

Chapter 9 - Instructional Media: Chalkboards to Video

Different types of educational experiences exist - from hands-on apprenticeships to role-playing, from demonstrations to reading printed text. Some educators believe that different experiences are more or less effective for achieving different types of instructional outcomes. For example, text with pictures is not as effective as live demonstrations for teaching motor skills. Instructors who are considering the use of media should ask themselves, “How do I expect the media or type of learning activity to make learning more effective?”

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Types of Instructional Media

- Real objects and models
- Printed text (books, handouts, worksheets)
- Printed visuals (pictures, photos, drawings, charts, graphs)
- Display boards (chalk, bulletin, multipurpose)
- Interactive whiteboards
- Overhead transparencies
- Slides and filmstrips
- Audio (tape, disc, voice)
- Video and film (tape, disc)
- Television (live)
- Computer software
- The Web

Dale's Cone of Experience



The diagram shows how Edgar Dale's "Cone of Experience" (1969) - organized learning experiences according to the degree of concreteness each possesses. At the bottom is hands-on experience. As you ascend the cone, concrete experience begins to drop out, with stimuli becoming more abstract; the stimuli require more skill on the part of the learners to interpret the messages they carry. You can see why lectures, even illustrated lectures, are considered to be some of the most abstract types of presentations. For certain types of learning (such as changing attitudes or teaching motor skills), experiences at the bottom of the cone are more appropriate than those at the top.

Learning experiences at the bottom of the cone tend to hold student attention longer and involve active student participation. Media at the top of the cone are said to be more passive but are suitable for transmitting large amounts of informa-

tion quickly. Which is best depends upon your purposes and circumstances. While the Web is becoming popular for distributing other types of mediated messages, it is not always practical, and other types of media are more appropriate.

Why Use Media in Instruction?

As a rule, educational experiences that involve the learner physically and that give concrete examples are retained longer than abstract experiences such as listening to a lecture. Instructional media help add elements of reality - for instance, including pictures or highly involved computer simulations in a lecture.

Media can be used to support one or more of the following instructional activities:

- **Gain attention.** A picture on the screen, a question on the board, or music playing as students enter the room all serve to get the student's attention.
- **Recall prerequisites.** Use media to help students recall what they learned in the last class, so that new material can be attached to and built upon it.
- **Present objectives to the learners.** Hand out or project the day's learning objectives.
- **Present new content.** Not only can media help make new content more memorable, media can also help deliver new content (a text, movie, or video).

- **Support learning through examples and visual elaboration.** One of the biggest advantages of media is to bring the world into the classroom when it is not possible to take the student into the world.
- **Elicit student response.** Present information to students and pose questions to them, getting them involved in answering the questions.
- **Provide feedback.** Media can be used to provide feedback relating to a test or class exercise.
- **Enhance retention and transfer.** Pictures enhance retention. Instructional media help students visualize a lesson and transfer abstract concepts into concrete, easier to remember objects.
- **Assess performance.** Media is an excellent way to pose assessment questions for the class to answer, or students can submit mediated presentations as classroom projects.

Media Used to Enhance Presentations

The Chalkboard or Whiteboard

FSU has replaced the ubiquitous chalkboard with whiteboards in most classrooms. The whiteboard is one of the most basic forms of instructional media and is best used for emphasizing essential information and developing ideas as the class progresses.

- Put assignments due, the next assignment and due date, and the day's lesson objectives on the board before starting the class.

- Use the board to present a problem the class should be thinking about during the lecture.
- Use the board for graphics as well as text and formulas.

When Using the Whiteboard

- Include a whiteboard plan in your lesson outline that determines which aspects of the lesson will be illustrated on the board — list of concepts to be learned, timelines, outline for the day's presentation.
- Bring your own markers to class and carry plenty of spares.
- Use different colored markers to highlight important aspects of the lesson.
- Write neatly and horizontally, making certain your handwriting is large enough for students to read. Board work should be organized so that students will be able to interpret their notes later.
- Write on the board in several places (top, bottom, right side, left side). Go to the back of the room to see if you can read what you have written from any location. Be sensitive to obstructions, including the heads of students, overhead projectors, etc., that may block the lower part of the board.
- Give students time to copy what has been written.
- Avoid modifying the board while students are copying information.
- Talk to the students, not the board. With a little practice, you will find that you can write while you are partially facing the class.

Document Cameras

Document cameras are located in many of the general purpose and technology enhanced classrooms on campus. With a document camera, you can display documents, books, graphics (e.g., pictures, charts, and maps), and three-dimensional objects and project them so even students in the back of the class can see.

In most cases, the same rules that apply to the use of the chalkboard also apply to overhead projectors. Overheads, however, have several advantages — transparencies can be prepared in advance of the class, and it is easier to prepare graphics and pictures for the overhead than for the chalkboard.

Tips for Using the Document Camera

- The camera is best turned off when you are not directly referring to information on it. Many instructors use a piece of blank paper to cover part of a document so that only the point being developed is revealed.
- When preparing documents for display on the camera, use san-serif fonts such as Arial, Helvetica, or Tahoma in a 24 pt. or larger font size. Margins should be set at 1 1/2 inches to avoid information being cut off the sides. When writing on displayed documents, use a medium to wide stroke marker and print clearly.
- Avoid using white paper as it produces a glare when projected. Blue paper or other similar pastel is a better choice. Likewise, three-dimensional objects are pro-

jected more clearly when placed on a darker background rather than on white paper or directly on the camera platform. Practice with different backgrounds to see which works best for you.

- Glossy paper in magazines and books may not project well because of glare. Practice with the camera settings before class to reduce glare or if possible consider copying the image onto different paper.
- Avoid the rapid paper flip. Consider placing your stack of papers on the camera platform and sliding a sheet off when you are finished rather than taking off and repositioning a new sheet every time you change documents. Leave the document on long enough so the students have time to take notes but not past the point where you are finished talking about it.

Resource

If a scheduled classroom does not contain a document camera, you can book one online at Technology Enhanced Classrooms at <http://condor.tecad.fsu.edu>

LCD Projectors

The University has invested heavily in modernizing classrooms and lecture halls to take advantage of instructional technology, including LCD projectors. LCD's used with a computer project an image onto a screen or blank wall - and provide more instructional flexibility in the types of content that can be used in a classroom. Classroom Support will train instructors on how to use the LCD Projectors as well as other classroom technology.

Advantages of LCD's

- Since slides are stored in files on the computer, they can be made accessible to students or other instructors.
- Presentations are easily made using PowerPoint or other software applications. PowerPoint can also be used to prepare handouts and content outlines.
- Some instructors post their PowerPoint slides to their course sites so that students may download them for study purposes.
- Many of FSU's classroom technology installations include connecting a videocassette player and a document camera to the computer. This installation allows instructors to project videos or images directly from a book to the screen through the LCD projector.

Instruction through the Use of LCD's

Students prefer consistent presentation of information. Consider standardizing the usage of your LCD slides, keeping in mind the following:

- The opening slide might be the title or main theme of the day.
- Subsequent slides might be key terms, discussion questions, and important concepts.
- Use the slides to tell a story. Talk to the students, not at them.
- Involve the students in discussion of the visuals.
- If you use slides regularly, the final or ending slide will become a signal to the students that class is over, with accompanying lack of interest and closure. Instead, use the last slide as a discussion device to allow students to synthesize information and bring closure to the topic.
- While using a standard series of slides, vary the layout and color for each lecture. All presentation software allows the choice of different backgrounds and color through the use of templates or master slides.
- Use sound clips, animations, and clip art with discretion.
- Avoid using too many slides. A good rule of thumb is to spend two or three minutes per slide.
- Be careful about infringing on another author's copyrights. If there is any doubt, get permission and inform students that you have permission.

Personal Response System

FSU classroom technical support has equipped a number of classrooms with student response system technology (often referred to as “clickers”). This electronic technology allows instructors to monitor attendance, conduct real-time surveys in the classroom, and elicit student performance feedback through quizzes and real-time surveys. In its basic configuration, the system consists of wireless, hand-held, student transmitters (clickers) and an instructor-controlled receiver-displayed unit. The system supports a number of display formats including bar graphs and numerical distributions.

Tips for Using Clickers in the Classroom

- Use the clickers everyday so students will get used to bringing them to class.
- Spread clickers questions throughout your lecture so students remain engaged but do not offer so many questions that it becomes tedious for both you and them.
- Always have a couple of extra clickers on hand for students who may forget theirs, but create an expectation that students must be prepared for class by bringing their clickers with them.

- If you are using clicker questions for quiz grades, reduce the possibility of cheating by keeping the point value of the quizzes low.
- Always have a back-up plan! Technology is a wonderful tool, but it can sometimes have glitches. Have an alternate plan for what you will do if the system does not work for a given lecture.

Video or Film

- Using video or film in classroom instruction has the advantage of presenting abstract ideas in a realistic context, which helps students grasp the abstract ideas more easily and to retain the material longer.
- For more information on using clickers, visit <http://cat.fsu.edu/clickers/index.cfm>



Examples of Use

Filming students' in-class presentations and viewing the tape together offers students the opportunity of seeing themselves in action.

In an English class, a TA might show students a scene from a Shakespearean play to set the context for a lecture.

A political science instructor may use a tape of a politician who visited campus, or whose remarks were broadcast on C-SPAN.

A chemistry class may be shown a videotape of an important, but dangerous and expensive, experiment.

In a communications class, the students themselves could be taped during a problem-solving session. Later, they can analyze the group interactions that occurred.

In a statistical methods class, students can watch an online video overview of how to set up tables in SPSS that was recorded by the instructor using Camtasia, a screen capture and recording software.

When Using Video in the Classroom

- Do not show the entire tape/DVD if there is no need to do so. Think about why you are using the video and show only the applicable portions.
- Relate the video to what is being discussed in class and discuss relevance to every day issues or problems.
- Prepare a set of questions taken from the video that students might discuss or answer. Prepare students by providing an outline of the video's main points on the document camera, whiteboard, or handout so that students know what to look for as they watch.
- Since video only presents a one-way flow of information, compensate for this lack of involvement by encouraging dialogues in other areas of the class such as group discussion.

When Using Video Online

- Online video can be used for screen capture and recording, simulations, demonstration of processes and other visual illustrations.
- Keep the length of the video short, no more than 3 – 5 minutes and follow up with a set of questions or an activity to be completed to hold students' attention and keep them on task. If the video is long, break it up into 3 – 5 minute modules for easier viewing with questions or points to consider in between.

- When using web-based media, be certain to inform students of general technical and computer requirements and provide links for downloading the necessary plug-ins and media players.

General Presentation Guidelines

Guidelines for a Variety of Instructional Media

- Visual aids should augment the presentation; they are not meant to be the entire presentation.
- It is important to be able to teach without them. Instructional aids may arrive late, or not arrive at all. Also, something may go wrong or break down. Even careful planning cannot cover every possibility.
- It is imperative that all instructional media are previewed before they are used in class or online. This will familiarize you with content and structure, as well as ensuring that no unfortunate (and sometimes embarrassing) mix-ups have occurred.
- Visuals are best kept simple, with minimal wording. They should always be readable from a distance (when reproducing from texts and enlarging graphics). You can practice using the visual aids in the actual classroom before the lecture begins.
- The audience's line of vision should not be obstructed.

- Visual materials should be displayed only when the instructor is ready to use them, and they should be kept visible until the students have finished taking notes. You should remove the materials when you are ready to talk about something else, signaling that it is time for discussion or noting a subject change.
- Effective instructors talk to the students, not the visual aids.

Instructional Strategies Involving Media

While it is necessary to talk about how media might improve classroom lectures, the reality is that there are more effective types of learning activities. Probably the most studied and research-based movement in the use of technology today is being done by Vanderbilt University in the areas of situated cognition and anchored instruction.

Situated cognition defines understanding as partially being a function of the context in which it is learned. Most of us have experienced a situation where we have learned something, but we cannot recall it when we need it. Or that we know that we should be able to solve a problem but the details escape us. This is known as inert knowledge. One reason for this lack of recall, according to John Seely Brown and others (1989), is that the knowledge was learned in a sterile classroom situation and was never applied in a real world context.

One instructional technique to reduce inert knowledge is anchored instruction; that is, to instruct using an experience common to the students. Instructors at Vanderbilt create an anchor by showing a 12-15 minute video clip that presents the context for problem solving. All the data the student needs to solve the problem is contained in the video. Students work together in groups to find the data they need and solve the problem. The students present and defend their solutions, and the instructor provides feedback.

Most collaborative learning situations today involve the use of media in some way. The Web provides a way for students in different locations to collaborate on problem solving and learning. (For details on using the Web as an instructional media tool, see Chapter 10 - Using Course Websites as Instructional Tools.) The realization that learning is a social as well as a mental process is important to the understanding of how media can improve learning.

Resources on the Use of Media

Books/Articles

- Azarmsa, R. (1991). *Educational computing: Principles and applications*. Englewood Cliffs, NJ: Educational Technology Publications.
- Brandt, R. C. (1986). *Flip charts: How to draw them and how to use them*. Richmond, VA: Brandt Management Group.
- Brown, J. S., Collins, A., & Duquid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.
- Dale, E. (1969). *Audiovisual Methods in Teaching* (3rd ed.). NY: Dryden Press.
- Davis, R. H., & Alexander, L. T. (1977). *Guides for the improvement of instruction in higher education: Vol. 4. Effective uses of media*. East Lansing, MI: Michigan State University, Instructional Media Center.
- Diamond, R. M. (1989). *Designing and improving courses and curricula in higher education: A systematic approach*. San Francisco: Jossey-Bass.
- Horton, W., & Horton, K. (2003). *E-learning tools and technologies: A consumer's guide for trainers, teachers, educators, and instructional designers*. Indianapolis: John Wiley & Sons.
- McKeachie, W. J. (1986). *Teaching tips: A guidebook for the beginning college teacher* (8th ed.). Lexington, MA: D.C. Heath.

- Newble, D., & Cannon, R. (2000). *A handbook for teachers in universities and colleges: A guide to improving teaching methods* (4th ed.). New York, NY: Taylor & Francis Group.
- Newby, T. J., Stepich, D. A., Lehman, J. D., & Russell, J. D. (1999). *Instructional technology for teaching and learning: Designing instruction, integrating computers, and using media* (2nd ed.). Upper Saddle River, NJ: Prentice Hall Career & Technology.
- Petterson, R. (1989). *Visuals for information: Research and practice*. Englewood Cliffs, NJ: Educational Technology Publications.

- ◇ Technology Enhanced Classrooms, part of University Computing Services, trains instructors to use the high-tech classrooms.
- ◇ The Scholar's Commons Digital Media Services Unit at Strozier Library - Provides resources and media self-service for faculty and students.



Related Chapter

See Chapter 10

Using Course Websites as Instructional Tools.

On-Campus Offices

There are a variety of other media that can be considered, as technology develops to make classroom applications more varied.

- Office of Distance Learning
 - ◇ The Office of Distance Learning (ODL) can acquaint anyone who works in the classroom with recent developments in interactive video, computer-based instruction, and other instructional media.
 - ◇ The Online Course Development and Faculty Support Unit - ODL's full service studio includes on-demand video and audio production, reproduction of materials within copyright restrictions, and use of MediaSite streaming.