Using Video: A Handbook for creating a successful presentation

Table of Contents

Welcome to Engineering Professional Education................................................................. 3

A Look at the Components of the ProEd System ................................................................. 4
  The Instructional Technology Facilities ........................................................................ 4
  Sound .............................................................................................................................. 5
  Technical Operations Area ............................................................................................ 6
  Off-Site Participants ..................................................................................................... 6

Planning the Instruction/Program ...................................................................................... 7
  Needs Assessment—audience identification and description ....................................... 8
  Content Identification—goals and objectives ............................................................. 8
  Instructional Strategy Design ....................................................................................... 9
  Development and Selection of Instructional Materials .............................................. 10
  Guidelines for Video Graphics .................................................................................... 10
  Other Supporting Materials ......................................................................................... 13
  Delivery of Instructional Program ............................................................................... 19
  “Hip Pocket” Techniques for Humanizing ................................................................. 20
  “Hip Pocket” Techniques for Message Style ............................................................. 21
  Evaluating the Experience ......................................................................................... 22

ProEd Contacts .................................................................................................................. 23
Welcome to Engineering Professional Education

Purdue University’s Engineering Professional Education (ProEd) offers the practicing engineer a wide spectrum of continuing education opportunities. These opportunities include credit and non-credit courses, on-campus and off-campus programs, and master’s degree programs encompassing both engineering and engineering-management disciplines.

Most of ProEd’s programs are delivered using video streaming on demand, however most credit classes are also streamed live. They reach a large professional audience and have the potential to recruit participants as well as to disseminate information that is important to your work and growth.

This handbook is designed to help you—as a beginning or as a more practiced presenter, facilitator, or instructor—to use video streaming on demand as a medium to its greatest advantage—for your students, for other participants, for yourself. Specifically, the handbook covers technical and pedagogical aspects of teaching via video; presents ideas on planning your course to help make it run smoothly; and, since most ProEd clients are “non-traditional” students, proposes some ways to structure your presentation to accommodate the needs of the non-traditional, part-time, adult student.

ProEd personnel are ready and can be available to help you prepare your program or course. The earlier you begin to plan and the earlier you involve ProEd staff, the easier your work will be and the better your presentation.
A Look at the Components of the ProEd System

The Instructional Technologies Facilities

Almost all programs facilitated/produced by ProEd originate from three multifunction classrooms and three technically enhanced classroom on Purdue University’s West Lafayette Campus. The three multifunction classrooms are located in Wang Hall. Two of the technically enhanced classrooms are in the Martin C. Jischke Hall of Biomedical Engineering and one of the technically enhanced classrooms is located in Forney Hall of Chemical Engineering. The goal of ProEd's multifunction and technically enhanced classrooms is to minimize the impact of the ProEd recording process on the instruction/presentation experience.

The three multifunction rooms in the Wang building are the best dedicated facilities for the facilitation/production of presentations. They are state of the art high definition recording rooms leveraging fiber optics. Also they are located close to the ProEd Technical Operations area. This translates into a faster response time if equipment in a multifunction classroom fails. ProEd’s larger multifunction room in Wang seats 75 students. It is equipped with large monitors to view video and ceiling microphones to capture audio from anywhere in the room. The instructor's area has a lavaliere and/or a wireless microphone, a document camera with a designated writing area, an Engineering Computer Network (ECN) managed networked computer with a Smart monitor which allows for writing on the monitor surface and cabling to hook up a personal computer system. There is a large monitor in the back of the room that shows the instructor or lecturer what is being recorded.

There are two video cameras mounted in the classroom and can image the instructor and the area surrounding the instructor’s console. Cameras are deliberately positioned to minimize intimidation of the classroom participants. The other two multifunction classrooms are similar in set-up but are a little smaller seating 45 and 49. All classrooms include ADA-compliant seating.

In addition to the Wang classrooms, Engineering Professional Education has developed and installed equipment which allows for recording in two other campus buildings, Martin Jischke Hall of Biomedical Engineering (MJIS) and Forney Hall of Chemical
Engineering (FRNY). The facilities in MJIS, located in Discovery Park on the south side of the campus, provide a standard SMAS classroom and a large lecture hall. FRNY, located on the North side of the Engineering Mall, contains one distance capable classroom. Both buildings are connected to the EPE Technical Operations area in Wang Hall via the University’s fiberoptic network. The fiberoptic interconnect provides for reliable, bi-directional high quality communication between the remote classrooms and the Wang facility.

The FRNY B-124 classroom is a SMAS managed classroom that seats approximately 60 students. It is configured as a standard University classroom with dual screen projection and multimedia display capability, all controlled from a podium mounted Crestron touch-screen panel. It has a ceiling mounted microphone array to capture and record on-campus student questions. The instructor’s area has a wireless microphone, a designated writing area, a white board, a computer system, and cabling to hook up a personal computer system. Two video cameras are mounted in the back of the classroom and can be focused on anyone in the front of the room.

Cameras in all three of the multifunction classrooms are operated remotely by the multimedia support staff. Normally, a Producer/Director or Student Director determines which view and camera will be used and recorded; but the instructor, by prearranged or verbal cues, can indicate his or her preference for a different view or camera to be used.

ProEd’s use of technically enhanced classrooms in the Martin C. Jischke Hall is also made possible by fiber optic lines. Unlike the multifunction classrooms, the control room staff has no control of cameras or graphic presentation devices. Through fiber optic lines the control room staff only monitors and records what is being sent from the classrooms in Jischke Hall. Because staff have very little control of the audio and video being sent, more technology savvy professors should consider using these classrooms.

**Sound**

The ceiling microphones allow on-campus student audio to be captured and recorded so participants, or off-campus students, can hear it when they watch the streaming video on demand. If an instructor uses a wired lavaliere microphone no special attention is needed once it has been clipped into place. However, if an instructor uses a wireless microphone, making sure the microphone is on and not muted is a must. The control room staff monitors audio levels and adjusts them as needed.
The Technical Operations Area

The Technical Operations Area is the “heart” for ProEd productions. In the Technical Operations area, equipment is housed for the recording and streaming of all ProEd presentations from the six classroom areas.

The Off-Site Participants

The great advantage for the delivery method of video streaming on demand is that it can be viewed anytime and about anywhere. Off-campus students and participants only need a computer and internet connection to view a ProEd production. And since it is video on demand it can be viewed at any time because it has already been recorded and is sitting on a video server somewhere. Quite a few of the ProEd students have indicated being able to view a presentation around their very busy work life schedule has been a great help and advantage. For our credit classes live streaming is also available for student who would like to watch their class in real time.
Planning the Instruction/Program

As in any instructional activity, planning is the key to a successful educational experience—for both instructor and participants. Planning to teach using a medium like video streaming is not altogether different from planning to teach in a regular classroom except in certain technical ways. One aspect of planning that is different, for example, is the administrative details. These are described in other resources such as the professor’s notebook or the ProEd website. Other planning aspects specific to video graphics for video streaming are discussed later in the text.

Listed below are six steps that should be taken in planning and carrying out any instructional program.

Step 1. Conduct a needs assessment that includes audience identification and description.

Step 2. Establish your goals and objectives and determine the subject/content material needed to meet them.

Step 3. Design your instructional strategy.

Step 4. Develop and select instructional materials and other supporting materials.

Step 5. Present the instructional program.

Step 6. Evaluate the experience, from both your perspective and that of the participants.

(These steps were adapted from the University of Nebraska-Lincoln’s booklet, Nebraska Corpnet and Walter Dick and Lou Cary’s text, The Systematic Design of Instruction.)
Needs Assessment: Audience identification and description

Most participants at off-campus sites are demographically different from on-campus participants, especially in the credit courses. They are usually part-time students, work full time, are older, and have some years of on-the-job experience. They also have many characteristics that are identified as belonging to the adult learner: they are usually self-directed, highly motivated and more interested in the practical application of the information than in theory. Their work life also exposes them to a wealth of “real world experience” which may give them a unique perspective on the material you will be presenting.

For these students, Engineering Professional Education can assist you with more formal needs assessment methods. Surveys, for example, can be sent to selected industrial sites. Many journals also publish lists of topics that engineers indicate they need for their professional growth and updating.

Content Identification: Goals and objectives

Content for credit courses is usually defined in the formal course description. But it is also important to incorporate applications and real world examples in the learning experience.

For Professional Development or noncredit courses, the needs assessment results can be useful in planning content. However, you, as an expert on your subject matter, probably have the best idea of what to include.

For developing goals and objectives, a recommended technique is the “ABCD” approach outlined in *Instructional Media and the New Technologies of Education* by Robert Heinich, Michael Molenda, and James D. Russell (Macmillan, 1996). To use this method in preparing objectives, you are invited to list the audience, the behavior to be learned, the conditions under which the behavior to be learned will be observed to determine success of the learning, and the degree to which the participant needs to learn the behavior.

An example of a written out objective using the “ABCD” method is as follows:

By the end of their orientation, new employees will be able to list thirteen major product lines of the corporation.

The audience in this example is “new employees”; the behavior is to “list the major product lines”; the condition is “by the end of their orientation”; and the degree is “thirteen major product lines.”
Time is another consideration in planning the content of your program ProEd. For example, if you plan on presenting a straight lecture with graphics prepared ahead of time, you can cover more material in the time given. However, with prepared material you can go faster than the students can take notes. Providing students with outlines or graphics, such as PowerPoint slides, in advance is helpful (see p.20). If you plan to write out your graphics as you present the material you will need more time to cover the same material. Also scanning your hand written graphics after class and posting them online can be helpful to students.

The majority of research concludes that more is covered in less time with this mediated type of instruction compared to the conventional classroom. There are not absolute answers. Whether more or less material is to be covered is an individual question depending on the instructor, course content instructional strategies and number of remote students and sites (University of Nebraska-Lincoln, Nebraska Corpnet. 1986, p 12).

So the bottom line is that until you are really experienced in using this type of media to teach, you would be wise to prepare more material than you think you’ll need!

**Instructional Strategy Design**

Most instructional strategies are adaptable to what ProEd needs for its streaming video. However, the ones you decide to use should be based on your own teaching style and on the goals, objectives, and content of the learning experience.

Some strategies that have been used successfully in our multifunction rooms have been:

- Lecture/discussion
- Oral reports from both on- and off-campus participants
- Demonstrations
- Pre-recorded DVDs
- Panel discussions
- Brainstorming

Also, since most of your participants will be adult learners, you may want to consider incorporating some of the techniques practiced by experts in the adult learning field. They suggest that you:

- Begin each session with an outline of the objectives you want to accomplish in the session
- Develop your “theoretical” material around “real world: example and applications
- Summarize, at the conclusion of each session, what has been covered in the session
In view of the demographics of your off-campus participants, you will also want to give some attention to ways of facilitating interaction with them. Some possible ideas are to:

- Have the off-campus participants send you photos of themselves. These will help make them more “real” to you and to the on-campus students (You can also mount the photos in some fashion so that you can “see” them as you do your presentation).
- Direct a question to an individual at a remote location. For example, you can say “Tom, at AT&T, what do you think about this application? Please call in now”. Before using this technique it is important to verify which sites are watching the live broadcast.
- Repeat any question asked by your audience, since both local and remote participants may not have heard the question clearly.

**Development and Selection of Instructional Materials**

The more senses you can involve in the teaching/learning process, the more efficient and effective the learning will be. Even though streaming video is not quite television, it is especially good at involving the senses of sight and hearing.

Streaming video is like television in the sense it is good for demonstrating processes and procedures, for close-ups of a process or procedure, and for slowing down events or speeding them up. It can be used especially well for graphics, but only if the following guidelines are observed:

- Keep the graphics simple.
- Avoid fine lines and small detail.
- Use proper ration.
- Use proper background color.
- Write legibly.

Remember the following tips on using prepared graphics:

- Use them to highlight information.
- Say what you are about to show before you display the graphic.
- Give the participants a moment to look at the information shown before explaining it or expanding on it.
- Mention key features of the graphic and point to them.
- Do not use too many graphics or go through them too fast *(Engineering Education, vol. 80, no. 8, p.1011)*.
Keep the Graphics Simple…

A Good Example of a Simple Graphic

Edge Operators with a Threshold

Image → Edge Operator → Edge Strength Map → Edge Operator → Edge Map

Edge Direction Map
A Poor Example of a Simple Graphics

Avoid Fine Lines and Small Details…
1. (a) To predict crystal structure(s) formed a given assemblage of ions, at any given ‘p’ and ‘t’.

(b) To predict crystalline solubility limits.
A Poor Example of a Graphic for Streaming Video

Process Configuration for robotic interface

<table>
<thead>
<tr>
<th>Statement</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGR1</td>
<td>Robot Type</td>
</tr>
<tr>
<td>Insertion Task</td>
<td>Task Title</td>
</tr>
<tr>
<td>2 GR1</td>
<td>Grasp Base</td>
</tr>
<tr>
<td>3M1</td>
<td>Raise Base</td>
</tr>
<tr>
<td>4M1</td>
<td>Move to above assembly Position</td>
</tr>
<tr>
<td>6RE</td>
<td>Release it</td>
</tr>
<tr>
<td>8R1</td>
<td>Reach fixture</td>
</tr>
</tbody>
</table>
Using Proper Ratio for ProEd video capture

Keep in mind that the video aspect ratio that ProEd captures for streaming video is 16 x 9. This means that overheads and slides prepared for use in a regular classroom may not work as effectively for streaming video. Remember landscape your graphics and try to never use the portrait option. While you may still be able to use the graphics, you may not be able to show them in their entirety without moving the graphic.
**Recommended Background Colors**

Use of a blue or gray background is recommended. Contrasted with the text color, it can make the text really stand out. PowerPoint templates or examples can be provided by the ProEd production staff.

**Example of a PowerPoint slide with a blue background**
Writing Legibly on ProEd provided Paper

If you plan to write on ProEd provided paper as you deliver your presentation, use the black, blue, and red pens that ProEd also provides. It is best if you print your letters at least ½" high or larger. Lines on the provided paper are a great guide.

Other supporting materials

The following materials can be used effectively and strategically with video:

- Graphics from books and journals—if they are not too detailed. But, remember; check to see if you need to get permission to use copyrighted material.

- DVDs. Check with the production staff to make sure it will play back correctly. And just like graphics from a book or journal, check to see if you need permission to use its content.

- Three-dimensional objects.

- Computer Graphics. ProEd uses a direct computer output by way of a scan converter to display what is on your computer monitor. What you see on your computer scan is basically what ProEd sees. It is a good idea to check with the production staff and also look at your graphics through the ProEd system before your production.

- Handout materials and PowerPoint Presentations. These are especially valuable in teaching by video. Experts in adult learning suggest that supplying your participants with at least an outline to keep them focused on the key points you will be presenting. Also you should keep in mind as you prepare any handout material what the copyright status of the material is.

- Outside Resource People. Using outside speakers is an effective instructional strategy. They can come to the multifunction rooms to make their presentation or they can participate remotely through a phone link or a computer presentation. You need only make sure that your outside speakers are familiar with video as an instructional medium. ProEd will gladly supply all outside speakers with a copy of this guidebook, give them a tour, and discuss with them any concerns they might have.
Checklist for Creating Graphics

☐ Darker backgrounds are better than white – white is hard on the eyes.

☐ High contrasted colors between the text and background looks better using video. An example is a black background with white text. Changes in color direct the attention of the viewer.

☐ Minimum font size for text on a PowerPoint slide should be 24 points. This should include text such as exponents and subscripts in equations.

☐ Sans serif or plain block fonts that are bold, not detailed, or elaborate are better, examples: Helvetica or Arial, not times, Informal Roman, or Chiller.

**Bold Block Letters Look Best**

☐ It is better to mix upper and lower case letters. USING ALL CAPITAL LETTERS FOR TEXT MAKES IT HARDER TO READ SCREENS.

☐ Bullet points are good to outline points – try to be consistent.

☐ Keep your PowerPoint slides and Graphics simple and uncluttered. Keep fonts and graphics as big as they can.

☐ Avoid use of narrow lines. Use at least 2 point lines or larger.
Delivery of the Instructional Program

No one expects you to be a “Video star” in your presentation. So the best advice is to relax and be yourself. There are just a few guidelines to keep in mind as you plan and as you present your material:

- Clothing and makeup. Wearing a shirt, blouse, or sweater with a pocket or button up area is preferable. Remember you will need somewhere to clip your microphone. Avoid heavily patterned fabrics, such as herring bone or small vertical stripes, since they can cause a distortion effect in the picture. Avoid big, bulky jewelry. If you wear makeup, wear the same as you would in a conventional classroom.

- Eye Contact. Look at the camera as much as possible. Speak to your entire audience; that is, avoid addressing all your comments to the local audience (if there is one). Remember that your off-campus participants are just as important and interested as your on-campus participants.

- Voice, language, and volume. Speak as you would in a conventional classroom. Use conversational language. If necessary, alter you pitch, volume, and tempo to avoid a monotone delivery. Changing you voice and tone can help keep your participants’ attention and interest.

- Movement. While most of your presentation will probably be done from a seated or standing position, you are free to move around the presentation/teaching station. This can add diversity to your presentation and also help to maintain your participants’ attention. Avoid too many hand motions, however, since too much movement can be distracting to your viewers.
“Hip Pocket” Techniques for Humanizing

- Send a welcome to the class letter, e-mail, or web announcement. This lets participants know they are important to the success of the program by sending them a welcome before the first session or program starts. Include program goals, suggestion for preparing for the first session (such as a question or problem to think about), and some information about yourself (biographical sketch, maybe a photo).

- Make a master roster. The more you know about the individuals in your group, the better you will communicate. Use information on preregistration lists to make up a master roster of participants at each location with a line or two of related information about them. Use this roster to focus discussion on the needs and interests of the individuals participating.

- Use of Names. Always call participants by name if possible. People like to be recognized by name.

- Let your personality come through. Be yourself. It is important to come across the way you do in a face-to-face situation, even though microphones are used in communicating. Try to form a mental picture of what it is like to be at one of the locations and talk directly to the individuals rather than to an “audience out there”.

“Hip Pocket” Techniques for Message Style

- **Preview your message.** Give a preview of what you are going to say in the form of a short, general overview. Giving individuals an idea in advance of the various parts of a message and how it will be organized (from general ideas to specific examples, or vice versa) helps them in their own understanding and remembering processes.

- **Use variety.** Plan short segments. Variety keeps interest levels high and this leads to more active listening. Keep your program fast-paced, providing short segments of concentrated listening (10-15 minutes) alternated with other activities. Activities could range anywhere from a question-and-answer period to administrative announcements about the presentation.

- **Repeat and summarize the main points.** Use repetition and summary to help individuals remember important points. Repeat new works, concepts, or phrases at least three times during an hour presentation. New words can be spelled using the writing paper during the presentation to aid audience understanding, or a printed word list can be added on the course website for further review.

- **Provide printed backup.** Use materials that can be printed out as back up for your message—an outline, PowerPoint, Word document, or even a detailed “workbook”. Print reinforces what we hear and is a permanent record for review purposes.

- **The most important summary is at the end of the presentation.** If time runs out, a short summary e-mail or web post could be used to tie together some of the important points brought out during a panel discussion or guest lecturer.

- **Ask for feedback.** The most basic technique for getting feedback is simply to ask for it. With e-mail and website access for the course, more often than not someone will leave feedback if you ask for it.

- **Use group questions.** Instead of evaluating participants individually, use a weekly question which is discussed and answered after the presentation time by groups created possibly at a given location. A group working to develop a cooperative best answer stimulates rapport and helps give individuals more in-depth understanding. Have group members answer (allowing for a minority opinion) and e-mail it or post it on the course website for you to evaluate before the next presentation.

- **Use written or web forms for feedback.** Use these forms to determine whether your program is meeting its objectives. ProEd regularly invites participants using the web to evaluate its program as well as the quality of instruction.
- Listen and watch your own streaming video presentation. Your presentations tend to be concentrated periods of listening and interaction. Many times, presenters miss an important ingredient in the presentation because there just wasn’t time to stand back and be an observer. Listening to the recorded streaming video presentation can be a valuable feedback tool.

Evaluating the Experience

As in any educational experience, you will want to evaluate your own work and expect feedback from your participants. To help you in this process, ProEd has developed on-line evaluations which emphasize the use of streaming video in the educational experience. ProEd also has some open-ended and scaled evaluation that can be adapted to your program or presentation. Or you can use an evaluation instrument of your own choosing.

You will also have certain administrative procedures to follow, especially if you teach a credit course.
**ProEd Contacts:**

For answers to questions, problems, concerns, contact Engineering Professional Education.

EPE is located at:

Wang Hall  
Suite 2500  
West Lafayette, IN

EPE can be reached by calling (765) 494-7015, by e-mail at ProEd@purdue.edu, or by its home page at www.proed.purdue.edu.

ProEd posts a lot of information on its website. Also there are printed materials available in the ProEd office.

Remember: *Using video streaming to teach is an exciting opportunity for you to share your knowledge with a wider audience. So engage the medium for all it is worth and let ProEd help you enjoy the experience!*