8

Internet-Based Instruction: Some Fundamentals

Advancing technology has had a profound impact on curriculum and the delivery of education in its ability to move instruction and learning out of and far beyond the classroom.[1] This new method, distance learning, is a planned teaching/learning experience in which instructors and students are physically separated by for all or part of a course. See distancelearning.wisconsin.edu/about_distance_learning.htm.

This anytime/anywhere instruction is increasingly popular with learners who hold full-time jobs and/or have family responsibilities, and they are fuelling greater demand for this form of learning. These learners find new opportunities for higher education that meet their time and accessibility requirements. Internet-based course delivery is now the standard method of instruction in distance learning, requiring instructors to take into account special factors regarding design and delivery.

This chapter includes basic information on providing education via the internet. It will focus on the fundamentals of course design and delivery from the perspective of the student and instructor, including such factors as course content, computer software, and the internet itself. All of the material contained in earlier chapters applies to online instruction;

however, there are additional aspects to consider, particularly regarding communication.

Learning Management Systems

So you will be teaching on the internet. Before you begin, some discussion of the basics is in order. Specialized software has been developed to facilitate design and delivery of online instruction. Usually called a "learning management system" or "course management system", these programs incorporate features to assist in general administration (grade book, student tracking, etc.) and manage course content. Popular examples include *WebCT, Blackboard, Desire2Learn*, *Moodle*, and *ANGEL*.

ANGEL

ANGEL is an internet-based training tool that facilitates the creation of sophisticated World Wide Web-based educational training environments. An ANGEL course is easy to use because of a simple graphical user interface that allows the web-based course to be readily accessible by both the students and the instructor. Students can click on links that allow them to communicate quickly with their classmates and the course instructor, as well as work on mastering course concepts. The ANGEL system is also designed to allow the instructor to customize the course using the ANGEL administration tools.

Some of the tools that ANGEL provides include:
- A course home page that presents summary information about the course at a glance
- Easily configured reports for the instructor
- Automated course assessment tools
- Easy access for students to course-related email, podcasting, wikis, and blogs.

The course conferencing system allows communication among all course participants, including the course instructor
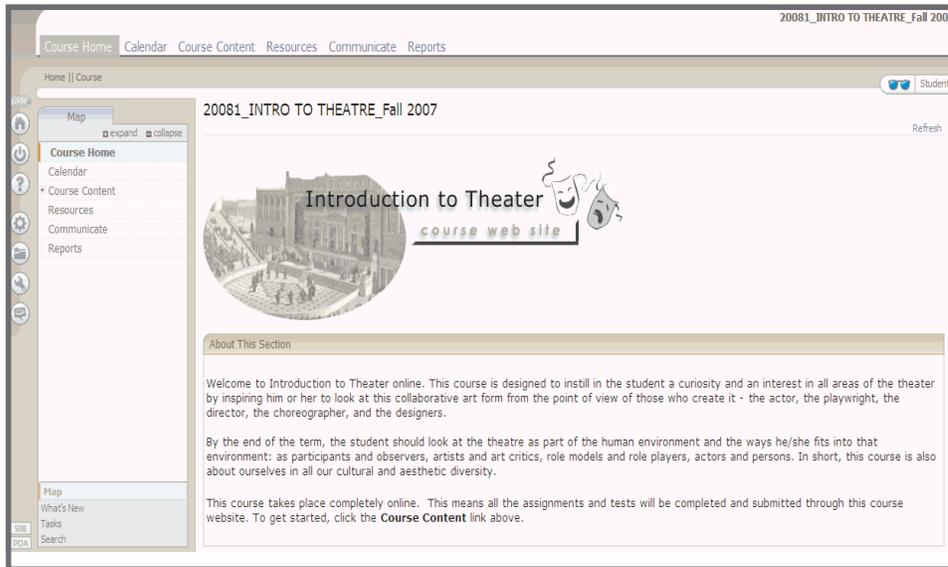
Figure 8-1. An ANGEL Introduction Screen. Reprinted with the permission of ANGEL Learning, Inc.

and students. The conferencing system can be searched for both new and previously posted messages. Furthermore, users can post messages that contain web URLs so that readers can visit relevant web sites.

This program also contains a real-time chat tool to support web-based communication among course participants. Each chat room contains the name of the chat session, the participants who submit comments, their names, and a list of course participants in each room. Figure 8-1 is an ANGEL Introduction Screen.

Learning management systems (LMS) provide various means to manage your course and communicate with your learners, such as:

- chat rooms
- email
- grade book
- student tracking (attendance)

- file management
- links to outside resources, i.e. libraries, online tutoring, etc.

Usually, the firm or school for which you teach will have an instructional technologist on staff to assist you in course design, including the transfer of computer-based content into the LMS, and how to use the LMS itself.

When to Utilize Web-Based Instruction

When should a course be delivered via the internet? This is an important question. Internet delivery of instruction has grown tremendously over the past eight to ten years. As more learners, as well as more people generally, become familiar and comfortable with the internet and its capabilities, more learners want to partake of this kind of learning. Time constraints due to job and family contribute to its popularity, as does the desire to minimize travel to colleges and other schools. Control over one's calendar and environment are advantages. Today's learner has become more comfortable sitting in front of a computer than in a traditional classroom.

Internet-based courses can be asynchronous, that is, the student takes the course at a non-prescribed time with student/faculty communication taking place largely by email, or synchronous wherein learners and often faculty come together to meet online in real-time at an appointed day and hour. The choice depends on the needs of the specific learner populations. Tools and methods for designing internet-based learning are available for both modes of instruction.

As well, online instruction need not be for the entire course. Hybrid or blended courses—those in which some segments are taught traditionally and other parts online—are also growing in popularity.

Who Should Take a Distance Learning Course?

One of the most common statements made about distance learning is that it is not for everyone. So how is the learner to know if a online course and environment is a good match for his/her learning needs and style? Any good distance learning program should provide a tool to determine a student's readiness for online learning. A questionnaire designed to aid the learner and instructor in making these judgments can be found on the Florida Distance Learning Consortium website (www.distancelearn.org/readydl.cfm). Factors to consider include:

Immediacy: Is the learner exploring internet-based instruction because he or she needs to master specific information and has no time to take a traditional school course? Or can the learner take the course in a more traditional classroom at another time?

- Social needs: Does the learner need the support of other learners or can he/she learn in isolation?
- Personal discipline: Does the learner need the continual prompting of others to get things done? Is this person a procrastinator?
- Locus of control: Does the learner take on responsibility readily?
- Time constraints: Considering job and family responsibilities, how much time does the learner have for studies?
- Instructor support: Can the learner work relatively independently?
- Academic history: Is this learner a reasonably successful student, based on past learning history?

Figure 8-2 depicts this questionnaire.

distancelearn.org
Florida Distance Learning Consortium

Home   Course Search   Degree Options   Personal Assistant | Getting Started   FAQs | Contact   Site Map   Login   Search

am i ready for distance learning?

Are online courses for me? Take this quick questionnaire to find out.
Return to the main menu.

1. **My need to take this course now is:**
    - a. High - I need it immediately for degree, job, or other important reason
    - b. Moderate - I could take it on campus later or substitute another course
    - c. Low - It's a personal interest that could be postponed

2. **Feeling that I am part of a class is:**
    - a. Not particularly necessary for me
    - b. Somewhat important to me
    - c. Very important to me

3. **I would characterize myself as someone who:**
    - a. Often gets things done ahead of time
    - b. Needs reminding to get things done on time
    - c. Puts things off until the last minute

4. **Classroom discussion is:**
    - a. Is not necessary for me to understand what I have read
    - b. Sometimes helpful to me
    - c. Almost always helpful to me

5. **When an instructor hands out directions for an assignment, I prefer:**
    - a. Figuring out the instructions myself
    - b. Trying to follow the instructions on my own, then asking for help if I need it
    - c. Having the instructions explained to me

6. **I need instructor comments on my assignments:**
    - a. Within a few days, so I can review what I did
    - b. Within a few hours, or I forget what I did
    - c. Right away, or I get frustrated

7. **Considering my job and personal schedule, the amount of time I have to work on an online class is:**
    - a. More than enough for a campus class or a Distance Learning class
    - b. The same as for a class on campus
    - c. Less than for a class on campus

8. **When I am asked to use computers, VCRs, voice mail, or other technologies that are new to me:**
    - a. I look forward to learning new skills
    - b. I feel apprehensive, but try anyway
    - c. I put it off or try to avoid it

9. **As a reader, I would classify myself as:**
    - a. Good - I usually understand the text and other written materials without help
    - b. Average - I sometimes need help to understand the text or other written materials
    - c. Needing help to understand the text or other written materials

10. **As a writer I would classify myself as:**
    - a. A strong writer - I am comfortable with writing and have strong organizational, grammar,
      punctuation and spelling skills
    - b. An average writer - I am moderately comfortable with writing and occasionally need help
      with organization, grammar, punctuation and spelling
    - c. Needing help with my writing, especially with organization, grammar, punctuation, and spelling

11. **I have dropped a college class after the term has started:**
    - a. Never
    - b. Once
    - c. More than once

What's my score?   Reset

Figure 8-2. Reprinted with the permission of Blackboard, Inc. and the
Florida Distance Learning Consortium.

Distance Learning Facts

1. Distance Learning students sometimes can end up neglecting their course work because of personal or professional circumstances, unless they have compelling reasons for taking the course.
2. Some students prefer the independence of Distance Learning; others find it uncomfortable.
3. Distance Learning gives students greater freedom of scheduling, but it can require more self-discipline than on-campus classes.
4. Some people learn best by interacting with other students and instructors, but Distance Learning may not provide much opportunity for this interaction.
5. Distance Learning requires you to work from written directions without face-to-face instructions.
6. It may take as long as two or three days to get comments back by e-mail from your instructor (such as over a weekend or holiday).
7. Distance Learning requires at least as much time as on-campus courses and in many instances up to three times as much.
8. Distance Learning uses computers and other technology for teaching and communication.
9. Printed and/or online materials are the primary source of directions and information in Distance Learning.
10. Distance Learning classes often require written assignments and projects.
11. Students who have dropped a college class often don't have the self-discipline or motivation to work independently and complete an online course.

Scoring

Add 3 points for each "a" that you selected, 2 for each "b", and 1 for each "c". If you scored:

- 28 and over: You may be a self-motivated independent learner and online courses are a real possibility for you.

- 15 - 27: Online courses may work for you, but you may need to make a few adjustments in your schedule and study habits in order to succeed. Online courses take at least as much time and effort and in some cases more than traditional face-to-face classes.

- 14 or less: Online courses may not be currently the best alternative for you. Online courses take at least as much time and effort and in some cases more than traditional face-to-face classes.

Based on IS ELI FOR ME?
© 1989 – 2003, Extended Learning Institute, Northern Virginia Community College. Adapted for this use with permission.

Return to the main menu.

Florida Distance Learning Consortium © Copyright 1997-2004

Figure 8-2, continued.

Technology Requirements & Prerequisite Learning Requirements

What are the technologies and prerequisites for participation in a distance learning course? Prior to registration, information on the exact hardware and software needed, connection speed (56kps or broadband), and any other specific materials required should be made available to students. Learners must be sure that their computers, whether available at home, school, or work, are able to meet these requirements and accommodate their needs. Learners should be familiar and comfortable with such basic tools as email, attachments, chat, and general browser maintenance. They should also be able to use the common non-internet based applications that may be part of a course, such as word processing and spreadsheets. Additionally, learners must be

told if prerequisite skills are required, such as completion of a previous course, and this completion must be verified.

Orienting the Learner to the Course

What kinds of information would you wish to have if you were the learner receiving the instruction? You would want to know how the course, or segments of the course to be online, will proceed. Is the course to proceed at the learner's pace? For example, will the learner finish one unit or chapter, take an exam or quiz, and then proceed to the next unit and exam in his or her own time? Or will there be an immediate prompt to go on to the next unit after feedback is provided on the previous unit?

Using a learning management system, the instructor can easily provide a "Start Here" or "Readme First" button/icon that leads the learner to preliminary information on the course. This is the essential information that will help each learner feel comfortable in the online learning environment. In fact, a good instructional design practice for internet-based courses is to provide an initial opportunity for the learner to tour the topics to be learned and mastered, and to learn how to operate within the program itself—how to advance in a unit, how to return to previously covered material, and how to correspond with the instructor and other learners using chat rooms and email.

You should provide your learners with fundamental course information such as:

- *Course Schedule*. The course may parallel a typical academic semester. Or, the course may have a self-paced format in which the learner works on the material at his or her own speed, probably with a fixed final date for completion. All essential dates, such as final exam, final project, etc., must be included.
- *Types of activities and assignments* must be clear. Effective online courses provide opportunities for learners to apply information to practical situations within their individual environments and locales. For,

example, a paralegal course might have a learner reviewing a court session in the learner's own town. I once helped design a program in veterinary technology in which learners did an externship within a vet's clinic in their own community. As well, your expectations of the learner's participation in online learning should be clear. Do you see interaction in discussion boards, chat-rooms, and group emails as essential? If so, let the learner know this.

• *Procedures for submitting work* to you, including assignments, projects, self-assessments, and email should be made clear.

• *Assessment methodology*. Many learning management systems have a built-in mechanism for testing. In this case, after the learner completes a fixed unit of instruction, and possibly an applied project, a unit quiz follows. The quiz is then electronically scored with immediate feedback provided or it is electronically transmitted to the instructor for scoring and later feedback. Whatever form of testing is used must be outlined at the beginning of the course. In a formal institutional environment, a proctored or supervised test may be warranted. Learners would be required to report to a central location or campus on an assigned date. Or they might report for proctored testing upon completion of each unit. In any event, these procedures must be made clear to all registering students.

• The biggest problem that learners report with online courses is that of *communication*. Therefore, communications protocols for learners to interface with each other and with you must be established from the beginning. Rules for communication—how learners should conduct themselves in discussion boards, chat rooms, emails, etc.—should be clear.

Figure 8-3 is one example of an internet protocol communications guideline for learners.

As is usual at the opening of a traditional course, an introduction to you, your qualifications, and your general

ONLINE ETIQUETTE = NETIQUETTE
Or
Good Manners While at the Keyboard

DO	DON'T
Use spell check and proofread before hitting the "send" key.	Write grammatically incorrect or incomplete sentences.
Keep the tone conversational but professional.	Use slang, cursing, or excessive abbreviations.
Use upper and lower case letters appropriately.	Use all uppercase letters or all lower case. Uppercase has the connotation of yelling and lowercase is just poor writing.
Make sure you are posting in the correct area of the class (when in doubt, check before sending).	Exchange private emails between two people in public forums like threaded discussion areas.
Put an appropriate title in the subject heading of anything you are sending.	Respond to a post with random or off-the-topic comments.
Use polite language.	Try to use sarcasm--it always sounds more rude than you intended.
Give everyone the benefit of the doubt--we are all learners.	Criticize or poke fun at anyone. Online is NOT private.
Make sure you read and understand your instructor's directions for posting. Each instructor is likely to have infividual requirements.	Assume that all post areas are available for posting. Some areas may be reserved for the instructor to use.

Figure 8-3.

background will be of interest to your learners. This is an opportunity to establish the bond with the learner that is often

lost in distance learning. At a minimum, the instructor should present his or her:

- Email address
- Telephone number (office and department)
- Office hours
- Other relevant information of importance

Also, provide an opportunity for the learners to introduce themselves. Using the chat room feature is a good way to do this. And you may gain some insight into how familiar and experienced your learners are with internet-based instruction.

Course Planning and Layout

Planning for instruction is essential to the learner's success in meeting the instructional objectives, as was discussed in Chapter 4. A learner-oriented course environment is necessary and this begins by placing yourself in the learner's place. Realize that internet-based learning can be difficult, as it takes place in isolation, away from face-to-face contact with an instructor and personal support. What would you want in this kind of course in order to be comfortable and have a chance for success?

To facilitate understanding on the part of the student, a learning management system can provide a layout or "course map," a single place where learners can obtain a full picture of the course. This map can include links to organizers, such as a starting point, email, discussion board, course schedule, assignments, quizzes, and even a photo gallery of pictures of students and the course instructor, a means of connecting with the class as a whole.

Internet-based courses should not be simply a collection of written materials electronically filed into a software platform. Rather, the course should be a framework for imparting information in as many different environments as possible. As an

electronic aid, the computer allows students to locate and understand information. It should be an embellishment to a classroom experience, rather than only a means of collecting written information.

First, assemble measurable instructional objectives. If you have been teaching the course in a traditional mode, you have your objectives already formulated. They must be measurable. There must be realistic means by which your learners can demonstrate mastery. These objectives must be understood by the learner. Please read Chapter 4, if necessary, to familiarize yourself with the fundamentals of instructional objectives.

The design of instruction for internet-based delivery must facilitate mastery of the specific instructional objectives. Recall from this Chapter that instructional objectives are comprised of four parts: audience, behavior, condition, and standard. Developing internet-based instructional objectives is no different from planning such objectives in any other form of instructional delivery. The key to selecting a process and activity in a well-designed internet-based course lies in the behavior and condition components.

The behavioral component of an instructional objective specifies what the learner must do, produce, or perform in order to demonstrate achievement of the instructional objective. As we design instruction in an internet-based course, we must keep what we wish the learner to master in mind. And this must be conveyed to the learner as part of the course orientation.

Refer again to Figure 4-4 on page . Note the learning capabilities—intellectual skills, cognitive strategies, verbal information, motor skills, and attitudes. Each has specific key verbs. Each has a different performance environment. For an intellectual skill or cognitive strategy, we might design a series of readings that the learner can access via hyperlinks on the computer to read and digest. Alternatively, for a motor skill, we would need to identify manipulative activities away from the computer for the learner to practice and master.

Sample Action Verbs

Capability	Key Verb	Other Possible Verbs	Learning Activity
Intellectual Skills • Discrimination • Concrete Concept • Defined Concept • Rule • High Order Rule	• Discriminate • Identify • Classify • Demonstrate • Generate	• Match, Classify, Combine, Organize • Name, Distinguish, List • Define, Discuss, Re-order, Correct, Out-line, Contrast, Compate, Appraise • Solve, Translate, Calculate, Evalu-ate, Estimate • Synthesize, Explain, Formulate, Create, Improve, Devise	May include esperiential learning activities such as attending a community-based event: theatre production, musical, civic event, etd. connected with the learning topic to observe and apply learning to compare, appraise, synthesize, explain happenings and/or suggest stratebies to improve outcomes.
Cognitive Strategy	• Adpt	• Select, Analyze, Modify, Reorder, Rearrange, Predict, Propose, Plan, Pro-ject	Streaming video; Internet-based Text; Hyperlinks to Internet sites.
Verbal Information	• State	• List, Recall, Record	Internet-based Text; Hyperlinks to Internet sites; Discussion Groups via Chartroom
Motor Skill	• Execute	• Manipulate, Tie, Hold, Assemble, Raise, Draw, Knock-down, Oper-ate, Search, Re-place, Drive, Twist	Assignments to field-based activities under mentor/proctor supervision.
Attitude	Choose	• Compare, Deside, Act.	Video conference; Internet-based Text; Chat room.

Instructional objectives written to impart attitudinal behaviors can be taught on-line through videoconferencing and chat-room participation. These interactive features enable planned instruction and subsequent feedback to be carried out. Figure 8-4 is one means to incorporate this learning strategy into an online course.

Figure 8-4. Reprinted with the permission of ANGEL Learning, Inc.

Verbal information. An instructional objective to impart verbal information can be accomplished through posting information on the internet, along with exercises completed by the learner either independently or with others in discussion groups. Hyperlinks placed in the text can lead the learner to other sites (e.g., www.lib.utexas.edu/refsites/) that can enhance the learning activity and provide additional information or clarification of the ideas.

1. At the end of this week's lesson, you should be able to identify and/or define the following:
   a. Selectivity
   b. Medium
   c. Characters
   d. Deus ex machina
   e. Ceremony
   f. Ritual

Cognitive Strategies. Cognitive strategies (instructional objectives that contain the action verbs select, analyze, modify, reorder, rearrange, predict, propose, plan) require

more elaborate development so as to engage the learner in problem solving and critical skills application. For example, a situation might be presented through a streaming video or pre-planned and developed scenario, after which the learner would be asked to analyze the events and propose solutions. The Introduction to Theatre course mentioned above has a unit in which the stated objectives are:

1. Understand the similarities and differences between performing on a stage in front of an audience and acting before a camera in film or television.

2. Know the three challenges of acting:
   a. To acquire vocal and physical skills that stage performances demand.
   b. To make the characters believable or realistic.
   c. To combine those skills with credibility.

Here the learners are instructed to view selected plays and participate in a discussion board activity as follows:

Discussion Topic for Unit 2:

For this discussion, we will think about and discuss the following:
- If children use imitation and role playing as a way of learning, what effect does what they see in popular entertainment have on their development?
- At what point, if any, do these effects diminish?
- In a society such as ours, which is flooded with the images from popular entertainment, how can children be shielded from negative ideas? Should they be shielded?
- After posting your discussion, please reply to the postings from at least two other students.

For activities, the learners are directed to:

Suggested Plays
- Edward Albee's Zoo
- Leroi Jones's Dutchman
- Eugene O'Neill's Long Day's Journey into Night
- Sam Shepard's Fool for Love

These plays have simple, direct confrontations to point out the dynamic, ever-changing nature of theatre.

Intellectual Skills. Instructional objectives aimed at developing intellectual skills (discrimination, concrete concept, defined concept, rule and higher order rule) are identified by the use of such action verbs as "combine," "organize," "define," "discuss," "reorder," "solve," "translate," "calculate," "evaluate," "synthesize," "explain," "formulate," "create," "improve," and "devise." A multi-sensory approach here is essential. Learners must be cognitively engaged through application of learning and problem solving with immediate feedback. Learners should be presented with a multiple variable scenario via text-based video, hyperlink to alternative site, or other combinations of possibilities.

Motor Skills. To design instructional objectives for such motor skills as the ability to manipulate, replace, and operate is difficult in internet-based instruction. It will be necessary to enable the learner to practice the necessary skills in a controlled and supervised environment, with a preceptor/mentor in charge. For example, in one internet-based course for phlebotomy technicians, learners are sent to a participating medical laboratory that has agreed to provide the required laboratory experiences under the supervision of a licensed phlebotomist technician. The learners are first shown how to locate a vein in a patient's arm and insert the syringe needle and then supervised conducting the procedure a predetermined number of times.

Attitude. To achieve your attitudinal instructional objectives is equally challenging in internet-based instruction. Multimedia is a useful tool. For example, in a course for theatre students, a

level of appreciation might be achieved by presenting a series of vignettes incorporating parts of productions that will focus the learners' attention on specific techniques, ideas, and staging. Or if the topic under consideration is theatrical criticism, the assignment for the learner might be to attend a live theatre performance in your area. The post-assignment evaluation could include an oral or written report from the point of view of a critic.

Copyright Considerations

Questions have arisen over the ownership of the product or course developed to convey distance instruction. Much depends on your employment contract. For example, have you devised the course as part of your regular work duties? If so, your employer is usually considered to own the material, according to the US Copyright Act of 1976. However, some institutions and state courts have interpreted this law in such a way as to result in different arrangements. Therefore, a discussion with your institution and/or employer and a written agreement prior to developing a distance learning course with its associated materials is a good idea. For further discussion of these issues, see Primo, et al., (2001) and Lang (1998).

Accommodating Special Needs Learners

As distance learning grows, so have concerns about the accessibility for people with disabilities. As a result, policy guidelines have been developed to ensure that technologies are adapted for their use. For example the "Web Accessibility Initiative" includes guidelines for web content, authoring tools, user agent, and XML accessibility. (www.w3.org/WAI/) Instructors must be familiar with these issues and discuss them with their course instructional designers to ensure learner accessibility.

Other Technologies

- Streaming video: streaming video is a method of delivering video over the Internet in delay-free real-time. An example of one software package that can be used to integrate visual information with textual and verbal information to produce vignettes is Camtasia Studio Screen Software. (www.techsmith.com/camtasia)
- Videoconferencing: Two-way or interactive video/audio discussion can occur over the Internet via a personal computer. This technology often uses proprietary software.
- Embedded graphics are a useful tool and include applications programs such as PowerPoint.

Summary

This chapter has discussed the design, development, and delivery of distance learning via the Internet. As this method of learning expands, all instructors must understand and become familiar with the appropriate techniques presented here.

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