Prepare Instructor-Made Instructional Materials


For information on the value of using handouts and transparencies and the types of information that can be presented by these instructor-made materials, read the following information sheet.

USING HANDOUTS AND TRANSPARENCIES

You, your students, the relationship between you and your students, your lesson objectives, and your organization’s resources are unique. Therefore, it is not surprising that there are times when commercially prepared materials to support a particular lesson are not available, not suitable, or not as good as those that could be prepared by you or your students.

Carefully selected instructional media and materials can help you to do the following:

- Provide concrete experience
- Motivate and arouse interest
- Increase retention
- Develop continuity of thought
- Provide variety in learning
- Provide experience not otherwise easily obtained
- Make better use of instructional time

Instructor-made handouts and transparencies can do all these things and do them well. When an instructor selects these materials in response to a specific lesson and the specific students involved in that lesson, the materials can be an invaluable tool in meeting the above seven criteria. Materials prepared by the instructor and the students tend to be more closely related to students’ own method of communication and, therefore, more easily understood by the students than commercially prepared materials.

Furthermore, the act of preparing materials can contribute to understanding -- for both instructors and students. And finally, there is a great deal of untapped creativity in instructors and students that can be tapped a bit by their being involved in the preparation of instructional materials.

Handouts and transparencies can be used to present a variety of types of information. Written information sheets can be prepared to provide students with just the facts or explanation they need, in language designed to effectively communicate to those particular students. Facts and figures can be presented graphically for ease of understanding. Points can be made humorously with cartoons.

Examples of ways to present information through information sheets, graphs, diagrams, charts, and cartoons follow. The type of presentation method you choose will depend on the sort of information you are dealing with. The best method will be the one that will most clearly and simply illustrate the information you are seeking to teach.
Information Sheets

Information sheets can readily provide students with the information needed to achieve lesson objectives. Perhaps a magazine article can be reproduced to meet these needs. (Don’t forget copyright laws, however.) Or, if your training or experience has given you a thorough understanding of the necessary information, you can create the sheet yourself.

Or perhaps a student might have special information that can be shared in this way. Or you might have read 25 sources, each of which contains a needed piece of information. In that case, you could write a sheet summarizing all this information. What you are now reading is an example of an information sheet.

Graphs

Graphs are visual representations of numerical data. Graphs should be simple. They should be used to show comparisons or relationships, and they should deal with approximations, rather than precise amounts, so that they tell a story obviously at a glance.

The following types of graphs may be used:

**Line graph.** Line graphs should be used when a considerable number of data are to be plotted or when the data comprise a continuous series that, over a period time, shows progress or development taking place.

![Line Graph](image)

**Bar graph.** The bar graph is used when the number of values to be compared is small (less than ten).

![Bar Graph](image)
**Circle or pie graph.** This type of graph is used to represent the whole (100%) and the parts of the whole.

![Circle (Pie) Graph](image)

**Area graph.** An area graph consists of squares, circles, or other outline figures of different sizes, which represent two or more related totals.

![Area Graph](image)

**Solid figure graph.** This graph can serve the same purpose as an area graph, but it contains spheres, cubes, or other figures that give a three dimensional effect.

![Solid Figure Graph](image)
**Pictorial graph.** The pictorial graph is an adaptation of the bar graph using simplified drawings of the subjects involved. Each quantity is indicated by the number of symbolic figures, rather than by the size of a single figure.

![Pictorial Graph](image)

**Diagrams**
Diagrams are condensed drawings consisting of lines and symbols designed to show the interrelationships, general outlines, or key features of a process, object, or area (e.g., blueprints or schemata). A diagram can show how to thread a film projector, how to assemble a new bike, or how to wire a transistor radio.

**Charts**
Charts are combinations of pictorial, graphic, numerical, or verbal materials that, together, will present clear visual summaries of important processes or relationships.

Tree chart. A tree chart is developed from a base composed of several roots leading to a single trunk, with branches representing developments and relationships. It can be used to show developments resulting from a combination of major factors.
Flow chart. Flow charts can be used to show functional relationships (e.g., organizational chart).

Outline chart. This type of chart can show the organization of content using key points and sub points.

What Affects Learning?
Lecture 5

What did we do last week?

- Differentiated among knowledge, skills, and attitudes
- Identified the five phases of the Instructional Systems Development Model
- Defined Learning

Learning Objectives

- Explain the factors that affect learning.
- Identify the components of the Learning System.
- Identify the five phases of the ISD system in order.
- Differentiate among the eight forms of analysis performed in the Analytic Phase of ISD.

Factors Affecting Learning

- Motivation
- Organization
- Participation
- Continuation
- Repetition
- Application
Cartoons

Cartoons are pictorial representations of ideas employing caricature, exaggeration, symbolism, and humor.

For information on five types of duplication methods, ways to prepare masters for those methods, and criteria for preparing handouts and transparencies, read the following information sheet.

DUPLICATING MATERIALS

There is no one best duplication method. The method you select should be based on six factors:

- Type of master available
- Quantity of copies desired
- Quality of copies desired
- Economy: cost of materials and labor
- Time element and urgency
- Type of machines available

The following information will help you know how to select the appropriate method for any given situation.

Duplication Methods

The times, they are indeed changing. Instructors of the 1960’s and 70’s duplication options were generally limited to just ditto and mimeograph reproductions. Special masters had to be prepared sometimes a lengthy, fussy process; and copies had to be reproduced -- sometimes a time-consuming, messy process.

Nowadays, instructors may have better and easier duplication options available to prepare instructional materials. The most useful are the xerographic photocopy machine and the laser printer. When there is a larger printing requirement there is also the offset
printer, often found in equipment in a school's print plant. Today, most instructors have access to word processing equipment at home on their own personal computers and in their offices, which can be downloaded to a laser printer and a number of copies (usually up to 20) may be printed.

**Photocopy:**

You can print an indefinite number of equal quality copies at about 3-6 cents per copy. Often individuals have a printing budget to use so that paper and ink are not wasted. Some organizations require users to use their own paper purchased from the department's budget. So in reality, there is a limit to what you can print.

**Offset**

Offset printing is best for large number of copies as the cost is fairly high for a few copies but decreases to 2-3 cents a copy for numbers in excess of 100. The disadvantage of offset duplication machines is that they have a fairly high initial cost and training is needed to operate the equipment properly. However, many high schools may have the printers in their technology education communications labs and you may make an arrangement with the instructor to print your copies. Some school divisions also have printing plants that print large numbers of copies to support instruction.

**Preparing Transparencies and Handouts**

In preparing transparencies and handouts, more is involved than simply preparing a master and having it reproduced. Many a presentation has been marred by the use of transparencies and handouts that were unattractive or, worse, impossible to read. Let's look, then, at some guidelines governing the preparation of such materials.

**Transparencies**

Transparencies should be prepared with the following guidelines in mind:

- Transparencies should be designed to illustrate or emphasize key points you are making; they should not be used to present the total content of your lesson.
- Keep each transparency simple. Preferably, a transparency should deal with only one main point. Too much detail or information on one transparency is distracting and confusing, rather than enlightening.
- Avoid masses of black area, especially when using photocopies as masters. It will not show up as solid black, but as blotchy.
- Put only six to seven words per line.
- Put only six lines when the transparency is oriented horizontally and ten lines or less on a transparency oriented vertically.
- Do not overuse color.
- Lettering should be large enough to be read easily by students in the last row. As a guide 24 point letters are the recommended small size (nothing less than 20 point should be used). Do not attempt to use typewritten lettering; even the largest print sizes are too small and thin.

Transparency masters can be word-processed or hand lettered. PowerPoint and other presentation programs are widely available and do an excellent job of preparing masters. They can be made black and white, which works very well. More about PowerPoint presentations later.
If your organization has a graphic arts department, you may be able to get beautiful transparencies made from your masters.

Transparencies can also be prepared by hand, using a special nylon- or felt-tip pen containing water based ink. These are not generally very high in quality.

If you have the time, the talent, and the inclination, however, there are a variety of special techniques, such as the following, that you can use to produce high-quality transparencies.

To simplify a transparency that is, of necessity, complicated (e.g., the internal workings of the human body), overlays may be used. Overlays involve a series of transparencies, each containing a simple portion of the whole. Used one at a time, they are each simple. Placed one over the other, they show the whole system, as well as the relationship of the simple parts to the whole.

Take, for example, a transparency in overlay form used in support of a lesson on normal and abnormal heartbeats. The basic, mounted transparency could be a graph without any data. The first overlay could show the pattern of a normal heartbeat. The second overlay could show the pattern of an abnormal heartbeat. A different color could be used for each transparency. In this way, simplicity can be maintained.

To make fine, professional looking lettering, one option is to use dry-transfer lettering, sheets of which are available-in a variety of lettering styles-at art supply and drafting supply stores.

You can make bold, clean, straight lines by using pressure-sensitive graphic tape, available in many widths at art supply stores.

Plastic templates permit you to make perfect circles, boxes, and a bewildering variety of other standard shapes on your transparency masters. Use a sharp-tipped black felt pen or technical pen for best results.

There are several ways to add color to your final result. Transparency material for the infrared process is available that gives you a pale-colored background with black lines or a clear background with colored lines. Several colors are available in a "rainbow pack."

You can also use special felt-tip pens-in various colors-to fill in the desired areas on the completed transparency. Again, coloring in small areas or using parallel lines or dots works best; it is difficult to color in large areas evenly.

Finally, special transparent, self-adhesive, colored film is available in sheets or rolls. You cut the film to fit the desired shape and then adhere it to the underside of the transparency. Be sure to get the right kind; some look transparent but show up as black on the screen.

Handouts

The quality of handouts that is acceptable may vary depending on their purpose and your situation. Generally speaking, using a xerographic photocopier or offset equipment produces the most professional looking copies-then mimeographing, then dittoing, then using the infrared photocopier. Xerographic photocopies are also the most expensive-per copy-to reproduce, however, so duplicating large quantities by this method must be carefully justified. Stencils take time and care to prepare, but they save well and can be reused year after year (assuming the content is still up-to-date and appropriate).
Typewritten or handwritten ditto masters can be prepared fairly simply and quickly; the quality of the copies is adequate, but not professional looking.

Infrared photocopies don't hold up well, and this is a more expensive process. However, the infrared photocopier can be used to make ditto masters. This means that if you have a magazine article or a single copy of information, you can use the infrared photocopier to prepare a ditto master of the material. Then, the material can be duplicated more inexpensively on the ditto machine.

No matter what method you choose, the handouts you give your students should be clear, logical, straightforward, concise, error-free, and above all, legible.

Preparing Visuals

Numerous studies prove that preferred learning styles vary greatly among people. The mind can also absorb information much faster than people can speak. Therefore, the instructor needs to acknowledge and accommodate multiple learning styles. Imagine sitting in a lecture hall listening to a presentation with all of the lights off. Would you be able to concentrate on the discussion? Now, imagine sitting in a classroom with windows and a computer sitting in front of you with a screen saver sending fish across the screen. All of these visual distractions could significantly diminish the amount of material that you will retain. Even when we try to eliminate these distractions, or at least minimize them, your eyes will always find something to watch. Thus, it is in the best interest of the instructor to provide something for the students to watch. Whenever possible, you should always include visuals with your presentation.

Luckily, a variety of software programs are available that enable you to create presentation slides quickly and easily, such as Microsoft PowerPoint. With most of these programs, you can begin with an outline that you then transform into a colorful presentation. While you are creating your outline, you are also creating your visuals. If you do not have an LCD projector available for your presentation, you can print the slides on overhead transparencies (which you should do for backup purposes anyway).

Look at the two examples of visuals on the next page. Which one is better, and why? Whenever you create slides that you will project on an overhead or LCD projector, you need to consider the following items:

- Font size
- Font type
- Amount of text
- Graphics
- Color
- Templates
The font size must be large enough to be read from any distance. Have you seen presentations in which the instructor made overhead transparencies of pages taken from a book? The text was impossible to read unless you were sitting in the front row. Remember, if it is worth showing, it is worth seeing! Depending on whom you talk to, the minimum font size should range from **20 points to 30 points** (72 points equal one inch). One way to test the readability of your handouts is to stand and place the visual on the floor at your feet. If you can easily read the text, then the type size is large enough -- assuming, of course, that you have normal vision.

There are literally thousands of fonts (or letter styles) available on computers. You can divide all of these fonts into two categories: **serif fonts** and **sans-serif fonts**. A serif refers to the slight enlargement or curl that appears at the endpoints of the lines in font styles. Fonts that have these feet are serif fonts; those that do not have the feet are sans-serif fonts. Studies have shown that **serif fonts are easier to read because your eyes follow**
the curves that flow from letter to letter. You will find that the majority of the text in books and magazines uses serif fonts. Sans-serif fonts stand out and draw your attention more, so people use this type of font more often in titles. Keep this point in mind when creating your visual aids, and choose the appropriate size and type of font.

Even if you adhere to the suggested minimum font size, you can still get into trouble by placing too much text on a slide. Another general rule is that there should not be more than six to eight lines of text on a given slide. In other words, you cannot present long paragraphs of text on a slide. Luckily, this limitation fits perfectly with the standards that you should follow for your outlines. Use short, bulleted lists of information to remind you (and the students) of the necessary information.

One danger with using presentation software is that inserting extraneous information on a slide is too easy. One example is the use of graphics. Because adding graphics is so easy, many people add any graphic that they can find to spice up the presentation. Nothing on the slide should be gratuitous. Everything you place on a slide should enhance the message that you are delivering. If a graphic is not needed, then do not add it. The graphic will just be a distraction. The same can be said for transition effects between slides. Transitions enable a seamless move from one slide to the next and can help build continuity. Do not use every transition that the program offers, however, just because you can. This action might cause the students to spend more time guessing what the next transition will be, rather than paying attention to the subject. The same rules apply for sound effects and animations. A well-placed transition can focus attention on an item, but use this feature intelligently.

Think carefully about the use of color, because color can have a subtle but powerful effect on the students. Consider the following example. A fellow instructor was hired to teach a technical course for a local company. Throughout the day, she noticed that whenever she presented material to the class, the students appeared to be tense and distant. She had a difficult time encouraging participation, and at the end of the day, she felt that few of the students grasped much of the required material. After the course, she pondered the situation but could not think of anything that she had done to offend the students. She had taught the course many times before and was always successful and well received. That evening, while watching the news, the reason for the problem became quite clear. She was watching a segment announcing that the company might possibly be taken over by its largest competitor, and the report mentioned that some employees might lose their jobs. The other company’s corporate colors were green and white. In fact, they were the exact shade of green and white that she used in his presentation. With each presentation, the colors reminded the employees of the possibility of layoffs. Rarely will your colors have such a drastic effect, but each color is associated with a particular emotion. The next figure shows this relationship for several of the more common colors. Be aware of the impact of your choice of colors.
If you are using presentation software to create your visual aids, another issue is the use of templates. Templates provide you with a predefined design incorporating graphic elements, color, and font type. All of the design work is already done for you. The only problem is that there are a limited number of formats and a large number of people using them. Commonly at a large conference, you will see many presenters who have the same design. To set you apart, make minor changes to the design so that it is different from everyone else’s.

Once you have completed your handouts, ask yourself the questions in the following checklist to eliminate any problems.

**Presentation Visions Checklist**

- Is all of the necessary information covered?
- Can the text be read easily from a distance?
- Is there too much text on the slide?
- Does each of the graphics have a purpose?
- Are the colors appropriate from the students’ viewpoint?
- What emotions do the colors convey?
- Do you have a backup of the visual aids in case the computer or projector fails?
Preparing Handouts

Unless the students have course manuals that cover all of the material you are lecturing on, you should provide them with handouts of the presentation so that they will always have a resource to refer to. If you have used presentation software to develop visual aids, printing the handouts is simple. Most programs offer options of printing one, two, four, or six slides per page and will add lines for note taking.

Deciding when to pass out the handouts is debatable. One side of the argument states that if you hand them out before the lecture, the students will read ahead and not pay attention to what you are saying. The other argument states that the students can use the handouts as a reference, and, rather than frantically taking notes on everything you say, they can take notes on their reactions to the presentation.

Remember the Verbal and Nonverbal Signals

Once you have prepared your outline, notes, visual aids and handouts, ask yourself what signals you are sending to the students. Remember the emotions that certain colors can convey. If you are teaching a course on graphic design and all of your handouts are plain black-and-white overhead slides, what message are you conveying regarding your abilities? Possibly, you are communicating that you are not too knowledgeable about the newest technologies. If you have attended a conference with a technology theme lately, you will be hard pressed to find a presentation that does not use some form of presentation technology. Those who do not use this technology are "behind the times," and they lose credibility. Each of your actions sends a signal to the students, so do your best to make your message positive.

Rehearse the Presentation

As you know you should rehearse the presentation when you have finished creating the presentation. Be sure to use your presentations materials as you rehearse so you can tell how they will work.