teaching and learning using interactive video
Courses over interactive video have been a reality at the University of Missouri-St. Louis since 1986. The infrastructure has evolved over the years, but many of the basics of how to interact with a remote site audience remain the same. The aim of this publication is to acquaint you with the technical basics so that you are aware of the potentials and constraints imposed by the technology. Knowing this enables you to better plan your course and materials used so that the learning experience for all students, remote or on campus, is as active and rewarding as possible. Many of the methods suggested for you to engage your various student constituencies can be used within the campus context or with other types of distance learning methods. Your success in teaching over interactive video is dependent upon your creative talent. The technology itself plays only a minor role. At your disposal is the staff of instructional designers, production technicians, evaluators and others in Information Technology Services.

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The term Distance Learning is somewhat generic since it encompasses a number of possible delivery methods. Some such as correspondence courses began at least one hundred fifty years ago. The key concept in any distance learning is the physical distance that separates the instructor from learners.

[audio conferencing]
Using telephones or radio, students interact with instructors over the airwaves. Used even today in Wisconsin and as far away as the Australian outback. Similar to making phoned conference calls.

[one-way video, two-way audio itfs]
The low power microwave transmission licensed by the FCC that can be used at distances up to fifty miles where the receive antenna is in “line of sight” of the transmitter antenna. You can have two way audio and video only if you have a transmitter at both ends of the transmission. Normally remote sites interact with the origination site using conventional phone connections.

[satellite conferencing]
The program is beamed to a geosynchronous communications satellite above the equator and the satellite amplifies and retransmits the program back to a dish antenna. Remote sites can most easily respond using conventional phone connections back to the origination site. Transmission costs are expensive and based on hourly use of the satellite transponder.

[two-way video and audio]
Compressed video technology has been used since the mid-1980’s to provide cost effective interactive video between multiple sites. Until recently T1 or ISDN phone lines had to be rented to use for transmission. Recent innovations have enabled interactive video programming to be transmitted over IP (computer lines). This is what UMSL and the universities and colleges in Missouri are using.

[video conferencing]
Using either phone line connections, or IP for transmission provides two-way video to conduct meetings with two or more sites involved. Some varieties allow for medium to large groups at a site. Normally video operates at full motion.

[desktop conferencing]
A lower resolution version of video conferencing where the camera and microphone are connected through a computer equipped with support hardware and software which allows interactive meetings, usually between two sites only. Generally operates at half of full motion. Better for static “talking head” conferences with no moving visuals.

[telecourses]
Class presentations and materials used by the instructor are pre-recorded, usually videotaped and viewed passively by students. Students do assignments and take tests and examinations as in regular face-to-face classes.

Figure 1. Videoconferencing
The distance learning delivery methods on the previous page can be categorized in another way, either as synchronous or asynchronus. Synchronous refers to those delivery methods where the interaction between teacher and students occurs when it actually happens or “in real time” as it is designated. Examples include regular face-to-face classes, interactive video, live satellite programming, audio conferencing and on-line Internet chat sessions. Asynchronous refers to delivery methods where the interactions are delayed and happen outside of “real time”. Examples include videotapes, CD-ROMs, internet and printed materials.

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The University of Missouri-St. Louis is part of several video networks that connect a variety of remote sites around the state. It is a partner in the St. Louis EdNet along with St. Louis Community College and Cooperating School Districts (CSD). It is part of the four campus University of Missouri Video Network. For the most up-to-date map of all the interactive video systems throughout the state please go to the following website: www.modla.org/map

As of January 2000, the infrastructure of the state’s video system is supported through MORENet that connects all state-funded institutions of higher education in Missouri. We no longer operate over leased dedicated T1 phone lines. Instead video transmission is accomplished over IP computer networks. The UM Video Network members offers undergraduate and graduate level credit courses, continuing education credit and non credit classes, video conferencing for research, extension and administrative purposes.

In addition to universities, another group of sites that are commonly used for courses are the Telecommunications Community Resource Centers (TCRCs) situated in the eight designated UM Extension service regions. These facilities are community partnerships with University Extension and Outreach and provide distance education and computer support. The first of these facilities was built in Poplar Bluff in 1993. Currently there are TCRCs in Camdenton, Kirksville, Mexico, Mineral Area College, Nevada, Portageville, and Reeds Springs. Others are being planned in other parts of the state.

Several area community colleges have been designated as Residence Centers with 2+2 courses offered from UM-St. Louis. The interactive video classrooms were equipped and maintained by UMSL. These partner institutions are St. Charles Community College, Jefferson County College, East Central College and Mineral Area College. Equipment at all four is comparable to that in on-campus ITV rooms.

Another group of facilities with interactive video capabilities is Southwestern Bell Telephone’s Telecommunity Centers (TCCs). One is housed on the UMSL campus, another at Harris-Stowe and several in the Kansas City region.

[other video services available]
Desktop videoconferencing is available for use in the Lucas Hall video classrooms as well as in several other campus locations. This service can dial out from the campus using ISDN and can connect to sites worldwide. An additional feature of the system is document-sharing. The best use of this system is for one-to-one conferencing. There are long distance phone charges associated with the use of this service. As with any long distance charges, costs vary according to location to which you connect. Phone us for details.
The video classrooms coordinated by the Video and Distance Learning staff are used according to coordination procedures developed in conjunction with the UM Video Network. While every effort is made to allow access by qualified users, any request is given a priority ranking.

[use of the facilities]
Open to all UM-St. Louis faculty, staff and administrators, University and Extension and Continuing Education staff. Also, available to non-profit, non-university organizations.

[priorities]
Credit courses that are part of a UM Video Network degree program
Credit undergraduate and graduate courses
Non credit short courses, semester-long courses from CE&O
Ad hoc videoconferences for UM-St. Louis clients
Non university users

[scheduling]
For semester-long credit courses requests must be made through the office of the Dean of CE&O and the UM System Academic Affairs office.
Link here for the complete scheduling guidelines from the UM system:
http://www.system.missouri.edu:80/vpacad/video/welcome.html
Course request deadline for all Terms for the next Academic Year is the 3rd Tuesday in January through the last Monday in February.

[costs]
[distance learning facilities]
Use of distance learning facilities for UM credit and non-credit programs and administrative ad hoc videoconferences are free. $60/hour is charged for non-university clients

[remote sites]
Check with staff for prices as remote sites vary as to charges for facilities, support personnel and connection charges.

[line charges]
Check with staff to determine whether there will be line charges for programs. Telephone type connections that use a long distance carrier such as AT&T, Sprint or MCI usually do incur charges.

[reserved time slots for semester classes]
All credit courses offered over the network will retain their scheduled ITV room for the entire 16 weeks of the term. Please notify staff if there will be any times that the room or network will not be used, including during tests and final examinations or term breaks.

[cancellations]
[entire course]
The academic department cancelling the course needs to contact the UM System Academic Affairs Office in Columbia and staff at UM-St. Louis.

[occasional class]
The faculty member should contact staff as soon as possible and will then contact any remote sites.

[copyright]
The faculty member is expected to comply with all applicable US Copyright laws. Should there be questions, direct them to the Director, Faculty Instructional Support.

[videotaping]
If you wish to videotape any class session or the entire course, you will need to have Videotaping Release Forms signed by all students in your class. On the form you will need to designate the use of the tape(s), how they will be distributed and how long they will be retained.
Training is highly recommended for all faculty and other presenters new to distance learning. Training is provided by staff either in a small group or to individual faculty members. The main determinant is the convenience of the faculty member. Initial training one month prior to the start date of the course or program is recommended. Any concerns faculty may have about such topics as designing appropriate instructional materials, teaching in the video classrooms and how to foster interactive sessions can be discussed with staff at any time. During the initial two hour session the instructor will be shown: an overview of distance learning and the UM Video Network, a tour of video classrooms and the control room, a demonstration of the equipment used in the classroom, and basics of instructional design techniques, presentation methods and use of visuals. An added service is to schedule a time for the faculty member to do a practice presentation that can be videotaped and reviewed later.

At times convenient to each faculty member, it is highly recommended that time be scheduled for hands-on practice of the equipment in the video classroom.

Refresher training sessions are recommended for any faculty who has not taught on the system for a year or more. Advanced training for seasoned faculty is available upon request.

Before each session
There is a half hour of scheduled test time before every interactive session. During this time, the classroom operator will make certain that video and audio connections are established with all sites. The operator is there to assist the instructor or presenter before and during the session. During the test time you should interact with the operator, set up and cue any visual materials, fax last minute handouts and chat with local and remote site students.

If you have any last minute changes or special support needs let your operator know before the session begins.

during each session
The assigned operator is available in the control room during all interactive sessions. The operator follows the class proceedings and switches the camera shots and assists in the use of various visual materials as needed. There is also a telecommunications engineer on duty during all sessions. If there are problems during the session the operator and/or the engineer will do everything they can to correct the problems.

Note bene
ITS staff will not proctor examinations, photocopy any materials or be responsible for the students in any way.

after each session
Any problems encountered during the class should be brought to the attention of the operator or engineer on duty. If you feel that anything was mishandled during the class contact the Director of Faculty Instructional Support or the Assistant Director for Video and Distance Learning.
teaching a video
distance learning class

If you think of the qualities that make a good presenter—being prepared, flexible, caring, an effective communicator—they are the same, and often more important, for the distance learning presenter. Learning to manage the session and interact with participants will help all participants, especially those at remote locations, feel like they are part of an effective distance learning experience.

Managing an instructional session can be challenging when all of the participants are in one location. When participants are in several locations, this task becomes even more challenging. Here are a few suggestions to help you manage a distance learning session effectively:

• Prepare and send support materials in advance to all sites. Make sure there are enough copies or a means of copying the materials at the remote location. Know who is responsible for photocopying and/or distributing your materials.
• Prepare and test your visuals before the session.
• Practice using the distance learning equipment, even things that may look simple such as using the document camera, so that you feel comfortable and confident when you walk into the session.
• If there is a facilitator or co-presenter at another site, stay in touch with them. They can provide you with important information or draw your attention to particular problems at the remote site.
• The more locations involved in the program, the easier it is to leave remote sites out of the discussion, or lose their attention completely. Make sure you involve or check in on all sites regularly throughout the session.
• You can assume that you are “on-the-air” as soon as you walk into the distance learning room. Be conscious of what you say and do. If you chat with local participants without acknowledging remote sites, remote participants might feel left out.

instructing in the distance learning environment

[remembering participants names] Calling on remote site viewers by name is critical, not only in order to make their learning situation seem less artificial, but also to avoid confusion at the remote sites. When you look into the camera, it appears to the remote site viewers that you are establishing eye contact and each and every viewer thinks that you are looking directly at them. To remember the names of those at the remote sites try these techniques:

• Ask participants to introduce themselves everytime they speak
• Make a list of remote site viewers and keep it available so that you can place a checkmark next to their name whenever they speak or ask questions
• For an entire course prepare a seating chart and have remote site viewers sit in the same seat every time

[expectations and ground rules] It is very important to set expectations and ground rules:

• Introduce yourself.
• Tell participants what experience you have with distance learning and what your expectations are in regards to this program.
• Explain in your own words how the technology works, its advantages and disadvantages. If you do not feel comfortable doing this, ask (in advance) the local technician or facilitator for assistance.
• Set up procedures for questions and answers, interaction, activities, and follow-up information.
teaching a video distance learning class

[roll call]
Depending on number of participants at each site, you may want to conduct roll call at the start of a session:

- Have each participant introduce him/herself and give a statement of their expectations of the program or tell the group something personal about themselves. Getting participants to talk will help them relax and feel more comfortable with each other. It will also help them get used to the distance learning technology.

- When you have a large group, it may be too difficult or time consuming to call on each participant. Ask the participants to sign a roll sheet and fax it to you at the break or end of the session.

resolving technical problems
You play a critical role in letting your technical team members know about problems and then working with them to reach solutions. Here are several suggestions for understanding the specific features of the interactive videoconferencing system and for dealing with the audio and video glitches that could affect your distance classrooms.

[current norm for audio and video synchronization]
There is typically a slight delay (of no more than a half-second) with video and audio transmission. That’s normal. Two different types of delay and their probable causes are described below:

The first type is an extended delay of BOTH audio and video (more than one second in length). Some sites experience greater delay in the video and audio transmission and reception than others. The delay is in the network topography and will change from semester to semester. Getting the schedule for the semester to Academic Affairs and then to MOREnet as soon as possible will help their staff to “map” the connections for your class in the most efficient manner and help alleviate the cascading and resulting delays.

The other type of delay is in the lip sync. This is best defined as the sound of a person’s voice is not in sync with their lips (like a dubbed Godzilla movie!). Please take care in noting which type of delay occurs in your class. This will enable the technical staff at each campus to accurately describe the problem to MOREnet.

Figure 2. Microphone Placement

LAVALIERE MICROPHONE PLACEMENT

High and in the middle - ideal position

High and to the side - OK position - not ideal

DO NOT attach microphone to metal jewelry

Too low
teaching a video distance learning class

[common instructional or technical problems that may interrupt classes]

• Instructional needs not communicated to technicians ahead of time. Please let your local technicians know when you need special equipment or will be changing from your typical instructional methods. It is good practice to arrive 30 minutes ahead of the scheduled class to meet briefly with the technicians and to test any software, videotapes, or techniques.
• Site(s) not connecting on time (30 minutes ahead of scheduled program is suggested) or needing additional time to test
• Unidentified system “noise” that may cut out your voice or those of your students
• People talking over one another because of the delay in audio transmissions among the distant sites
• Hearing echo of instructor/student voices as microphones are open site-to-site

[suggested responses to audio and video problems as they occur]

• Let your on-site technician know about problems as soon as they occur
• Take time to describe the problems, poll each site for their description
• Return to the instruction, providing greater direction for the interactivity process (e.g., institute a systematic response pattern, going from site to site to elicit comments or questions)
• Give sites/individuals advance notice of the questioning or response order you’ll follow. Establishing a response procedure can help alleviate people talking over one another or their hesitating to ask questions because they don’t want to interrupt you
• Prepare on-site student activity as back up for each class session. Fax the relevant materials to each site if the problem and solution takes longer than 5 minutes to fix. This will permit the instruction to continue at the remote sites.

Be encouraging and enthusiastic about the distance educational environment. Adding technology to the teaching and learning environment does complicate the interactions you desire. But, you may build on the range of geographic locations and personal/professional experiences represented in your students to incorporate real-world critical incidents and case studies.

[additional instructional possibilities to consider]
You might be interested in inviting guest lecturers to your distance classrooms with access to videoconferencing systems where they are located. Talk to your local technicians about the possibilities.

An instructional designer and a visiting professor in video production (located at UM-St. Louis and UM-Kansas City, respectively) might suggest additional ways to use the features of our videoconferencing system. Contact Cheryl Bielema, Ph.D., UM-St. Louis, by phone (314) 516-7134 or email bielema@umsl.edu. Dr. Dennis Rosa, Creative Director, UM-Kansas City, can be reached at (816) 235-1610; email, RosaD@umkc.edu.

[special setups and needs]
Special setups may include use of different room configurations, making accommodations for guest speakers, or use of particular software applications or other special needs. Please alert the support staff well in advance of when you anticipate these special needs so that they will be available when you wish to use them in class. If there are special needs for remote sites, advance notice is also necessary.

[videotaping your classes]
You may have your video classes videotaped by making a request prior to the start of the course or particular session. In order for the videotaping to occur you will also need to have a signed release from every participant at all sites. This is in compliance to federal right to privacy regulations and copyright.
teaching a video distance learning class

[the monitor is the message]
In the distance learning classrooms, the monitor is your “window” to participants at the remote sites. Remote site viewers must rely on the television monitor almost all of the time for instructions, content, feedback, and nonverbal communications. It is through the monitor that remote participants will see you, the presenter, and all visual materials that you present. Remote site viewers do not have the advantage of being in the same room and feeling your personal presence. Unless you use the monitor to reach out and interact with them, remote site viewers will be passively watching TV. To actively engage the remote site viewers, you can talk directly to them, and look directly at them via the instructor’s camera. It is imperative also that you display proper visuals. If you show a book and hold it up in front of the room, remote participants will not be able to see it properly. Put the book under the document camera so ALL participants can see the same thing.

[additional suggestions]
Here are some additional suggestions that will help bridge the geographical and psychological distance between people at local and remote sites:

- Relax and be yourself.
- Call participants by first name.
- Make eye contact with participants by looking directly at the instructor’s camera.
- Listen to the participants and give appropriate verbal and nonverbal feedback.
- Be approachable and flexible.
- Plan activities for participation and start each time with a different site.
- Draw passive participants/sites into the conversation.
- Allow ample time for questions and concerns.

Figure 3. Presenting Visual Aids
Figure 4. Making Eye Contact

MAKING EYE CONTACT
Participants at remote sites are more engaged by instructors who look straight at them from time to time. They need to feel they are as valuable to the program as the participants at the local site. Simply calling on them by name isn’t the same as a direct, personal gaze on occasion. If the instructor doesn’t look at the remote site participants directly through the camera, the effect at the remote site will be like a picture out of focus, “there, but not there.” Eyes downcast or not focused on the participants can inadvertently convey that the instructor is uninvolved or is disconnected from their site. A smile goes a long way.

To maintain eye contact with remote participants it is necessary to look into the camera, much like a newscaster on television. Since it is easier and much more natural to look at a MONITOR, not a camera, most sites have positioned the instructor’s camera close to or on top of the monitor that shows the remote site. Learn to look at the receive monitor as much as possible, especially when you are addressing or listening to a participant at a remote site.
ideas to engage viewers

Good program interaction is based on the use of a variety of activities: participants watching and listening; conversing with the presenter; conversing with each other; or working on their own. Activities should not be limited to interaction between people, but should also provide opportunities for the participants to interact with the material itself.

Effective interaction will reach beyond the technology to permit a more natural learning process, but opportunities for interaction must be carefully planned in advance. Here are several suggestions for activities, and you can probably think of many more:

[assigned questions]
Ask a group at one of the remote sites to be responsible for the answer to a specific question. They can present the answer at the next session. This responsibility encourages participants to sit down and talk with one another after the session is over. Cooperation is also fostered and there is a built-in leadoff for discussion at the next session.

[preview key points]
List significant concepts to be covered during the presentation on a visual under the document camera. By previewing what you will be covering, you can create mental anticipation. This technique can also be used to start a discussion. Jot down some points that you think might need more clarification and ask participants to select one or two that they would like to discuss.

[interactive study guides]
Stimulate individuals to interact with what you are presenting. Leave some portion of the material to be completed or erase a portion of what you have written, so that the group has a chance to mentally fill in the gaps.

[brainstorming]
Work on a given problem within a determined time period (five to fifteen minutes) and assign a person to record publicly all ideas. Participants call out solutions in single words or short phrases without any commentary or discussion. All judgments are suspended until all ideas are out. As the session progresses, one creative idea stimulates another. At the conclusion, each list of ideas is edited and evaluated.

[small group discussions]
Small groups at each site can work on a given activity or discuss a given issue. Any handout materials are sent to other sites in advance. At the end of the allotted time, each group presents their results or conclusions to the larger group. This is followed by questions from participants at the other sites and is moderated by the presenter.

[e-mail discussion list]
Email discussion lists can be used for a variety of purposes. Besides a list for the entire group, you can also create smaller lists for groups of participants. Use email lists for follow-up discussion, group projects, case studies, and other activities.

[case study]
A real-world description of a problem is given with all accompanying data. Participants at the various sites are asked to resolve the problem within a given period of time. Participants at each site submit suggestions to other participants and the presenter acts as a moderator. Participants can even construct their own cases that are related to the learning objective.

[role play]
The participants are given a situation and roles to play. Without practice, they act out the events of the situation. The situation could provide a broad outline or a detailed confrontational event into which the participants are thrust. People playing the different roles can be located at the same or at different sites. Role playing activities are excellent for developing communication skills.

[games]
Create a game that reinforces the subject being taught and lets participants at different sites play against each other. You can create a variation of a popular games such as Jeopardy or Wheel-of-Fortune.

[debate]
This is an organized and civil argument that requires a good moderator. After the debate, which would emanate from the host site, participants in remote sites ask questions.
In any instructional setting, effective use of visual aids can greatly enhance the presentation of material. This is especially true for distance learning where remote participants rely on the television monitor for information. It is important to present a variety of visual materials. You can use images, objects, text, slides, computer applications, and videotapes to demonstrate and emphasize. Keep visuals simple and to the point. Supplement visuals with detailed handouts and always test new visuals before the program.

The guidelines on the next few pages are true for all distance learning visuals, including computer presentations, slides, and printed or handwritten materials. Presentation software, like PowerPoint, can help you produce professional looking charts, diagrams, and bullet lists in minutes.

[use of the elmo document camera]
The document camera can be used to show printed and handwritten materials, photographs, pictures and illustrations from books, and other three dimensional objects. If there is a technician on duty, he or she will zoom in and focus on materials as needed. If there is no technician, please make sure you know how to perform these tasks.

Small print materials, such as newspaper articles, do not show up well on the document camera. Give copies to the participants and use the document camera only to reference the material you are discussing.

[in-room computers]
You can use the computer in the distance learning room for presentation software, use of CD-ROMs, web pages, or other online materials. Please test material and programs in advance and pay special attention to font size and small details.

[use of videotapes]
A prerecorded videotape can be a great addition to your distance learning presentation, as long as you keep a few issues in mind: Because of compression, videotapes that have a lot of motion in them will appear a little jerky. The audio and video quality of prerecorded videotapes varies tremendously. If possible, preview tapes on the distance learning network, before class.

Pay attention to copyright laws. Any videotape that has been rented usually is licensed only for home viewing or for use at one site only. To display it to other sites would require that you have obtained permission from the copyright holder.

[35mm slides]
A slide-to-video unit is available for the distance learning classrooms in Lucas Hall. Once the technician switches to the unit, you have full control over advancing and reversing of the slides. Please set up your slides before class.

[light pen]
Using the Light Pen, you can freehand draw or position an arrow on the video monitor. These markings will be seen at all locations. Use this technology to highlight an area on a slide or point to a specific object. Lines and arrows can be drawn in several colors and they are erased at the click of a button.

[SMARTboard]
The SMARTBoard is an interactive whiteboard used for displaying and accessing computer-based materials for classes, meetings, and presentations. The user can write on the 57” projection screen, save notes to a computer file, or print to a network printer. Computer applications, including the internet and PowerPoint, can be easily controlled by touching the SMARTBoard screen. The SMARTBoard also functions as a television monitor for interactive video classes.

SMARTBoard systems have been installed in distance learning classrooms at Columbia, Kansas City, and Rolla. Using the system’s video and data conferencing applications, users will be able to share handwritten notes and computer documents with colleagues or students at remote sites around the state or the world.

Be sure to do a spell-check on your visuals; double-check that numbers are correct. Re-read sentences for use of proper grammar. Always bring printed copies of your visuals for backup if technology fails or the classroom computing system is not compatible with your computer and/or disks.
Thirteen Steps to Better Instructional Visuals for Electronic Presentation

1. Understand the media.
Well-designed graphics can greatly hasten and increase understanding and improve retention of information. Electronic presentations have great promise for utilizing graphics and some important potential pitfalls to consider.

Well-designed presentations use a consistent format with wisely chosen colors and type fonts. Poor choices not only communicate poorly but also can distract from your message and you.

2. Simplify general composition.
Keep content simple and short. Use key words instead of complete sentences. Text on each slide should reflect the main points of your presentation. Bulleted items can introduce or summarize key points. Text should not reflect verbatim what you plan to say. Plan on spending 2 to 5 minutes or less verbally presenting the content of each slide.

3. Don’t squeeze too much information on the page.
Five to seven words per line and five to seven lines per page is a good starting place. Twenty-five words per page is a good guideline. Headings should be short. Spread your information over multiple “slides” rather than crowding words and graphics on a single slide. Because no two TVs reproduce images the same, you must leave at least a 10 percent blank or “safe area” around your text and pictures.

4. Organize basic presentation outline.
A. Presenter name, topic, class, etc.
B. Objectives so audience knows where you are taking them
C. Body of material
D. Repeat list of objectives for group review
E. Summary of required action or assignments

5. Limit colors and control contrast.
Color can be a powerful visual tool. Use it sparingly. Avoid large areas of heavily saturated (over 80 percent) colors like red or orange since they are difficult to reproduce electronically. Ensure adequate contrast between text color and background color. Use light letters, such as white or pale yellow, against a dark-colored background, such as blue or green. Use only a few color choice “templates” per presentation.

What you see on your computer screen may not be what you see on the actual presentation equipment. Highly textured, multi-color fills and loud backgrounds can be distracting. Avoid white backgrounds that can strain viewer’s eyes in a darkened room.

6. Select a typeface appropriate for electronic media.
Typeface style in instructional visuals can promote visual variety, increase learner understanding, and gain or engage learner attention. Fonts should enhance the presentation without being the focus.

There is a good deal of disagreement about which type fonts are best for electronic media. The most legible fonts are those that have strokes with similar thickness at all points. Helvetica or Arial are good examples. Faces such as Times with very thin strokes do not work well. Fancy or ornate typefaces can be hard to read and reproduce poorly on video. Save them sparingly for title slides and headings. Use normal, bold, or extra bold (black) versions of the same type face to visually separate elements

Limit typefaces, sizes, and weights to two or three, and retain these throughout the presentation. Some typefaces are specifically designed for electronic presentation like Microsoft’s Trebuchet MS (TrueType) and Verdana (TrueType).

Typefaces That Work Well for Electronic Presentation
Avenir, Arial, Bookman, Old Style, Chicago, Comic Sans, Geneva, Helvetica, Lubalin Graph, Monaco, Newtext, Korinna, Optima, Univers

Font or Typeface Size
Start the main body of your text at a 36 pt. typeface and adjust up or down from there. Test your font sizes to make sure people in the back or sides of the room can easily read your text. Differentiate headings from the main body by using larger type or a different font. Use standard upper and lower case letters for best readability.
7. Keep transitions between slides smooth.
Be consistent from slide to slide. Subtle transitions work better. Fancy transitions attract too much attention away from your message and require lots of computer processing power. Simple transitions use less compute memory and won’t slow the pace of your presentation.

Clip Art, Pictures, Graphs and Diagrams
Always attempt to substitute pictures, tables, or charts for words—they can convey complicated information quickly and efficiently. Keep drawings simple and lines bold. Make line size at least 4 pt. Solid fills work best. Stay away from screened fills, patterns, and broken or thin lines that cause annoying TV screen flicker. Use light, bright colors for illustrated graphics and dark backgrounds.

Always label charts and diagrams with horizontal text to avoid audience fatigue. Do not clutter graphs with text and footnotes. Reserve detailed data for handouts. Put footnotes in small text in the lower left-hand corner. If you are unsure about copyright clearance get permission or find an alternative image.

8. Scan images for best resolution.
Optimal setting for digitized photos, slides, and printed materials is 72 dots per inch resolution and a color palette between 256 and 1,000 colors. Anything greater is beyond the resolution of TV and will create huge presentation files. Use a “universal” color palette to ensure image colors remain consistent when transferred across computers. Scan images at 75 percent to 50 percent actual screen size. This will save disk space and leaves an area surrounding the image for headings, labels, etc. If you are unsure about copyright clearance get permission or find an alternative image.

9. Use spreadsheets and instructional software with care.
When converting computer-generated graphics to a TV signal, as much as 75 percent of the image resolution can be lost in the process. All of the above rules apply, especially the need for reasonable contrast between lettering and background. Never use patterns, screens, or anything with a line weight of less that 6 pixels, or severe screen flicker will occur. Many software programs can be enhanced for TV viewing by increasing line weights, converting backgrounds from white to light colors, increasing font size, and using a simple bold typeface.

10. Carefully select 35mm slides.
Try to use horizontal compositions. Vertical slides are always cropped by TV’s 3 × 4 ratio leaving wide blank margins on each side of the slide. Make sure letter size is adequate for reproduction on video. Word slides do not convert well to TV viewing. Consider converting text slides to a computer presentation, printing them out on paper or having your TV specialists recreate them using a character generator. Dark or out-of-focus slides will look significantly worse on television. Expect a significant drop in resolution when reproducing 35mm slides on TV.

11. Choose appropriate printed visuals and transparencies.
Materials shaped in TV’s horizontal format of 3 units high by 4 units wide work best. An 8½” by 11” paper is close enough to this size. Graphics for TV should be created in the horizontal (landscape) format rather than the vertical (portrait) format. Using a consistent size for all graphics eliminates the need to continually zoom the graphics camera in and out when dealing with different sizes of paper.

Use pastel or light-colored paper (light blue or light green, for example) to avoid extreme contrast between the letters and the paper. This should make the graphics more “viewable” by both the camera and the participants. White paper with dark letters will fatigue the eyes. Transparencies will work, but are usually marred by wrinkled or glossy acetate that may pick up glare from overhead lights. Using matte acetate or copying transparencies to light-colored paper will eliminate this problem.

12. Hand-lettered visuals can still work.
For hand lettering, see the notes above and print legibly with a medium point, dark-colored felt-tip marker on light-colored paper. Preprinted lined paper with ¼” spacing can be used to help guide penmanship.

13. And finally, to prevent embarrassment . . .
Double check spelling, grammar, and numbers. Assume there will be technical problems to work out. Arrive early enough at the presentation room to test all visuals and equipment. If you’re using non-standard fonts, bring along copies or embed (save) them in your presentation. Always bring printed copies of your visuals for backup if all else fails.

—Dave Pavlik
Manager, Graphics

—Allan Schmidt
Instructional Development Coordinator
1. Vertical visuals may lose part of the message on a TV monitor.

2. Use a HORIZONTAL or LANDSCAPE orientation to get your entire message on screen.

3. **USE VISUALS TO**
   - Organize ideas
   - Reinforce and clarify

4. The aspect ratio of a television monitor is 3:4.

5. Using long and wordy paragraphs of text on a slide will force you to reduce the font size. The resulting text will be more difficult for students at local and remote sites to read.

6. Use concise sentences and bullet points to convey your messages.

7. Centering all of your text may be confusing and difficult to follow.

8. **Center Titles and subtitles**
   - Left-align all other text and bullet points.
DOUSE

• 36 point or larger

• Bold or large text for emphasis

AVOID

• The color red

• Fancy backgrounds

AVOID

• San Serif fonts like Times

• Decorative fonts like Chancery

DO USE

• Dark text on a light background

• Light text on a dark background

DO USE

San Serif fonts like Helvetica or Arial

AVOID

• San Serif fonts like Times

• Decorative fonts like Chancery

AVOID

• Italic

• ALL CAPS

DO USE

• Clip art

• Photographs

• Charts and graphs

AVOID

Using words to describe facts and issues that are better described by visuals
Q. Can I assign group discussions?
A. Yes!

Students at different sites can break into groups. Some sites may only have a few students and they would become one group.

Two potential problems may arise:
- You cannot easily “eavesdrop” or join in with remote groups
- If there is only one student at one site, he/she may not be able to participate. While students are talking you can still talk to remote sites via the network.

Q. Can students make presentations?
A. Yes!

For short presentations, such as a report to the class after group discussion, students can talk from their seats. For longer or more formal presentations, students can use the instructor’s podium. Please give students guidelines for using media.

Q. What about name tags?
A. Name tags may pose a problem.

Since some remote sites are quite large and you often see a wide shot of the room, you will not be able to read the name tags. This is also true if students are sitting in several rows, one behind another. A seating chart may work better.

Q. What should I wear?
A. Dress as you would for any class.

Don’t try to look or be more formal than usual, but keep these few ideas in mind:
- Wear simple patterns or solid colors.
- Avoid the color red—it tends to “bleed” in video.
- Avoid black and white outfits.
- Keep dangly, noisy jewelry to a minimum and avoid scarves and ruffles.
- If possible, avoid tinted eyeglasses so that students can see your eyes.

Q. What about using overhead transparencies?
A. In general, overhead transparencies may be used.

- Test all transparencies prior to class to make sure the text is large enough.
- If possible, photocopy or reprint them onto pastel-colored paper.
- Change page orientation to landscape.

Q. What if there are technical problems?
A. Please notify the technician or site facilitator.

They will troubleshoot, involving other technicians and engineers, and will correct the situation or advise you as to extent and length of time they need to work with the system.
Analog - a signal that is made of many frequencies. Your voice is analog, it has a wide range of frequencies. Traditional telephone lines transmit an analog signal.

ATM - Asynchronous Transfer Mode. High speed (up to 155Mbps), high bandwidth, low-delay, transport technology, integrating multiple data types (voice, video, data).

Audioconference - an audio-only meeting in which participants in different locations use telephones or special audioconferencing equipment to interactively communicate with each other in real time. The number of participants may be as small as 3 or as large as 100.

Bandwidth - the amount of data that can be transmitted over a channel, measured in bits per second (bps) and referred to as a bit rate. The higher the bandwidth, the more information can be transmitted.

Broadcast Quality - the quality of video as seen on broadcast television. Video is transmitted at 30 frames-per-second. Same as Full Motion Video.

Bps - bits per second. A unit of measurement of the speed of data transmission.

C Band - portion of the electromagnetic spectrum used heavily for satellite transmission. Uplink frequency is 6 GHz and downlink frequency is 4 GHz.

Codec - CODer-D ECoder. This equipment converts voice and video signals from their analog form to digital signals for transmission over digital lines. It then converts those digital signals back to analog so that you may hear and see them.

Compressed Video - a method of transmitting analog audio and video signals (like those from a video camera) over a narrow digital channel (such as a T1 line). The information delivered via a compressed video signal is “edited” during the transmission process so that it demands less space. Compression allows for nonessential digits not to be transmitted - thus reducing the “volume” of transmission. The “editing” is based on mathematical algorithms and, the more advanced the algorithm, the higher quality of full motion video, with less delay, that is received at the other end. Compression techniques are used for landline as well as satellite communication.

Desktop Videoconferencing - a means of using a desktop computer, video camera, microphone and special conferencing software to communicate visually, audibly, and graphically with another person through the public switched telephone network (ISDN lines) or through the internet.

Dial-Up - to conduct a videoconferencing session by “dialing up” the remote site’s ISDN number. Requires connection to a switched access network.

Digital - a signal that consists of just two frequencies, one high and one low. These two frequencies form a binary code that represents information. Your computer is a digital machine. When two or more computers communicate, they use digital transmission. Many telephone lines today transmit digital signals.

Elmo (document camera) - Elmo is a company that manufactures document cameras and other AV equipment. The word “Elmo” is often used as a generic term for any document camera.

Fiber Optics - a technology in which light is used to transport information from one point to another. Fiber optic cables are ultrathin tubes of glass through which light beams are transmitted over long distances carrying enormous amounts of data. Some versions of fiber optics can carry two billion pulses of light a second to carry more than 30,000 times the information of electronic signals over copper wire.

Full Motion Video - see Broadcast Quality.

H.320 - the international recommendation for compression of interactive video transmission. It can be the video system’s sole compression method or supplemented by additional algorithms. H.320 includes a number of individual recommendations for coding framing, signaling, and audio.
H.323 - the international recommendation for compression of interactive video transmission over an IP network.

ISDN - Integrated Services Digital Network. A telephone line that is made up of two pairs of normal telephone wires to deliver two “Bearer” channels and one data signaling channel. The bearer channels can be used for voice, data, or video transmission. ISDN lines are not wide spread in their use and only a few telephone companies offer ISDN services.

ITFS - Instructional Television Fixed Services. A band of low-power microwave frequencies set aside by the Federal Communications Commission (FCC) exclusively for the transmission of educational programming, and licensed to public institutions. ITFS is typically used in urban areas and requires a special antenna. Receiving sites require a converter.

Kbps - Kilobits per second. Refers to transmission speed of 1,000 bits per second.

KU Band - portion of the electromagnetic spectrum in the 12 to 14 GHz range. Used for satellites.

Landline - a telephone circuit that travels over terrestrial circuits, including wire and fiber.

Leased Line - a dedicated circuit typically supplied by the telephone company.

Microwave - radio waves in frequencies above 890 MHz and below 20 GHz. Is used for transmitting telephone, facsimile, video, and data, mostly in private networks. Microwave signals only travel in straight lines and, in terrestrial systems, are usually good for 30 miles, at which point you need a repeater tower.

Multipoint - a videoconference between three or more sites.

NTSC - National Television Standards Committee. A video standard established by the United States (RCA/ NBC) and adopted by numerous other countries. This is a 525-line video with 60 cycles per second. Frames are displayed at 30 frames per second.

Origination Site - the site where the instructor is located. Also, the site that initiates the conference connection.

Pan - to pivot a camera in a horizontal director (left to right).

Point-to-Point - a videoconference between two sites.

Remote Site - all sites, except the one where the instructor is located. Also called Receive Site.

Satellite - a microwave receiver, repeater, regenerator in a geosynchronous orbit 22,300 miles above the earth.

Satellite Transmission - a form of transmission which sends signals to an orbiting satellite which receives them, amplifies them, and returns those signals back to earth.

Switcher - a mechanical, electrical, or electronic device that opens and closes circuits, completes or breaks an electrical path, or selects paths or circuits. Telephone companies have dozens or hundreds of switches to ensure that the phone call you place goes to the correct destination.

T1 - a digital transmission line with a capacity to transmit 1.544 Megabits of information per second. T1 uses two pairs of normal copper telephone wires, the same as you would find in your house. If used for regular telephone service, a T1 line can handle 24 voice conversations at once. Using compression and higher transmission rates, a T1 line can also transmit video and data signals.

Teleconferencing - a conference between two or more sites that are linked by telecommunications. Usually refers to satellite communications.

Tilt - to pivot a camera in a vertical direction (up and down).

Videoconferencing - communication between two or more people remote from each other by using video and audio software and hardware to see and hear each other in real time.