

Looking Back to Instructional Strategy Basics, Charging Forward, Methods for Transitioning from the Classroom to the Online Environment

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Abstract

Growth of online learning both in terms of the number of institutions offering online courses and in the number of students enrolling in online courses continues to rise at an accelerated pace. Current course management tools such as Blackboard and WebCT and an array of screen capture and courseware authoring tools have been adopted in order to create and distribute learning content in this new online environment; however, many faculty are reluctant to undertake online learning due to concerns relating to the time and effort required for online learning, and a lack of understanding of how to transition their “proven” classroom techniques to the online environment. This article will address ways that many effective and commonly used classroom learning activities can be transitioned to the online environment by putting pedagogy before technology.

Introduction

According to the Sloan Consortium publication “*Making the Grade: Online Education in the United States, 2006*” There has been no leveling of the growth rate of online enrollments; institutions of higher education report record online enrollment growth on both a numeric and a percentage basis. Nearly 3.2 million students were taking at least one online course during the fall 2005 term, a substantial increase over the 2.3 million reported the previous year.”

Linda Harasim, in the publication “*Learning Networks: A Field Guide to Teaching and Learning Online*” (Harasim, 1995), said “all education – face to face, distance mode, online – requires understanding the nature of the medium in order to conceptualize and design it as an educational environment”. Effective pedagogy (teaching and learning) requires the awareness of the limitations and opportunities of any mode of delivery. Are we letting the technology drive the educa-

tional experience and overlooking that sound pedagogy must be present regardless of the delivery method?

Distance education has a long history, starting in the 1800's (Moore and Kearsley, 1996), using the postal system and printed materials, were they pedagogically sound? Later was the advent of recorded audio "lectures", which could supplement the written material. Next were audio and visual presentations that could be recorded and sent or otherwise made available to students, assignments were completed and returned via postal mail. We now have the Internet, e-mail, two-way video conferencing, blogs, course management programs, chat rooms, and high speed wireless connections in coffee shops.

Distance education can be defined as "planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements" (Moore and Kearsley 1996).

Distance learning has some inherent differences compared with face to face instruction and as mentioned earlier, we need to pay attention to the nature of the medium. It is usually communicated by computer via the Internet; communication can be synchronous, students are all on-line at the same time, like a chat room or asynchronous when communication can take place from anywhere, at any time. The nature of the learner is also different in distance learning, students participate differently on-line than they do in a classroom. The medium itself changes the nature of the learning environment. The instructor has less control of the class becoming more of a facilitator or moderator (Ascough 2002).

Pedagogical Foundations

According to research by Glasser we remember: 10% of what we read; 20% of what we hear; 30% of what we see; 50% of what we see and hear; 70% of what we discuss with others; 80% of what we experience personally; and 95% of what we teach to others.

Regardless if it's face to face or on-line, effective instruction begins with clear objectives/statements of behavior for students. What are the students going to be able to demonstrate as a result of the instruction? The first step of instructional design is to write the performance objectives, were more commonly known as the behavioral objective. The behavioral objective has three components; the first component describes the skill or behavior that the student will learn. The second describes the conditions that will prevail when the student completes the task or lesson; such items as; will learners be allowed to use a computer? or will they be given a paragraph to analyze? The third component describes the criteria that will be used to evaluate the learner's performance. The criteria are often stated in terms of the limits or ranges of acceptable answers. The criteria answer such questions as, "Does an answer have to be exactly correct or is 90% acceptable?"

After the conditions, behavior, and criteria are written as an objective, the objective helps guide the instructor determining the best format for your assessment instrument. Once the assessment is developed, it is time to begin the development of the instructional strategy. How will the instruction be presented to the student? What concepts will be used? What delivery methods will be used? Some examples of common delivery systems include the traditional model; lectures to

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students in a classroom, also correspondence courses, large group lectures, course delivery by broadcast video tape, two-way interactive video conferencing, computer based instruction, web based instruction, self paced instruction, or combinations of any of the above.

What are the basic steps involved in instructional development? The first step is to sequence and cluster the content of the instruction, assigning various objectives to specific lessons. Then select the best instructional strategy for each lesson. The basic learning components are the same regardless whether you are designing instruction for cognitive skills, for verbal information, for a motor skill, or for an attitude, for classroom instruction or on-line instruction.

The last step is the actual design and production of the instructional materials. These materials should include a variety of instructional activities: materials to present information to students; participation materials for student activities and evaluation/assessment materials. Once the original materials are developed they will most likely be revised on a regular basis in order to be most effective.

Most instructional design and materials development are based on Blooms Taxonomy of Educational Objectives. Blooms taxonomy for the cognitive domain starts with the lowest level of learning, that being *Knowledge*; the ability to recall information; terminology, specific facts, vocabulary, etc.

The next level is *Comprehension* which is understanding the meaning of the information and materials. Students are able to translate, describe, discuss, give examples, summarize, etc.

Application is when students use previously learned material in new situations to solve problems; the students develop, discover, establish, implement, solve, utilize, etc.

With *Synthesis*, students create something that did not exist before, creatively apply prior knowledge and skills to produce new ideas; students adapt, anticipate, compare, formulate, generate, negotiate, modify, revise, etc.

The highest level in the cognitive domain is *Evaluation*; when students judge values against a given standard; students compare and contrast, conclude, criticize, critique, judge, etc.

Examples of Common Classroom Activities

The problem this paper is attempting to address is “How can classroom instructors take their best practices, most intriguing classroom activities, and when teaching on-line use technologies to best replicate those activities for students?” How can technology be used to engage students as well as they are engaged in a face-to-face environment? We must remember that we can use technology to enhance and support sound pedagogy, not let the technology drive our curriculum development or instructional design! As part of this study, the authors, who have a computer technology background and an educational psychology background, felt it would be important to ask instructors from various disciplines what their in-class instructional strategies were. What were their most effective classroom (face to face) activities? The authors then took those activities and, in the next section of the article, give some examples about replicating them in an on-line environment.

The following comments were extrapolated from those interviews of full-time faculty

Business Management

Discussion questions are distributed prior to class meeting. During class each question is discussed with all students being required to contribute to the discussion. To assure that all students participate, the instructor uses a class roster to call on each student during the class.

Small group work is also utilized. The instructor determines group membership attempting to place at least one strong student in each group and separating close friends into different groups. This group approach is used for single class assignments and for semester long projects (example: writing a marketing plan).

Current events are folded into class discussions wherever possible, and students are required to make presentations to the class using PowerPoint.

Chemistry

Most learning is facilitated with a lecture followed by demonstration. After demonstration, students are given a similar problem to solve in class. After students have had a reasonable amount of time to complete their solutions, the solution is demonstrated and explained.

This approach is used for a range of content areas including balancing of chemical equations and drawing of Lewis diagrams.

Educational Foundations

For each reading assigned, the instructor provides a sheet that contains several statements that relate to the reading. Each student is asked to mark a plus (+), minus (-), or question (?) for each statement to represent the students understanding of the statement. A plus indicates that the student agrees with the statement. A minus indicates that the student disagrees with the statement. A question indicates that the student is unsure of their feelings regarding the statement.

After each student has marked their sheets, they are formed into groups to discuss their feelings and come to a group consensus regarding the statements. Group consensus is then reviewed by the entire class to form an overall consensus.

Semester long projects are also done using groups. Students assign themselves to groups by selecting a question to research. The instructor may intervene in the group assignments if necessary to balance the groups. At the end of the semester each student must present an independent paper that is built from the group research performed by each group on the class.

Mathematics

After lecturing and demonstrating techniques for problem solution, the instructor assigns problems to be worked on in class. As students work on their solutions, the instructor moves through the class providing one-on-one assistance to students as needed.

History

The instructor utilizes small groups with membership selected by the instructor. These small groups will be given a reading passage or an image that they must discuss to identify the historical significance of the topic or scene depicted. Typically the groups will be given between 5 and 15 minutes to talk among themselves, and then are asked to share their thoughts with the entire group.

Maps, response “clickers”, journaling, videos, and presentations are other forms of classroom interaction that are utilized.

Tools for Online Content Creation and Management

There are two classes of tools that are of importance for the creation and management of online learning content: Course Management tools and Content Authoring tools.

Course Management tools provide a framework for hosting learning content, assessments, and student information, and also typically provide tracking tools to assist in monitoring student progress and participation. There are several Course Management tools in general use today, including Blackboard, WebCT, Angel, and Moodle. These tools are all very similar in terms of the capabilities they provide and the ways that users, whether course designers, instructors, or students, interact with them. Regardless of what you are teaching or what medium you are using, it is important to maintain a consistent and familiar environment in order to maximize students' opportunities to learn. In an online delivery environment the use of a Course Management tool helps to provide that consistent and familiar environment while at the same time providing administrative features like class rosters and grade books.

Content Authoring tools are a more diverse set of tools than are Course Management tools. The features provided by these tools, and the skills required to use them span the spectrum from the amazingly simple to the unbelievably complex. This diversity can be seen by examining the nine content creation offerings from Adobe: Acrobat, Authorware, Captivate, Presenter, Contribute, Creative Suite, Director, Dreamweaver, and Flash.

At the heart of most content authoring tools is the ability to create content in web-friendly formats that includes some combination of text, pictures, video, animation, and audio. Higher end products will include support for creation of content that is SCORM (Sharable Content Object Reference Model) compatible. The authors have evaluated several available tools in this category including:

- Microsoft Producer, a free (to owners of Microsoft PowerPoint) utility that integrates with PowerPoint to provide the ability to record a PowerPoint presentation to a video format complete with an audio track
- SmartGuyz ScreenCam, a \$250 product that can create video recordings of anything displayed on your computer screen and also is capable of importing existing audio and video files.
- Tech Smith Camtasia Studio, a \$150 product that has all the features of ScreenCam, plus the ability to add interactive elements and to create SCORM modules.

- Adobe Captivate, a \$200 product that has comparable features to Camtasia Studio, and also will integrate directly into Adobe's Flash animation engine.

All of the evaluated products are effective in creating web-friendly formats, but can be differentiated based on the limitations in the types of content that can be created, and the degree to which user interaction is supported by the content created. The selection of a screen capture tool will be influenced most by the intended application of the content created. Users that are planning to create narrated lectures for web distribution as a supplement to classroom lecture will be well served by a product like Microsoft Producer. Users that will be creating demonstrations of software application use, such as Microsoft Office or Adobe Photoshop, will want a more robust tool such as ScreenCam, Camtasia Studio, or Captivate. Users that desire a product that supports interactive elements such as branching that can be used to incorporate remediation will want to use a product like Camtasia Studio or Captivate.

Effective Translation of Classroom Activities to Online Environment

When determining what type of online activity to use when transitioning from the classroom to the online environment, it is important to examine the purpose of the activity with respect to the learning objective and to consider the role that the instructor plays in facilitating the desired student behavior. For example, we previously identified several faculty from disciplines ranging from Business Management to History that incorporate one or more forms of discussion in the classroom. One might assume that a classroom discussion should become a threaded discussion topic in an online environment. However this assumption does not address the role of the discussion with respect to learning objectives and student behavior, nor with respect to the role the instructor wishes to play in guiding the discussion.

Threaded discussions are of greatest benefit when it is desirable for students to have time to reflect on the details of a question, crafting logical, well researched answers that can be shared with others in the class. For example, in a web-based Customer Service class an instructor assigns students one or more discussion questions based upon readings from the text. Rather than have the students submit their responses to him directly, he has the students post their responses in a threaded discussion and also requires each student to read the responses posted by the other students posting replies to at least two of these other responses. In this way, the instructor is replicating a classroom discussion that exposes all students to a variety of viewpoints while at the same time encouraging students to think deeply about the significance of the material covered. This application of threaded discussion also allows the instructor the ability to provide guidance and clarification as needed by posting his own replies to the students' posts.

A threaded discussion would not be appropriate in a situation where the discussion is intended to demonstrate students' ability to apply knowledge to a situation and make quick decisions. Nor would it be appropriate when the instructor wishes to have more control of the flow of the discussion. In these situations a chat room (either text or audio) is a more suitable technique.

Although chat rooms are synchronous activities and many online classes are asynchronous, this technique is still of value in the online environment. For example, in a web-based Survey of Information Technology class an instructor used a text chat room to facilitate interviews with information technology practitioners. When this class was taught in the classroom environment, practitioners would visit the class to answer students' questions about their field of expertise.

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During the interview, students would raise their hands and be recognized by the instructor in order to ask a question. Students absent on the day of the interview would miss the opportunity to ask a question or hear the answer. In the online environment, students raised their hands electronically in order to be unlocked so that they could ask a question. All questions and answers were logged and after the interview was over log was converted to a transcript and published so that all students had access to the discussion.

Earlier we described a classroom technique used by both Mathematics and Chemistry instructors to teach concepts such as solving equations and drawing Lewis diagrams of chemical compounds. The instructor would first present the underlying principals and concepts using lecture, and follow with a demonstration using several examples. Finally the students would be given the opportunity to demonstrate what they had learned. In an online environment these activities could be replicated using a combination of lecture and demonstration techniques described in the following paragraphs.

Lectures can be recorded as audio files for playback in the online environment. Once recorded, lectures can be transcribed, either manually or using a speech to text translation program, so that they can also be made available in textual form for hearing impaired students and for students that are visual learners. If the lecture includes diagrams, charts, PowerPoint or other visual material, these items can be digitized for online viewing and synchronized with the audio using a software package such as Captivate.

In the classroom, an instructor is able to observe the students and ask questions to gauge comprehension and provide remediation when needed. In the online environment, while the instructor cannot observe the students directly, it is possible to incorporate occasional questions into a lecture presentation to assess student understanding. Products like Captivate can branch from these questions providing remediation when needed, or allowing the student to move forward through the lesson. Demonstrations can also be recorded (both audio and visual elements) using a tool such as Captivate or Camtasia Studio.

Summary and Areas for Further Study

In summary, the major responsibility of instructors is to develop instructional material and strategies that are pedagogically sound, reinforcing the objective of the lesson. Do not be overwhelmed by the technology and allow it to dictate what and how the material is presented or how students interact with the instruction, the instructor, or with other students. On-line instruction should closely replicate face-to-face instruction.

The selection of tools will sometimes be dictated by university standardization; training and support should be readily available. These would include a course management system. Institutions are not likely to support more than one course management system due to higher cost, lack of continuity, and support issues. Content tools, for the most part can be determined by individual instructors; however the availability of on campus training and support and existing site licenses should be considered.

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