

Using Traditional Technologies In the Classroom

Purpose and Goals

People are smitten with new technologies but often fail to give consideration to the appropriate use of traditional technologies that are used so often in the classroom. They may seem simple to use at first glance, but being *easy* does not necessarily mean use will always be *effective*. Thus, there are three goals of this workshop:

- 1) Understand how to use the technology in a general sense (skills).
- 2) Understand how to apply it in appropriate fashion to a given set of learning goals.
- 3) Understand the difference between teacher centered strategies and student centered strategies with regard to these technologies.

In addressing the effective use of these technologies you may want to work along four major themes or dimensions:

1) Teacher centered issues (basic skills)

Basic techniques of using these technologies

2) Activities

Have participants actually use and practice with equipment for a few minutes.

3) Student centered issues

Can you allow undergraduates to make use of these technologies during class time?

4) Discussion

Examine the application of these technologies in class - perhaps a discussion about how they might be used on occasion to promote active learning among students. When might using these technologies be the wrong idea (for teacher or student)? Advantages and disadvantages of individual technologies.

Discuss and Use the Technologies

1. Chalkboard / Dry Erase Board / Whiteboard

Distribute handout and discuss

Advantages: Inexpensive, easy to use, widely available

Disadvantages: Chalk dust, may require practice and prep work to use effectively

Activity: let everyone practice writing on the board, figure out what is legible and what is not, test the 1-10 rule, try squeaking the chalk-does the 45° rule work?

2. Overhead Projectors

Distribute handout and discuss

Advantages: bright - can be used under regular lighting, use different colors, prepare materials well before class, face students while writing

Disadvantages: bulky and difficult to transport, user must stand in one place, may require extra preparation, transparency film is somewhat expensive

Activity: let everyone write on the overhead and try focusing it; does the 1-10 rule work here? Would you allow students to use the overhead - when?

3. Slide Projector

Distribute handout and discuss

Advantages: vivid colors, can be run automatically, inexpensive

Disadvantages: can easily be misaligned, trays spill easily, must be shown in a dark room, can not easily change the order of the slides

Activity: let everyone have a look at the projector and learn how to orient a slide. Show them how to install and remove trays, move slides forward and backward. Show students example slides and ask them which is better for the purpose given.

4. TV / VCR / Film / DVD (ie: presentation of film clips or movies in a general sense rather than a specific format, but you might also consider what are the advantages or disadvantages of the given format)

Distribute Handout and Discuss

Film

Advantages: multimedia format - juxtaposes time and space, color, depicts movement - animation - process - time - space

Disadvantages: equipment is heavy and expensive, film is expensive; requires subdued light; requires knowledge of equipment (film projector); difficult to use only segments of a film; usually takes up most of a class period; film tears and breaks easily.

Video

Advantages: easy to operate, use of TV doesn't necessarily require lower lights; easily move forward or backward for specific segments of film; may be edited for tailor made instruction

Disadvantages: equipment requires some knowledge to use; large scale video projection not widely available so TVs may be suitable for smaller audiences.

DVD

Advantages: highest quality video and sound; easy to jump to different segments; can use a computer and computer projector to show video. Media is compact and easy to transport

Disadvantages: new technology so equipment may not be widely available.

Activity: show them how to turn on and run a TV / VCR combo.

5. The Room

Rooms are not often thought of as a technology, but the environment in which you teach can sometimes help or hinder learning. There are two driving questions with regard to the space in which you teach:

Is it a comfortable space for students to listen, interact and learn?

How can you use the features of the room to help students learn?

Distribute handout and have a brief discussion about the characteristics of the Rooms in which TAs might teach.

6. Your Voice and Body

Your voice and your body are probably the last thing you think of as technology but these are the two tools you will use the most when communicating with students.

Distribute tips on using your voice and your body.

Have students practice speak aloud (could you have them read a passage from a book or journal).

Have students speak with their backs facing the class.

Have students communicate from corner to corner in the room. What level of voice do you need?

You might want to emphasize the use of the body throughout all the technologies listed above (ie pointing at the chalkboard, point with a finger on the overhead, walking from the slide projector to the screen and back again).

Chalkboard Tips

Visual Reinforcement

- Have a plan for your board work.
- Give students time to copy what you have written.
- Practice drawing diagrams or pictures beforehand so that students can see and understand them.
- In quantitative classes, write complete statements of what you propose to prove on the board. Try not to simplify steps by erasing them - this might confuse students - use a single strike instead
- Be selective - write only what you need or what is important to learning goals. If there is a lot of detail to be included, prepare a handout before the class begins instead of squeezing it all on your board.
- When correcting mistakes you have made in your board work, explain your mistakes to the students before you correct them.
- Record students' comments verbatim.
- Visually highlight important points with a circle, star, or underline.

Hands-on Tips

- Avoid squeaking chalk by pressing hard and writing with the chalk at a 45° angle to the board. If this doesn't stop the squeaking, break the chalk in half.
- Write legibly - check your writing from the back of the room before class. Check for glare on the board from different points in your room. If there is glare, draw the blinds or shades on the windows. When you finish writing stand to the side of the board so students can see your work.
- Read aloud when writing on the board. This can be especially helpful for math or science students where equations are being written. However, avoid talking TO the board (with your back to the students). If you wish to talk or discuss issues with students, turn and face them.
- Erase old chalk work completely. This will make the board easier to read and while erasing it will give students a chance to catch up with you.
- Structure your board work - don't just write things randomly, keep your board organized. For example divide up the board with vertical lines - put equations in one panel and major ideas or themes in another. You could do the same with arguments and conclusions.

- Use the most visible parts of the board for the most important points. The upper left point on a board is the most prominent spot. Be aware that the bottom edge of the board might not be visible to some students. Watch for students twisting or craning their necks to read your board.
- Use sliding three layer chalkboards in the following order: first - middle panel; second - front panel; third backboard.
- Follow the 1-10 rule - words and letters should increase in height by 1" for each 10ft increase in viewing distance. (e.g. if students are 10 ft away, write letters 1 inch high. If they are 20ft away your writing should be 2 inches high, and so on).
- Avoid handwriting or cursive writing. Unless you have perfect script, students will prefer that you print.
- Avoid using all capitals when writing words.
- Erase with up and down strokes rather than side-to-side. Up and down strokes won't interfere as much with new writing on the board.

Evaluation of your Board Work

- Ask students to let you know whether or not your board work is clear.
- Ask a sample of students if you can see their notes - by looking at their notes you can judge whether they are hearing, seeing, writing and remembering the important points of the class.
- View a videotape of your board work. Through the assistance of the UCLA TA Training Program you can have one of your class sessions video taped.
- Erase the board at the end of the class so that the next instructor has a clean resource with which to work.

Overhead Projector Tips

- Leave transparencies on the projector for at least 20 seconds.
- Use a pencil or pen as a pointer by laying it directly on the overhead transparency.
- Speak facing the audience - do not turn and talk towards the screen.
- Don't bother showing transparencies when you know that your students can't read them.
- Write separate notes so that you know when each transparency should be shown.
- If lettering on a diagram or chart is too small produce a paper handout for your students.
- Transparencies tend to stick together - stack your transparencies so that a sheet of paper separates them - they will be easier to peel up and place on the overhead.
- Use a card or a piece of paper to cover portions of the transparencies and hide information until it is supposed to be discussed.
- Overlay transparencies on the projector at the same time to show alternatives, changes or processes.
- If you have concerns about the quality or legibility of your transparencies simply walk to the back of the room and look, or ask your students (they will be glad you did).

- Consider placing a copy of your transparencies on reserve in the library so that students can review them.

Designing Transparencies

- Always use a heading or title and include only a few key ideas on each transparency.
- Use only 6 to 8 words per line.
- Use only 6 to 7 lines per transparency.
- On use 1/2 inch margins - on a 10" x 10" projector this will give you a space of 7.5" x 9"
(most transparencies are 8.5 x 11 so if you give yourself a 1/2 margin in width that leaves you 7.5 inches).
- When projecting your transparencies try to keep relevant information in the upper 2/3 of the screen.
- Follow the 1-10 rule based on what is projected on the screen - not what is on the overhead transparency itself.
- Use a maximum of two font faces (when preparing printed transparencies).
- DO NOT USE ALL CAPITAL LETTERS. They are hard to read.
- Avoid vertical lettering (in English).
- Use serif fonts rather than sans-serif fonts (serif fonts have little tails on the letters called serifs, sans-serif fonts do not have these little tails).

Times New Roman - a serif font

Arial - a sans-serif font

Using and Overhead Projector as a Chalkboard

- Follow the same principles you would for using a chalkboard.
- Write legibly and avoid using handwriting or cursive form.
- Beware of the size of your projected pointer. They can sometimes appear large and blurry on the screen and block some of the other information on the transparency.
- If you wish to write and erase, make sure you use water soluble pens and bring some water and paper towels to wipe your sheets clean.

Slide Projector Tips

- Use a single type of presentation media - try not to mix slides with overheads.
- Use carousel-type projectors whenever possible.
- Arrange your slides in advance and make sure to use the locking ring on the center of the carousel.
- Use a dark slide at the end of your presentation. Some machines will display full light in empty slide slots. By placing a dark slide at the end of your presentation you can avoid temporarily blinding your audience.

- Try to use horizontal slides only. They have a larger viewing area for your audience. Vertical slides often cannot be seen completely. If you do use vertical slides, make sure they can be seen clearly before you start your presentation.
- Pictures of maps make for poor slides. Most of the detail in the map can not be seen by your audience. If you must use maps, enlarge important portions of the map so that details can be seen clearly, or, give out a printed version that is legible.
- Limit each slide to one main idea.
- Use charts and graphs rather than tables. Charts and graphs are much easier to understand and compare. Tables can appear complicated and confusing.
- Use quality well framed photographs. Close up shots are generally better than overall views because they show detail clearly.
- Choose slide colors carefully - avoid dark blue and red lettering. Use dark colored backgrounds and light colors for foreground objects (diagrams, lettering, titles, etc.).
- Keep a slide on the screen for no more than 10 -15 seconds. Most viewers won't spend more than 15 seconds examining your slide.
- Recognize that students may not be able to take notes during your presentation of slides. If you want students to have a permanent record of your presentation, create note or handouts, or put copies of the photographs, charts, and diagrams on reserve after the presentation.
- Keep your text simple and concise.
- If you have a small number of slides to show during the course of a lab or discussion section, group them together so that they are shown in once presentation rather switching back and forth between chalk board and slides, discussion and slides, etc.

The Room

Is it a comfortable space for students to listen, interact, and learn?

- Is the room too hot or cold? Can you adjust the temperature or do you need to call facilities to have adjustments made?
- Are there enough chairs or spaces at the tables?
- Are there broken chairs or tables that need to be replaced?
- Do you have chalk and erasers?
- Is the room bright enough?
- Can you open / close the shades on the windows?
- Can you open / close the windows themselves?
- How do you operate the lights?
- Can you reach maps or screens to pull them down? Are they electronic / mechanical? Do the switches for the screens work?
- Will your voice carry to the back of the room easily (so that all students can hear) or will you have to elevate your voice.

How can you use the features of the room to help students learn?

- Can you move the tables and chairs?
- Are the seats fixed?
- Given your teaching style can you encourage group work where the chairs are fixed? Can you present and use visuals if students are spread around tables?
- Is it easy or difficult for you to reach individual students for one - on - one interaction? Is it easy for students to interact with each other?
- Would you and your students be better off in a room with a different arrangement of chairs, tables, screens, windows, and chalkboards?

Tips for TV / Film / Video / DVD

Preparation and Operation

- Show up well ahead of beginning of class to set up and test equipment.
- Sound is a frequent problem - make sure the film or video can be heard throughout the room.
- If you are using a TV to show the film have student get up and move or move their chairs closer so that they can see and hear.
- Check / Test your media well ahead of time (several days) to make sure you have received the correct film or movie and that the media is not damaged. If the film is damaged or wrong you will need time to return it and collect the correct version.
- Learn how to operate the equipment. UCLA's Audio Visual Services (AVS) will train individuals on how to use different pieces of equipment. If you are not familiar with a given piece of equipment - contact AVS for some training.

Teaching with Film / Video

- Prepare your students by telling them why you are showing a given piece of film or video.
- Tell students whether or not they should take notes.
- Interrupt (stop) the video when necessary to enhance learning - ask students questions; gather their reactions, ask them to justify their opinions of the film so far.
- Help your students to think critically about the presentation. Stop the film at specific points to ask questions or allow for discussion. View several presentations that offer different opinions on the same topic. Stop the tape before its conclusion and ask students to argue/defend what they think the conclusion should be. Ask students to compose their own ending to the story being shown. Tie the presentation to other types of media/material on the same topic (ie print sources / a bibliography / a research guide).
- Produce your own short video presentations. Have students produce their own short video presentations. There are services on campus such and the Instructional Multimedia Production Lab or the Faculty New Media Center that can offer support for such projects.
- Conduct follow up activities after the film or video has ended. Lead a discussion, break students into groups to discuss specific issues, have them do a write up of the

key points and major themes of the presentation - ask them to relate these themes or points to larger issues presented in the course.

Voice and Body Tips

Voice

- You will need to speak loud and clear so that all students in your class can hear you. You will need your voice to be loud especially when you are trying to pull students away from group work and back into one large group.
- Practice your loud voice at home -even if it seems silly. Read a passage of a book or journal article at different voice levels - see what feels loud, what feels comfortable, and what feels soft.
- Do not talk to students with your back turned towards them. Having your back turned causes your body to block your voice thus making it hard for students to hear you.
- Try not to talk to the chalkboard while writing. Write, then turn and talk about what you wrote - or, talk first, then write.
- When talking aloud, try to talk 50% slower than you would in a normal one-on-one conversation. Speaking aloud requires that you enunciate your words well and that you give everyone a chance to hear and understand what you are saying. This can best be done when you slow down your rate of speech. Read a passage from a book or journal aloud and try it at different speeds.
- If you are not sure whether your students can hear and understand you - ask! Don't wait until the end of the class or the end of the quarter. Ask within the first 10 minutes of class. Students will appreciate your concern.
- Don't be afraid to ask your students to speak up so that the class can hear them. If a student speaks softly, repeat their question yourself so that the whole class can hear it.

Body

- Your body can communicate ideas, emotions and attitudes to students as easily as your voice. Be cautious about how you appear, act and react to students.
- A smile never hurts.
- Don't be afraid to move around your classroom. Being the teacher does not require that you stay at the front of the room at all times.
- If you can't hear a student's question - walk over to them and ask them to repeat it so you can hear.
- If it seems a student can't hear you - walk up to them so that they can hear your question or your response.
- Clothing - dressing up or dressing down - either is OK. But we recommend that, since you will probably do some standing, sitting, bending, and squatting during a class session, you should probably wear the sorts of clothes that allow both you and your students to feel comfortable.
- Before you pick up sticks, pointers, and laser beams, try using your arms and hands as your pointer. It is much easier to watch the teacher point out something on the board with their arm and finger than to try to follow a dancing point of light.

Sources:

UCLA Office of Instructional Development's "The TA AT UCLA - 1987 - 1988 Handbook".

Davis, B. G. (1993). Tools for Teaching. San Francisco: Jossey-Bass Publishers.