second, assume that the information technology infrastructure for supporting ALN is in place. The cost estimates made below for creating ALN instruction do not include the costs for installing and operating this infrastructure. This assumption is made because IT infrastructures are already in place on most campuses.

Third, in a guide-on-the-side model, the time spent by the instructor will be about one hour preparation for a one-hour facilitation. With materials on the Web, the time required to generate new materials is reduced by about 40 percent. In the Net-learning model, instructor time required per week will be about six hours a week or about 90 hours/semester.
Fourth, the time required to generate materials is high. For a typical three-hour on-line course, about 200 to 300 hours are required (from my own experience). A minimal course can be constructed in about 120 hours (from our on-line workshop results). In the comparison table below, we use an average time of 250 hours.

Fifth, reworking materials each year requires some time. I estimate about 20 hours are required each year to update materials.

Sixth, the scenarios provided are for primarily on-campus students with some off-campus students. The cost for on-campus instruction will be higher, because it includes both on-line and face-to-face instruction.

Seventh, the breakout information below is given in hours since costs are difficult to quantify given the widely varying cost of faculty and teaching assistants. (For an analysis given these additional variables, the efficiency studies conducted at the University of Illinois are quite instructive.11)

Cost Analysis

<table>
<thead>
<tr>
<th>Figure 8-8</th>
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<tbody>
<tr>
<td>Cost Analysis</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Total time requirement for three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Course hours</td>
<td>16 hours*</td>
<td>15 weeks = 240 hours</td>
<td>150</td>
</tr>
<tr>
<td>(including writing lecture notes)</td>
<td>15 weeks = 240 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net-learning Delivery</td>
<td>6 hours*</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

Figure 8-8 below shows the hourly requirements over a period of three deliveries for a semester of 15 weeks, assuming each delivery requires a revision.

The estimates given in figure 8-8 show a gain in productivity only after the third offering of a course. However, if a course is given in multiple sections (e.g., the ES130 course described above), the benefits of time savings can be immediate. One may conclude from these estimates that Net-learning will not be economically useful in courses in which materials must be completely changed each year. Since the structure of the course is in place after year one, the hours for course renovation and updating allocated should permit more than 10-20 percent of the course to be updated each year. Updating a Web-based course is far easier than updating a traditional set of lecture notes because of the ability to use existing structure.

The amount of time required to develop an on-line course will vary with the complexity and depth of materials that are created. Figure 8-9 below shows total course time estimates for courses created with

<table>
<thead>
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<th>Figure 8-9</th>
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<tbody>
<tr>
<td>Course Development</td>
</tr>
</tbody>
</table>

| Minimal Web content: syllabus, assignments, conference, homework problems, links, guestbook | Total: 100 hours |
| Add: PowerPoint slides 4 hours/week | Total: 160 hours |
| Written materials to supplement texts: 4 hours/week | Total: 220 hours |
| Add audio to slides: 5 hours/week | Total: 310 hours |

11 For an analysis given these additional variables, the efficiency studies conducted at the University of Illinois are quite instructive.
increasing amounts of material complexity for the most popular means of generating Web materials. These times are estimated for a faculty member who is expert both in domain knowledge and course creation.

The addition of audio synchronized with slides is a time consuming operation and may not be worth the effort. However, there are various tools now on the market that can reduce this time significantly.

Figure 8-10 below shows the relative cost and relative benefit of using various other multimedia materials. We peg traditional Web development at 1 and provide an estimate of cost, benefit and complexity on a linear scale. All things being equal, in this evaluation it is best to create materials that have the lowest cost with the highest benefit. We show that currently the most “bang for the buck” is secured from developing Web pages.

The conclusion from the above analysis is that on-line Web materials can be quickly and easily created; however, adding more complex media requires a significant additional investment.

Revenue Analysis

Figure 8-11 contains an analysis about how revenues might change in a ALN-enabled learning environment. These estimates are crude and are based only on the experiences that we have had with offering on-campus ALN courses and on-line workshops to off campus students. Current income is pegged at 1.0 for the on-campus course offering. We believe that about 50 percent more students (e.g., 20 in a 40-person class) can be added without much additional cost (perhaps by including some professor and additional teaching assistant time, estimated here at 20 percent of a traditional class course). Off campus students, however, pose more significant revenue accrual opportunities. Eliminating the traditional classroom can increase net income by 60 percent or more over the traditional model. As a caveat, however, these analyses don’t include the maintenance of the infrastructure needed. A more detailed analysis would show how partial or full utilization of a shared delivery infrastructure would affect the rev-

<table>
<thead>
<tr>
<th>Figure 8-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost/Benefit Analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Relative Cost</th>
<th>Relative Benefit</th>
<th>Complexity</th>
<th>Notes, exam-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web development</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>development is pegged at 1</td>
</tr>
<tr>
<td>“Standard” Web (text, images, conferencing)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Slides PowerPoint</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Using</td>
</tr>
<tr>
<td>Synchronous Broadcast</td>
<td>1.5</td>
<td>.75</td>
<td>5</td>
<td>RealAudio</td>
</tr>
<tr>
<td>Slides plus audio</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
<td>PowerPoint plus RealAudio, Netshow</td>
</tr>
<tr>
<td>Video plus audio</td>
<td>2.5</td>
<td>2</td>
<td>3</td>
<td>Real Media, Netshow</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Figure 8-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Income</th>
<th>Additional Cost</th>
<th>Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Campus Traditional</td>
<td>1.0</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Traditional + 50% off campus</td>
<td>1.5</td>
<td>.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Off campus</td>
<td>2</td>
<td>.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>
enue projections.

While the above projections are crude, it is probably fair to say that efficiencies can be achieved with ALN. More data will enable better estimates.

Development Models: Different Models for Different Types of Institutions

Below, several different strategies using Net-learning for different types of institutions are outlined. For the purposes of this essay, I use the following hierarchical organization of institutions:

Public
- Comprehensive: off campus
- Comprehensive: on-campus
- Community colleges

Private
- Research
- Small liberal arts institutions

Strategies for Comprehensive Public Institutions: Off Campus

- Reduce expensive video broadcast operations; consider replacing video studios. Video broadcasting of lectures has been widely used to reach distant populations at public institutions throughout higher education. This method can now be replaced with either asynchronous learning methods or with synchronous media, both on the Web. Both techniques will cost much less than current video broadcasting methods.

- Extend sphere of influence. Net-learning can provide a new technique for reaching high schools, industry, and alumni. For institutions with an outreach mission, on-line learning methods make sense, because they reach more people at a lower cost than traditional means.

- Provide robust facilities and staff to carry on outreach mission. Large public institutions with distributed campuses are in an excellent position to provide significant support for on-line activities to faculty. With the Net, providing distributed facilities to a distributed population is possible and desirable.

- Use Net-learning to reach your entire region or outside your region. Net-learning will help reach learners throughout the traditional area of public state institutions and also reach learners outside those boundaries equally well. One must consider strategies for collaboration (competition and collaboration) between and among comprehensive public institutions.

Strategies for Comprehensive Public Institutions: On-Campus

- Objective: Provide a wide range of ALN-based activities that enhance learning, reduce costs, and provide outreach.

- Consider Asynchronous Learning Networks as a means for managing large class sizes. ALN provides an attractive means for managing large class sizes; the paradigm scales very well.

- Use conferencing to engage large classes. Networked discussions scale very well: “the
more the merrier."

• Eliminate large lecture hall presentations. If Net-learning is used on-campus, the routine large lecture hall presentation no longer makes sense. Presentations that simply present information can be videoed and put on the Web. Presentations to large groups probably should be reserved for speakers who can provide excellent presentations.

• Reduce the crunch on lab facilities via simulation. Simulation of laboratory exercises can easily reduce the utilization of physical laboratories.

• Devote human resources to smaller groups. Creating ALN courses will free faculty time that can be spent in direct interaction with smaller groups of learners.

• Automate testing and grading. Putting trial tests on-line, Web-accessible grades, and automated grading of tests can reduce the amount of tedious grading for faculty. Methods for assisting in grading and management of testing are still in their infancy.

Strategies for Public Community Colleges

• Reach a more geographically dispersed student body through ALN. Reach more students, providing learning experiences for those who must learn at night and on weekends.

• Bring education to the workplace. Provide the knowledge people need to learn where they need to learn it.

• Create an integrated curriculum. A focused, integrated, customer-driven curriculum may be easier to create in community colleges, but not in most other educational environments.

• Train your entire faculty. Have your faculty work together (example: Tulsa Community College).

• Form a competitive edge strategy. Decide what you can do well and try to corner the market.

• Problem: competition—most other community colleges will have these same ideas.

• Observation: community colleges are embracing ALN more than most other institutions of higher education.

Strategies for Private Research Universities

Use ALN to improve the learning experience of students and reduce the cost of instruction. Critics believe that the learning experience is already optimized, that technology cannot improve learning and that costs cannot be decreased. Even institutions that focus on small classes and intense faculty-student dialogs will likely find some use for on-line learning methodologies. For example, some possible strategies include:

• Facilitating on-campus learning. Computer supported cooperative work can enhance learning for on-campus students. For example, computer conferencing will permit student learner teams to communicate and organize information more conveniently than traditional methods.

• Providing excellent on-line knowledge access
facilities (e.g., residential networking). This will permit students to access research information when and where they need it (e.g., when they are writing a research paper late at night in their dorm rooms).

- Engaging alumni in life-long-learning and in interaction with students via the Internet.

- Securing student engagement with industries in research activities pursued by faculty. Student teams can work with non-collocated industries for mutual benefit.

Problems:

- Need to provide more non-faculty support for Net-learning since an often research-driven faculty has little time for new educational activities, or motivate faculty to routinely use Net-learning in their teaching.

- It is far too difficult to engage faculty in research institutions since there appears to be little perceived reason among the faculty to change from the current lecture-driven methodology.

- Observation: Research institutions produce large amounts of intellectual capital. Those research institutions that can more effectively deploy their intellectual capital to learners both on and off campus will be the winners.

Strategies for Small Private Liberal Arts Institutions

- Objective: Improve residential experience for students.

- Focus on creating on-line community. This can be accomplished via computer conferencing and through shared materials on-line, portfolios, and the like.

- Improve relationships with alumni. The alumni represent a potentially rich source for improving student contact with the outside world, and, at the same time, binding alumni closer to the institution.

Model for Organizational Change based on ALN

Faculty Change

Many administrations have been inviting speakers to campus to help their faculties understand the “art-of-the-possible” for Net-learning. ALN has become a hot topic over the past few years, and faculty are certainly becoming aware of the possibilities of Net-learning—although they often appear less than receptive to the ideas. It appears that ALN activities have been occurring in most disciplines, with perhaps the most interest but the least expertise in education. Faculty most often want to know why they should use Net-learning and what they will get out of it. Quite obviously, the easiest way to teach a course is to lecture from notes that have been prepared in the years before (the “yellowed note” syndrome). Faculty are not easily persuaded that putting the course on-line would enable learning outside the classroom, allow them to easily and quickly update their course (when the initial pages are complete), and provide improved learning experiences for their students. At some institutions, the faculty have been eager to create on-line courses; at other
institutions, they resist steadfastly. From the anecdotal information secured through running the ALN Web, it appears that faculty at smaller and more vulnerable institutions (e.g., community colleges) are much more interested in ALN than the faculty at the research institutions. The proper course of action with faculty appears to be to continue to provide presentations to the faculty about what is possible and why students will learn better with ALN/Net-learning.

Conferencing

Computer conferencing is the best first step in getting into the ALN world. Bringing people together is probably the most important feature of ALN. Conferencing can be implemented on a small scale with any one of several conferencing software programs. Features that should be included are the ability to have threaded discussions, e-mail notification, multimedia, registration, and private and public conferences. The most important feature is the first, in which lines of discussion can be followed. We have run undergraduate courses with simple conferencing systems and with systems that have more features. The students will use the feature-laden systems while they hesitate to use the less robust systems. Some discussion about alternatives among conferencing system can be found at the following URL:

http://jrbtn.vuse.vanderbilt.edu/conferencing/

The cost of hardware and software to implement conferencing is not particularly high. But the costs of maintaining user accounts, training people to use conferencing, and keeping the server and software running can add up. Some systems are remarkably more difficult and costly than others. It would be best to secure advice prior to purchase.

Organization

How do you make an organization work with ALN? The faculty-driven imperative does not appear to work. The top-down leader-driven imperative does seem to work.

A Concrete Example

During the winter of 1998, the ALN Web group worked with the Vanderbilt University School of Nursing to begin educating the faculty of that school about how to create courses on-line. The choices at the outset were (1) create a support staff that would create courses for the faculty, or (2) teach the faculty how to accomplish their goals themselves. We chose the latter route. We began with a series of weekly lectures about the state-of-the-art of ALN, computer conferencing methods, HTML, using Front Page, and evaluation and assessment methods. Following the initial lectures, some 22 nursing faculty (along with 230 other people) took our on-line workshop on building Web-based courses. In addition, three of the nursing faculty who had taken the workshop helped us facilitate the on-line course.

Strong support from the Dean of the School of Nursing was the major factor in enabling an entire faculty to learn about ALN. In our case, she actively pushed the faculty to participate. Once they were engaged, they were enthusiastic about creating on-line courses.
We have had the same experience with two other institutions: Tulsa Community College and the Mayo Clinic. In both cases, the administration strongly encouraged and supported faculty. We have also seen cases in which the administration is not supportive; in these cases, nothing happens.

Strategies for Implementing ALN

I articulate several strategies for success in ALN that have worked for us. Some of these strategies are controversial. Nonetheless, we have empirical evidence that these strategies work. You will certainly hear other viewpoints.

Teach your faculty how to build on-line courses; don’t hire students to create courses for the faculty! The most common mistake in building on-line courses is to think that one can hire students to assist faculty in creating on-line courses. While you can do this, it has been proven time and time again to be a less-than-perfect strategy. One can get rapid initial success, but long-term gains are lost as soon as students leave or become unavailable. By not upgrading faculty skills, one loses time, money and agility. Many people will tell you that using students is the best option. I don't believe that it is.

Select a good authoring tool for faculty to use. There are many good authoring tools with which one can generate on-line courses. These tools range from tools that guide a faculty member through every step but are inflexible, to tools that are full-featured but require a fairly steep learning curve. We prefer the latter due to the known rapid dissatisfaction that people have when boxed in with a tool that does not permit them to do what they would like to do. Many faculty members are creative; hence, tools that provide flexibility likely will be better for the long term. A strong argument can be made, however, for providing both modalities.

Share.

A useful strategy is to give away what you make and share with others—at least until your faculty are good enough to make something better than anyone else. Sharing with other institutions can include exchanging techniques, making links between courses, and building cohesive sets of course materials.

People Strategies.

Find the best people, and remember that the best people are not always who you think they are. We find that faculty that have an abiding interest in education can be attracted to ALN very easily because of the student-centered nature of ALN. In contrast, the great orator will never adopt ALN, since it is completely alien to this type of education. In numerous cases, we have seen faculty who are near retirement commit to ALN programs and produce superb on-line materials that can be used long after they are gone. Consider this possibility!

Select the Right Areas.

Select courses that are likely to be successful on-line. For example, don’t pick a small graduate course that includes a lot of face-to-face interaction. ALN cannot replace the direct person-to-person interaction that is possible in a very small group. Instead, pick large classes with 40 or more students—ALN works much better with more people participating.

Build around opinion leaders and popular
courses in which a success will be noticed by the rest of the faculty.

Tactical Considerations: Alternatives

Concepts

• Improving Awareness. Many campuses are active in raising the level of understanding about the “art-of-the-possible” using Network-based learning. There are a number of ALN lecturers that provide lectures to faculties about what can be done with Net-learning. A series of symposia is an appropriate way to get started.

• Understanding the Collabotition. Collabotition = collaboration plus competition. We think there will be increased competition among colleges and universities as the barriers of space and time are erased (in part) from the higher education equation. At the same time, one must consider collaboration with others that have complementary skills. Many institutions will try to tap the same markets; those with a higher prestige/cost ratio will likely be able to secure students more easily. The ability to collaborate will reduce cost and competition.

• Understanding which aspects of ALN are useful for the target institution. As discussed above in the strategies for different types of institutions, it is important to understand what will work best for your institution.

Methods

• Provide Infrastructure. First, network infrastructure should be present on-campus for both students and faculty. In cases where fac-
ulty have to work at shared workstations or students use only laboratory computers, we have seen much less enthusiasm than at institutions in which every person has a computer and network connection. Once the infrastructure is installed, one can see dramatic increases in utilization. There is no way to prove that the infrastructure will be useful before it is used.

- Implement conferencing. By far, the easiest way to engage faculty and students is to provide computer conferencing for the campus. Perhaps the simplest technique is to provide a server for multiple courses, perhaps allocating servers by unit (e.g., a school or college).

- Help faculty learn how to do ALN. Provide a way to train faculty on ALN. Do not provide student help to do the work for the faculty.

- Build out from successes. Select pilot projects that are likely to demonstrate success. Do one or more per year. If the faculty is enthusiastic, many projects can be done in parallel.

Management Schemes

- Provide local management of servers. Distributed management of shared file systems seems to work. One clear mistake is purchasing servers to be run by computer personnel who are not engaged in the teaching and learning process. They have little or no incentive to keep servers up and running.

In our experience, a distributed set of servers managed by the people who are offering ALN courses works far better than a centrally managed set of servers. This scheme could translate to having a server or servers in each unit of an institution. These servers could and should be centrally managed but provide the capability of restarting, file transfer and the like to the people facilitating and creating ALN courseware.

Conclusion

Will ALN be ubiquitous in the University of the Future? As with all innovations, ALN will likely become part and parcel of the everyday life of the higher education institution, not replacing the current methodologies but simply changing them. In some universities, ALN will become a major force—especially in those with a mission of outreach. In others, ALN will simply supplement on-campus experiences. We suspect that ALN will continue to merge into a composite of conferencing, computer-based training, and on-line reading materials. There will be advances in providing learning experiences that are tailored by individual needs. The person-to-person aspect of ALN will dominate since cohorts of learners following the same set of ideas is a very compelling scenario.

Lifelong learning will continue to grow in importance. Colleges and universities can reach a broad new market of lifelong learners who need continual professional education. Other segments of the population will be interested in learning
about the liberal arts as an avocation. The retired population represents a potential market for colleges and universities since education can now be delivered into the home. Probably the largest segment of the lifelong learning population is industrial workers who continually need new skills to advance or even to remain in the workforce.

Competition for student tuition dollars will become intense as institutions figure out how to scale-up. The offering of an excellent introductory course in a popular topic to as many people as possible will become a siren call to institutions wishing to “corner the market” in a particular subject. Of course, competition will lead to far better courses than have been known before. However, the casualty will be institutions that produce poor courses.

International education will change. ALN will provide a way to educate international students without their coming to the United States. Currently, massive numbers of foreign students are enrolled in U.S. institutions. We predict these numbers will decrease and be supplanted with ALN teaching a much larger number at a lower cost at a distance. Both international institutions and U.S. institutions are already gearing up for these activities.

In summary, we think that ALN can reduce costs, free more faculty time, and enable us to do more with less. As with any innovation, acceptance will be slow, but the impact on higher education is likely to be powerful.

Prospects for the Longer Term

There seems little doubt that we are currently in a period of very significant change. Technology has finally matured to the point where a clear difference in education can be made by implementing ALNs. During the upcoming decade we expect to see innovations that include: (1) the building of coalitions of institutions to create and utilize on-line materials, (2) the rapid falling of institutional barriers and formation of multiversities, (3) modularization and sharing of courseware, (4) courseware that adapts to the needs and learning styles of the learner, as well as many things that cannot yet be envisioned. It is an exciting time to work with asynchronous learning networks!

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Endnotes

1 The ALN Web Group is the group at Vanderbilt University that operates the ALN Web (http://www.aln.org): Martine Dawant, J. Olin Campbell, Arthur Brodersen, Jason Mann, Joy Holly, John Crocetti, Eric McMaster, Choon Thaiputhump, and Nabil Alrajeh.


11 ibid.

12 For example, Dr. Burks Oakley of the University of Illinois is in constant demand. J. R. Bourne from