



Office for Domestic Preparedness

Interactive Video Teletraining Best Practices

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1.0 Overview

Interactive video teletraining (IVT), when effectively blended with other learning technologies, can be an effective way to share ideas and deliver training. The technology allows communication among distributed participants and provides training access to those who might not otherwise be able to participate due to budget and/or time constraints.

Too often, however, well intentioned IVT efforts fail and participants turn away from a valuable communication tool and training resource because of poor planning, bad design, and ineffective implementation. In a time when many are still skeptical of the effectiveness of new technologies, a bad experience or two will turn away potential users and make it much more difficult for organizations to implement IVT as part of their Blended Learning strategies.

The purpose of this document is to identify best practices and pitfalls in implementing IVT as part of a blended training solution.

1.1 Benefits of IVT

Organizations are increasingly using IVT as an instructional medium. Reasons include:

- Reduced travel costs
- Less trainee time away from the job
- Potential to get critical topics out to a national audience faster
- Ability to provide trainees access to subject matter experts
- Instruction that is consistent and standardized

Recent studies have shown that IVT can be as effective if not better than traditional classroom instruction, if it is well designed and delivered.

1.2 Barriers to Effective IVT Training

Despite the above benefits, organizations often find that IVT as a training modality is not as popular as traditional training. In most cases, the fault lies not with the media but with the design of the training itself.

1.3 Is This Training or is This Television?

One reason some IVT sessions have received poor ratings is because they were not training vehicles at all, but merely the distribution of information. While satellite broadcasts are an effective way to share information, your audience needs to know if you are about to provide a program of interesting facts, or offer

a training module with measurable objectives, structured activities, practice and feedback that will assist participants in the acquisition of new skills.

1.4 Choosing the Right Tools for the Job

Another reason for IVT failure is that even when the event is clearly designed as training, the instruction should not have been delivered via IVT. A thorough media analysis must be a part of any distance or Blended Learning training initiative. Designers must be fully aware of the media's strengths, weaknesses and knowledgeable as to instructional strategies that work best with IVT. Media analysis and selection will be addressed in greater detail later in this document.

1.5 New Competencies for Teaching at a Distance

Traditional classroom training cannot be presented for IVT without significant modification. Training audiences are no longer content to sit for hours watching a "talking head" that never acknowledges their presence. New competencies for teaching at a distance that will be addressed in this document include:

- Roles and responsibilities of an IVT design and development team
- Planning and developing an IVT training course
- Television graphics and visual thinking
- Involving students at remote sites
- Verbal and non verbal presentation skills

1.6 The Concept of Blended Learning

The many alternative delivery and support methods provide rich choices for delivering knowledge-based content. However, the array of available media and delivery can be confusing. The concept of Blended Learning is not simply selecting a variety of instructional methods to deliver training. As described in the ODP Strategy for Blended Learning, a sound Blended Learning solution is one that organizes training content into modules or chunks, defines clear and measurable learning objectives, and examines available media to determine which media best support the instructional strategies chosen for the module.

2.0 Project Roles and Responsibilities in Planning and Producing IVT

In order to make IVT training successful, a team of individuals is needed to perform a host of support tasks to create an effective learning event. The more complex the program is, the more responsibilities there are.

Below is a compilation of the key roles and responsibilities involved in planning and producing IVT. Although these roles are arranged under functional job titles, it is possible to combine several functions within a single individual's responsibilities. Thus, a Program Manager may also wear the Instructional System Designer's hat, or a Subject Matter Expert may also serve as Instructor. Regardless of how many people actually make up the production team, it is important that all of the functions are assigned to someone on the team.

2.1 Program/Project Manager (PM)

The Program (or Project) Manager usually manages the development team and their schedules. In some cases, this function may be added to the responsibilities of the Instructional Systems Designer or the lead instructor.

The PM manages the project schedule and ensures that all members of the project team understand (and accept) their roles and responsibilities. The PM also tracks milestone and task deadlines, keeping everyone on track.

Above all, the PM must keep the creative inputs of all team members firmly focused on achieving the stated project objectives. In some cases, the PM will need to act as gatekeeper or referee, with the authority to reject or modify production options that would either (a) detract from achieving the stated objectives, or (b) consume resources needed elsewhere to achieve the stated objectives.

2.2 Instructional Systems Designer (ISD)

The most important task confronting the Instructional Systems Designer (ISD) is to develop a course design plan that will 1) achieve the stated learning objectives; and 2) ensure that any content developed consistently supports those learning objectives.

To begin, the ISD usually performs or directs the needs assessment and task analysis. Then the ISD works with the project team to conduct a media analysis and identify appropriate instructional strategies for all selected media in the training event. The course design plan (discussed later in the document) gives structure to all training products that will be developed subsequently, either by the ISD or by other creative members of the team. The resulting products may include a syllabus, lesson plan, treatment, flow chart, storyboards or run time sheet, narrative script, exercises, drills, job performance aids, or any of the myriad of items that enable the learning experience.

One of the toughest challenges in IVT development is to keep a sharp focus on the length of the program and the amount of interactivity. Instructors, SMEs and developers can be overwhelmed by the sheer volume of potential subject matter, and often opt to include it all. Broadcast lengths of 2 hours or longer without sufficient interactivity will often cause viewers to turn away. Research has shown that the attention span of a typical audience is quite limited. Thus, a central dilemma confronting every project team is “what to put in, and what to leave out.” It is the design plan that guides the team in resolving this dilemma, by helping them to distinguish between what would be *nice* to know and what the target audience *needs* to know to accomplish stated objectives.

Using best practices, the ISD will employ a treatment plan (IVT storyboard) that identifies and allocates media to instructional objectives (e.g., visuals, graphics, Power Points, etc.). The ISD may or may not also create a detailed script (see Developer, below).

2.3 Instructor

An IVT Instructor is far more than a mere presenter. Effective instruction in the IVT environment requires instructors to go beyond merely “exporting” a classroom lecture or PowerPoint presentation to another medium. Best practices require an instructor who has mastered a variety of skills, including:

- Listening – to participants in the studio and to those linked from remote sites, and to be perceived as interested in what is being said and done.
- Speaking – using clear diction, dynamic intonation and modulation, while sounding conversational, relaxed, informal, but also authoritative.
- Projecting – mustering the energy to “stay the course;” establishing a style and persona that makes a personal connection with the audience.
- Reacting – adjusting to events on the fly, taking advantage of unscripted learning opportunities, and fully engaging the audience in the learning process.

2.4 Distance Facilitator

The Distance Facilitator manages the process of networking geographically dispersed participants into a virtual community whose members are linked electronically. An effective Distance Facilitator is more than just a passive course registrar. Ideally, this person has a background in classroom instruction and has the ability to support a broad range of training approaches.

A Distance Facilitator employing best practices will maintain regular contact with each group being facilitated, and should be proactive in seeking input and feedback from all participants.

2.5 Producer

The Producer works with the instructional designer and instructor to organize the program flow. The Producer creates a project plan to schedule and manage the production tasks involved in executing the design plan. Ultimately, the Producer is responsible for providing the technical “vehicle” used to deliver the IVT program.

The Producer manages the production budget, allocates resources, and determines accountabilities for executing the design plan. The Producer recruits or assigns the production technicians and organizes talent auditions as needed. The Producer facilitates communications between content developers and the technical specialists responsible for conveying the content via the chosen media. As part of this process, the Producer monitors the review and approval process, sets deadlines for script reviews and revisions, and keeps the project manager informed of progress.

Most important, the Producer ensures that all production activities (recording, filming, graphics design, editing, etc.) are consistent with the training design. In some organizations, the Producer often functions as a Director, Editor, and/or Developer, as well.

2.6 Graphics Designer

The Graphics Designer (or group of designers) is responsible for producing memorable, high-impact images that will enhance the learning experience. Good graphics usually are “worth a thousand words.” Because training delivery media encompass a range of options including hard copy, videotape, transparencies, video graphics, slides, photographs, and many others, it is important to choose graphics designers with skill sets appropriate to the selected production strategy. For video productions, graphics designers may need to have skills in 3-D and motion graphics. For hardcopy (print) materials, graphics designers should be conversant with prepress and layout techniques.

Too often, graphics are designed a certain way because someone wants to use the latest design tool, or because “it’s the way we’ve always done it.” Instead, when considering graphics design for an IVT, the creative team should first agree upon strategies optimized to a project’s audience and objectives, *then* the designer can develop graphics in support of those strategies.

A common pitfall encountered in graphics design stems from the fact that people often have mental images of what graphics will look like, and those mental images frequently are at odds with what the designer produces. Complex graphics or animations should always be storyboarded and reviewed before they are fully executed, to make sure that they meet with approval of all key team members and to conserve precious time and resources.

2.7 Visuals (AVID) Editor

Good editing can appear all but invisible to the audience, but ill-conceived or sloppy editing can be all too apparent. An editor can only work with what he or she is given to work with – badly-acted, poorly-lighted footage cannot be rescued by even a good editor. However, well-acted and beautifully produced footage can be ruined by poor editing.

Editing consists of a vast number of detailed decisions – decisions involving shot selection, timing, content, transition, and continuity. One trap that confronts all editors is the danger of getting caught up in technical details and losing the big picture. The Producer and/or Director should be sure to communicate the program's objectives and audience to the editor. The editor should keep those considerations in the forefront at all times. It is also important that key decision-makers (Producer, Director, Instructional Designer, Project Manager, and/or SMEs) be available to periodically review the editor's work and provide real-time suggestions for corrections or changes.

2.8 Director

The Director is responsible for supervising the work of all technicians in the production studio. A good Director anticipates what will happen next, and prepares the crew to act accordingly. Thus, when a Director receives a script, he/she will break it down into separate setups, shots or scenes, and will block out camera angles and talent positions accordingly.

The Director also receives a program "rundown" from the Producer and creates a cue sheet that directs technicians as to the timing of all program elements (video roll-ins, graphics inserts, video keys and CG lower-thirds, etc.). Of course, a good Director also plans for dealing with the unexpected, especially in a live broadcast, and will often develop and even rehearse contingency plans for dealing with potential problems.

2.9 Subject Matter Expert (SME)

The Subject Matter Expert is often the client or program owner. As such, the SME teams with the ISD or instructor to develop the content outline and provides editorial comment as content moves through the review cycle. In many cases, there may be more than one SME involved in a single project, especially when the subject is complex. When multiple SMEs are assigned to a project, it can be vital to have one designated as "lead", in order to referee technical disputes and resolve content issues that may arise.

SME availability during the design and development process is critical. Projects that attempt to identify and develop content without easy access to SMEs are doomed to fail. It is important for the Project Manager to ensure that all team members are aware of their interdependency for the success of the project. By identifying manpower and resource requirements early in the process, all project team members can budget their time accordingly.

2.10 Developer

The Developer (often called a Content Developer) determines exactly what will be presented to the target audience. For some IVT programs, (e.g. ones that must employ prescribed legal or technical language) every word of the verbal content is tightly scripted by the Developer. For other programs, the Developer will create an outline to guide instructors who will present the content in their own words. Even when the Developer writes a verbatim script, it should be his or her goal to create a framework that facilitates easy communication and human interaction. Skilled instructors and presenters can make a script sound spontaneous and fresh, but unskilled or unpracticed presenters find it difficult to bring a script to life. The Developer's principal challenge is to enable instructors to bring a subject to life.

Developers often must function as public relations experts, reconciling issues, opinions and suggestions received from many sources within the organization. Developers also need good research skills, since they often will be working with technical information outside their personal experience. Above all, a Developer should be creative, and capable of thinking visually, as well as verbally.

By definition, IVT productions must involve participants in the training experience, or the benefits of this technology will not be realized. Several fundamental principles of sound training methodology are especially relevant to developing content for IVT:

1. Don't (just) say it – show it;
2. Reinforce the training with exercises that involve the audience in applying the principles being conveyed;
3. Test comprehension periodically and remediate accordingly.

2.11 Site Coordinator

The Site Coordinator handles the logistics at each downlink site. He troubleshoots equipment problems and may handle the administrative details of the broadcast. Not to be confused with the Distance Facilitator, Site Coordinators are not trained to facilitate discussion, engage students in learning activities, or provide feedback to the studio. They can, however, distribute handouts/exercises and facilitate end of program evaluations. What they must do, however, is make sure the equipment is functioning properly well before the training begins. Too often, site coordinators enter the room five minutes before broadcast and have little time to troubleshoot problems that occur. Learners become frustrated with the technology and turn away from this type of distance technology.

2.12 Studio Crew

Studio crew are generally assigned by the Producer, but supervised by the Director. Depending on the delivery medium (or blend of media) selected, the studio crew roles could include:

- Camera Operator (including Dolly Grip)
- Audio Technician
- Technical Director
- Tape Operator
- Character Generator Operator
- Lighting Technicians (including Gaffer)
- Floor Manager
- Prompter Operator / Cue Card Technician
- Makeup / Wardrobe Technician
- Set Technician, Stagehand, and Property Master
- Microwave / Uplink & Downlink Technician
- Chief Engineer

Not all production takes place in the studio. Often, relevance and visual impact can be greatly enhanced by taking a camera crew out into the “real world” (e.g. visiting the workplace or other locations where the subject matter can be observed first-hand). Such location coverage can be via “live remote,” or it can be taped in advance, then edited and included within an IVT production. Many of the same studio crew roles itemized above would apply to location crews as well, although the size of the crew generally is smaller for location production.

2.13 Audience

IVT productions occasionally include a live audience in the studio as well as remote site participants. While this technique can be effective in reducing the psychological distance between instructor and remote sites, it can have a negative, isolating effect if the instructor is not practiced in engaging both audiences. If the technique is employed, the characteristics of the studio audience should align with the audience characteristics identified during the analysis phase of the project (see the next section for a complete description of the phases of the ISD process).

3.0 Instructional Systems Design and the ADDIE Model

As seen above, effective IVT development demands a team effort from a variety of specialized personnel. Too often, however, developers in a hurry to produce a product, take shortcuts by transitioning traditional classroom delivery content to video without revising it appropriately. Perhaps the most common and egregious error in IVT program development is to simply conduct a traditional classroom event in front of a camera. Feedback from students that have had to endure this type of “training” have proven to IVT developers that new courses designed for this highly visual medium must incorporate instructional design features that support and enhance learning at a distance.

Instructional Systems Design (ISD) is the most widely used methodology for developing new training programs. This approach provides a step-by-step system for the evaluation of students’ needs, the design and development of training materials, and the evaluation of the effectiveness of the training intervention. There are many ISD models, but almost all are based on the “ADDIE” model - Analysis, Design, Development, Implementation, and Evaluation, as illustrated in **Figure 1**. As described in the ODP Approach for Blended Learning, each step has an outcome that informs the subsequent step.

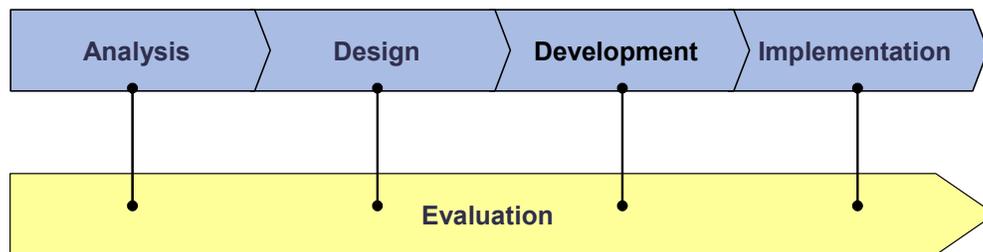


Figure 1 - The ADDIE Model of Instructional Design

In the next section, the five phases of the ADDIE model will provide the structure for identifying current processes in IVT development, as well as recommendations for training modification and improvement.

4.0 Analysis Phase of an IVT Project

The Analysis phase is the first phase of any instructional design project and the most critical phase in the implementation of a blended approach to training. Through a proper analysis, the “Who, What, Where, Why, and By Whom” is determined for the training program.

The following processes should be included in the Analysis phase:

- Curriculum or Needs Assessment
- Course Goals and Objectives
- Course Outline

- Delivery Methods Analysis

For more information on these processes, please refer to the ODP Approach for Blended Learning.

4.1 Choosing Instructional Strategies for IVT

IVT has the ability to simulate the classroom environment, can incorporate a variety of media, and can ensure a consistent delivery of content across geographical boundaries to a much larger audience in a shorter period of time. It can also provide high levels of interaction and immediate feedback to questions despite the distance between instructor and students. All too often, critical decisions are made before the necessary analysis has been completed. When this occurs, the resulting IVT often will miss its target, or will consume time and resources. Common pitfalls to avoid include:

- Adopting a strategy for the current project just because it is familiar (“we’ve always done it that way”)
- Choosing a strategy that is driven by a hidden agenda, rather than identifying all of the objectives that are driving the project (e.g. the boss secretly wants to be a TV star)
- Taking the path of least resistance (“we don’t have time to plan – our experts know their stuff, just turn on the camera and let them talk”)

IVT instructors can employ a broad array of instructional methods to engage participants at remote sites. A partial listing includes these options:

- Problem-solving exercise
- Brainstorming (individuals or groups)
- Group analysis and report
- Contest, quiz, puzzle, or game
- Role play
- Case study
- Debate
- Q&A session
- Peer presentation, with or without peer feedback

4.2 Building the script outline

Working with the SMEs and instructor, the ISD builds the script outline for team approval. The outline at this point is high level, but all objectives are clearly identified and the structure of the training with an approximate time frame is identified.

5.0 Designing Content and Building the Plan

Once IVT is determined to be all or part of the training delivery in the Analysis phase, the Design phase then creates the “blueprints” for the instructional experience. In this phase, the instructional designer plans the elements of instruction, such as instructional objectives, assessment strategies, course outlines, design documents, visualizations, run time sheets, scripts and participant materials to describe the presentation of content, practice activities, and feedback mechanisms.

Design activities for IVT should consider the following:

- A review of the course goals and objectives
- Determination of delivery approach (i.e., moderated panel, formal team presentation, informal discussion)
- Determination of instructional strategies (i.e., lecture, discussion, exercise, scenarios, case studies)
- Allocation of time to each segment of instruction
- Discussion and determination of visuals (i.e., graphics, pictures, video clips, position and shot of instructor(s))
- Determination of delivery medium for all prerequisite and course materials (i.e., paper, Web download, video roll-in, PowerPoint handouts)
- Determination of student activities and exercises; plans for remote site facilitation
- Selection of evaluation and assessment methodology
- Determination of activity timeline, milestones, and project team member responsibility for each activity throughout design, development, implementation and evaluation (i.e., project plan/development schedule)

An important consideration in the Design phase is the fact that what works in the traditional classroom may not necessarily be effective in a two dimensional IVT environment. For instance, participants may be able to tolerate a lecture for a long period of time in a classroom, but they will lose interest quickly in an IVT “talking head” that does not engage them in any activity. Once the audience tunes out, it may be difficult or impossible to regain their attention.

The two dimensional aspect of IVT can be offset by developing a conversational instructor script, making the course as visually stimulating as possible and creating a positive and interactive instructional environment. As you begin the design phase, be sure to take into account the equipment available to you, both in the studio and at the remote sites and identify the types of interactions possible within the environment.

5.1 Building the Project Plan/Development Schedule

Perhaps no other media involves as large a coordination of effort as a satellite broadcast. As illustrated in section 2.0 of this document, there are a wide variety of skills and activities that must be organized and managed throughout the project to ensure a successful IVT training event. For this reason it is imperative that a project manager be identified early in the ADDIE process to ensure that each project task is identified and that all members are aware of their assigned tasks and deadlines. The schedule should clearly describe each activity of the development process, the expected duration of that activity, the start and end date, and the project team member responsible for completion. The project manager will be responsible for maintaining and revising the schedule to ensure requirements are being addressed and tasks remain within scope.

5.2 Building the Design Document

A key output of the Design phase is a course design document. The purpose of the design document is to create a roadmap to use throughout the course design and development process. It provides a skeleton of the course content and documents the detailed expectations. A design document should include the following items:

- Summary of the instructional approach to the course
- Course structure and flow
- Estimation of the course length
- Interactivity guidelines
- Description of participant materials
- List of planned visuals
- Final detailed course outline
- Course development schedule
- Evaluation plan
- Project Team Point of Contact list

While the entire project team contributes to the development of the design document, the lead instructor may have the primary responsibility of addressing course structure, lesson content, and instructional methods. The ISD's responsibilities should include a review of the content supplied by the lead instructor and advising the team on matters such as the construction of instructional objectives and the selection of instructional strategies.

5.2.1 Audience Characteristics

Knowing your audience is essential to the development of any training course, but even more important in an IVT environment. The studio instructor will not be able to see student faces and assess the need for adjustments to content delivery to better address student needs. The design phase, therefore, must produce a detailed audience profile in order to produce materials that can address the needs of the audience effectively. At a minimum, identified characteristics should include:

- Job category (senior management, technical professionals, administrative support, etc.)
- Audience mix (consistent or varied)
- General skill or knowledge level
- Experience with Distance Learning technology
- Motivation for training
- Relevance of training to job application

5.2.2 Run time sheet

The run time sheet displays all broadcast activities in chunks of time so the design team can begin to map out the content and identify resources needed to support the program. Perhaps one reason so many IVT's run on far too long is that this useful tool was overlooked in the IVT design phase. One best practice is to use the run time sheet as a method to identify whether the content should be compressed or even divided into more than one broadcast.

5.2.3 Student materials

At a minimum, student materials consist of a student guide that follows the delivery of the subject matter and helps students stay on track. Student materials may also include articles, supplemental readings, references, and handouts. All visuals seen on the screen should be duplicated and plenty of white space should be available on each page for note taking. Complete instructions for all exercises should be included in the student materials.

5.2.4 Visuals

Incorporate a variety of visuals to ensure that the program is as visually stimulating as possible. This approach engages the audience and breaks up periods of straight lecture. We will discuss visuals in greater detail in the Development section of this document.

6.0 Developing Content

Development is the production phase of the ADDIE process. During Development, the plans defined in the Design phase become reality. Here the instructional designer is concerned with materials and visuals that facilitate and support learning, as well as interactivity that is creative, innovative, and engages students to explore further.

One way to look at the organization of course content is by “chunking” the content. There should be at least one “chunk” per course objective and each should consist of three elements: Teaching points, activities, and processing.

6.1.1 Teaching Point

Think of teaching points as discreet topics delivered by the instructor. Teaching points provide the knowledge students will need to master before they can demonstrate that they have met the objective. One IVT best practice is to establish a teaching point in ten minutes or less.

6.1.2 Activity

A major problem with many IVT programs is that they spend too much time on content and little or no time on activities and processing. If a “course” relies too heavily on content, it should best be called what it is, an informational program and **not** a training course.

Activities should allow students to apply, practice, and demonstrate mastery of course objectives. A variety of effective activities such as exercises, role play and discussions engage students in the training, keep them involved and allow them to track their learning progress. Remote site facilitators, if available, should assist in the facilitation of activities because they are in the best position to guide, observe, and give feedback on student participation.

6.1.3 Processing

Processing allows the instructor and/or facilitator to ensure that students understood the intent of the activity, and brings closure to the teaching point or learning objective. For example, the Distance Facilitator can provide feedback to the Studio Instructor after the activity at the local site. The Studio Instructor can then provide the opportunity to process and bring closure to the exercise for all of the groups.

6.2 Building the Script

A typical format for a script is a two column document. The instructor content is on the right side and depicts what the students will hear. The left side describes or depicts the visuals – what the students will see. It also contains instructor notes telling them what they need to know about the production.

Depending on the instructor and the shelf life of the course, the detail of the instructor text may range from talking point bullets to a full teleprompter script. If you are writing a course that may only be presented once by one instructor, work collaboratively with the instructor to develop the script. If you are building a course that will be presented by more than one instructor, write full text to ensure consistent delivery.

If the instructor is experienced with IVT and has mastered the course material, an outline script with bulleted talking points may be sufficient. But beware of instructors with little or no IVT experience who assure you their classroom experience will enable them to “wing it” with just an outline. Too many classroom instructors have experienced the dreaded “deer in the headlights” syndrome once the lights go up and the camera is focused on them for the first time. Build a full script for newly transitioned instructors and use the rehearsal period to duplicate the actual broadcast as closely as possible (lights, floor manager, teleprompter). This will ensure newcomers experience the environment before they have to instruct in it.

6.3 Becoming Familiar with the Unique IVT Environment

The media selection process helps to optimize production technologies and strategies to fully capitalize on the IVT production environment. It is important for training managers, program developers, and instructors to understand what this equipment can do and how to use it to best advantage.

6.3.1 Equipment Unique to Teletraining

Some of the devices commonly used in IVT are identified below, along with some guidance as to the best practices that will enable users to benefit fully from their use. Effective use of this equipment requires that instructors have a working familiarity with any equipment they will use. Even when technicians in the control room operate some of these devices (e.g. the Chyron or the still store), it is important for instructors and control room operators to conduct one or more technical rehearsals to make sure that the program content is displayed according to the training design. In many cases, the Director or Producer will create a cue sheet to coordinate how the studio staff handles these disparate elements.

6.3.1.1 Character Generator or Chyron (CG)

The *Chyron* or “character generator,” inserts text into a video signal. Typically, the “lower-thirds” that appear below a talking head to identify the speaker are created by a CG. Character generators are most commonly used to identify the names of individuals speaking during a broadcast, but can also be used to present key teaching points while maintaining a camera shot of the instructor.

6.3.1.2 Teleprompter

Established presentation techniques for on-camera instructors include *projecting* personality and *engaging* an audience. An essential element in these techniques is “eye contact.” Helping presenters to maintain eye contact with their audience is the principal purpose of the prompter (the term “TelePrompter” is a trademark). A prompting device also can be helpful, or even essential, in situations where it would be risky to allow presenters to speak in their own words. For example, if legal or technical requirements absolutely require that a presentation use precise wording, then a script can be reviewed and approved in every detail, then transferred to a prompting device. Or, if the sheer volume of material makes it difficult for a presenter to “keep it all straight,” then a prompter can provide the necessary safety net. However, prompters also have a downside, in that they can rob presenters of their spontaneity. Whether or not to use a prompter is an important decision to make. Some considerations that come into play include:

- Using a prompter convincingly requires prior familiarization. Organizations using best practices schedule prompter drills for inexperienced instructors. These organizations would never allow an instructor to walk into a studio and begin reading from a prompter without adequate rehearsal and preparation. Highly-paid network newscasters can use prompters effectively because they have learned to do so – and have had plenty of practice.
- Prompters do not always have to display a verbatim script. Instead, the prompter can display bullets or talking points. This works best when the instructors draft these talking points for themselves.
- If instructors lose their spontaneity in front of a prompter, but experience problems maintaining eye contact when working from paper, then consider a third option – use a moderator or interviewer who can keep the program on track, while including the audience in a dialogue with the presenter.

When working from a prompter, inexperienced presenters sometimes will speed up their delivery as the program goes on, and can even wind up in a “race” with the scrolling prompter. To avoid monotony, instructors should vary the pace of their presentations, but they must remind themselves to avoid “racing” the prompter (of course pacing will also depend on the complexity of the subject matter). An experienced prompter operator is required, one who can follow any changes in the presenter’s pace (without affecting the pace in the process).

6.3.1.3 Still Store

A still store is a digital storage device that can store and display a variety of electronic images on a television screen. The still store enables instructors to include in their program just about any image that can be captured electronically – and affordable digital cameras make it possible to capture or convert almost any image to an electronic format. Because IVT is a *visual* medium, the still store is an important tool developers can use to include a wide variety of visual

information in their programs. For programs involving information technology, the still store can be especially useful for displaying screen shots from computer displays. For technical training programs, the still store can display mechanical drawings, artists' renderings, block diagrams, flow charts, and photographs. Graphics designers experienced in creating for IVT should know the capabilities of these devices and the requirements they impose.

A device that often works in tandem with the still store is the *scan converter*. This device translates computer signals into the NTSC signal used in television, and is necessary whenever the instructor wants to show the audience a computer-generated image (e.g. a PowerPoint slide or Web screen).

6.3.1.4 Overhead camera (ELMO)

Another display device available to IVT instructors is the overhead camera ("ELMO" is a trademarked example). The overhead camera displays physical objects, which can be moved in three dimensions. This capability is particularly useful in training or familiarization programs involving the use, assembly, disassembly, or manipulation of equipment or other items.

In some cases, an overhead camera can be located at ceiling height, to enable the audience to see larger objects. Examples would include a cooking show with a camera to show the stovetop, or an auto-repair show with a camera looking into the engine compartment of a vehicle. Ceiling cameras tend to have a fixed focus with no zoom, and pose no particular challenges to the instructor.

6.3.1.5 Writing tablet

A writing tablet allows an instructor to jot notes or draw sketches that are visible on the television screen. These devices are commonly used in broadcast television to illustrate football plays, show moving weather fronts, and to display other dynamic forms of information. The writing tablet is a real-time device. In an IVT program, it is best used to add new visual information that could not be prepared in advance for display from a still store or taped as a roll-in. The writing tablet can be very useful to an instructor when responding to a question, or when interjecting a spontaneous idea, that requires a sketch or written term to convey the message.

6.3.1.6 Keypad Response System

A keypad response system greatly enhances the level of interactivity in IVT. It provides the audience with a direct, real-time link to the instructor. Its usage generally is initiated by the instructor, typically by posing a question. Participants can respond by pressing a button on a keypad, to indicate their selection from a multiple-choice list or to indicate a numeric value of their choosing. This technology provides the instructor with a valuable source of real-time feedback (How am I doing? How are you doing?), and it gives the instructor the opportunity to gauge audience comprehension and to adjust the presentation accordingly. One of the strong points of this technology is that it permits many respondents to

act simultaneously. Its principal disadvantage is that it offers respondents a limited range of responses.

As with any interactive technology, it is important that respondents understand how (and when) to operate the system, and how to get connected with the studio. This requires user training, advance notice before a telecast, possibly refresher training or reminders during the broadcast, and a help desk or troubleshooting capability to resolve technical problems. Most important, it requires live participants who are motivated to interact.

Costing for these systems will range depending on complexity and number of systems purchased. Hosting equipment at the studio site ranges between \$30,000 to \$50,000. Keypad response systems at the remote site require a site manager at a cost of approximately \$5000 which usually includes 20 keypads.

6.3.1.7 Push to Talk (2-way audio)

Two-way audio, sometimes referred to as “push-to-talk” technology, extends interactivity beyond the keypad response system, because it does not limit responses to a pre-determined set of multiple choices. Instead, it provides an audio link between the teletraining studio and any number of remote sites, so that participants may speak directly with instructors and other experts in the studio. This means that participants can not only respond to the instructor’s questions, they can pose questions of their own.

Used properly, push to talk can provide instructors and participants with a close approximation of the classroom training experience. Push to talk works best when participants are offered opportunities to interact at several different points during the program, not just a question and answer session at the end. Best practices for using this technology require an instructor or moderator to manage the process, and who will:

- Engage the audience in the process and effectively encourage their active participation.
- Make it clear to participants when their participation is welcome.
- Resolve conflicts when several participants try to speak at once.
- Manage the time and keep the agenda moving ahead.
- Be prepared with alternatives when questions or issues cannot be resolved on the spot (taking it “offline”).
- Ensure that the information needs of the audience are being met.
- Fill potential dead spots by offering relevant information, or gracefully transition to another segment or topic.

Managing the push to talk process is a skill that can be acquired through practice and self-critique. But, instructors who lack experience with the technology should be assisted by a more experienced counterpart until they are ready to manage

the process for themselves. Some organizations hire a professional television moderator to help develop these skills in their first group of new instructors. Then, they can implement a mentoring process whereby the skills are passed on as additional instructors are recruited.

While far less capable in terms of interactivity, Push to Talk (PTT) technology is significantly less expensive than that of keypad response systems, because the system is essentially that of a phone bridge set up with extra microphones. A PTT studio box costs about \$1300, with additional microphones estimated at about \$120 per microphone.

6.3.2 Building a Visually Stimulating Environment

Visuals should be used to attract and maintain attention, reinforce main ideas, illustrate the spoken word, minimize misunderstanding and increase retention. Best practices incorporate a variety of visuals to support the content, create a stimulating environment and break up periods of lecture.

To determine when or where a visual training aid might be appropriate, the design team should consider which points of the content are the most important and/or which points might be most confusing and need clarification.

Visuals can include key words (sometimes called word pictures), pictures, charts and graphs, or videos.

6.3.3 Incorporating interactivity, practice and feedback

Adding some type of interactivity every ten minutes will create a more exciting, motivational and valuable training experience for students. Effective activities should engage the learner, be memorable, require reflective thinking, encourage discovery, and provide an opportunity to practice what was learned. Activities to consider include:

- Debates, panel discussions and interviews
- Demonstrations
- Case studies and scenarios
- Role plays and problem solving
- Games and puzzles
- Guest speakers and SMEs
- Reviews, questionnaires and quizzes

7.0 Implementation – Rehearse and Deliver

In the Implementation phase, the course is tested and deployed for use by the desired audience. The production team ensures all components function as designed within the current environment and identifies anomalies that must be addressed before the training broadcast goes “on the air”.

The following activities are addressed in this phase:

- Running and testing of the course in the specified environment. This can include a simple reading of the script to a full dress rehearsal with all talent and training components present
- Planning for coordination and management of the training program

7.1 Setting the Stage - Advertise and Publicize

Interactivity depends on having a critical mass of active participants. Organizations with successful IVT programs do not take the audience for granted; they vigorously publicize upcoming programs and actively *recruit* participants. As with any publicity or advertising campaign, a single exposure to the message is not enough. IVT programs should be supported by a coordinated publicity campaign that should begin at least a month or two before the scheduled training session (to give potential participants adequate notice to plan for it). Reminders should be sent to potential participants on a regular basis. A final round of reminders should go out within 24 hours of the scheduled training.

Best practices include advertising via multiple communications channels (newsletters and similar publications, e-mail, faxes, and spot announcements on the IVT network itself). The most effective recruitment efforts do not merely “broadcast” the availability of training to the organization at large; best practices aim recruitment efforts directly at the target audience that was identified during the instructional analysis phase of program design and development. To achieve this, SMEs and other training clients should develop selective e-mail and fax lists containing the names of their key audience of interest.

7.1.1 Register Participants

Interactive systems require specialized equipment and may also require dedicated connections. Trainees need an easy way to acquire information about how to participate (e.g., what number to dial, which channel to tune in, what passwords are required, etc.). Trainers need to know who needs additional material or information before the telecast, who is participating during the program, and whom to contact afterwards when conducting evaluations. These requirements underscore the importance of a registration system to track trainees and to facilitate their participation. The registration process should be quick, simple, and responsive to participants’ needs. Support staff resources usually are required to handle this registration function.

7.1.2 Distribute Materials

Learning is greatly enhanced when it is reinforced. IVT programs are real-time (live) events. To extend the learning past the boundaries of the telecast time-slot, program designers and developers should consider preparing and distributing training materials to participants before the program begins. At the most basic level, these materials could include copies of PowerPoint slides, handouts summarizing the course outline, or copies of key drawings and diagrams. This will better prepare participants for the training, and will leave them a permanent reminder of the contents after the video screen goes dark. By including evaluation forms in the advance materials, training developers and managers can obtain higher response rates when evaluating course effectiveness.

If the IVT program will include tests, elaborate exercises, or other activities requiring handouts, then it is imperative to distribute these materials in advance of the training. An effective system for registering participants provides the information necessary to send training materials to all who need them. The promise of “extra goodies” (i.e. advance materials) provides extra incentive for trainees to register to participate, rather than just tune in and view passively.

7.1.3 Maximize Your Teaching Effectiveness

The topics below provide some lessons drawn from the experience of successful IVT instructors, presenters, and presentation coaches.

7.1.3.1 *Pacing*

Audience research indicates that the longer the program, the more important it becomes to vary the pace of the presentation. Verbal presentations should never be paced so fast that they are incomprehensible. But, some content can be covered at a relatively fast clip (e.g. a recap of mostly familiar material), while other subjects will benefit from a more deliberate pace (e.g. a step-by-step demonstration of how to defuse an explosive device).

Experienced production specialists will work with the production team to create appropriate pacing. To sharpen their presentation skills, instructors and presenters will benefit greatly from coaching, mentoring, rehearsals, and self-appraisal.

7.1.3.2 *Effective presentation skills*

IVT instructors and presenters can maximize their effectiveness by mastering some basic skills that have been identified as best practices in the extensive literature on the subject of presentation technique. A few of the key skills and techniques include:

- Look comfortable in the IVT environment and appear at ease using the equipment.

- Make frequent eye contact (via camera lens) with participants.
- Project body language and other nonverbal cues appropriately.
- Speak conversationally, with some emphasis, good inflection, and modulation; avoid “lecturing” or “sermonizing.”
- Relate all content to objectives, preview the contents (provide the audience with a cognitive “road map” so they understand what is to come), then refer to the map periodically so they can see how far they have come.

7.1.3.3 *Interactivity every 8 to 10 minutes*

A few “rules of the road” have emerged from research into adult learning best practices:

- Every program needs to “hook” an audience within the first minute or two; this can consist of a challenge (can you beat this?), a question (did you ever wonder why...?), an implied threat (if you don’t know X, you could find yourself in real trouble...), or a promised reward (learn this and you might get a raise...). The purpose is to obtain from each audience member (in IVT, from each participant) a commitment of time and attention to receive your message.
- Research also shows that audiences need to be re-engaged (re-commit) every 8 to 10 minutes or they will “tune out” your message (either literally or just psychologically).

Entertainment programs use plot devices (cliff hangers and story climaxes) and action sequences to keep the audience engaged. In developing IVT programs, instructional designers, content developers, and production experts also structure their programs to engage the audience and to gain their continued attention (commitment). By far the most effective of these techniques is *interactivity*. The interactive experience represents the most significant, and unique, advantage IVT producers have over their counterparts in the broadcast/entertainment world. A person who is actively participating in a learning experience is by definition, engaged in and committed to, the program.

7.1.3.4 *Exercises and activities that engage students at remote sites*

To engage participants in an interactive exchange, instructors and IVT facilitators can employ a variety of approaches, ranging from simple conversational techniques to formally structured exercises and activities. To keep the communication channels open, instructors should:

- Call on participants by name, if possible.
- Stimulate dialogue by asking open-ended and probing questions.
- Focus discussion on the on-the-job significance of topics and activities.

- Conduct frequent spot checks and polling to gauge participant understanding and attention.
- Solicit opinions and gather relevant insights from participants as a springboard to further discussion.
- Acknowledge participant contributions, and try to reference them later in the program, as appropriate, to emphasize their relevance and validity.

7.1.4 Establishing Partnerships – Working with Your IVT Team

Perhaps the biggest surprise for classroom instructors transitioning to IVT instruction is the loss of control they are used to having in the classroom. As an IVT instructor, they will need to rely on an IVT team to help deliver lessons effectively. And since they won't be able to see trainees' faces, they may need to count on distance facilitators at remote sites to act as their eyes and ears.

The studio instructor may be responsible for the delivery of content and managing the overall flow of the course. However, distance facilitators can greatly enhance the learning experience by answering questions, leading activities and helping to keep trainees involved and on track. The IVT instructor is less of a solo artist and more of a manager of the trainee's learning experience. This new method of delivery requires more planning and preparation for instructors than they ever invested in traditional delivery.

7.1.4.1 Co-Instructors – why two people are better than one in front of the camera

Another possible team member may be a co-instructor. Team teaching with a more experienced instructor will help make the transition easier and provide a more visually stimulating environment for the trainees. The team should spend time together before the session to establish rapport with one another and to be clear on respective roles in the IVT course (who teaches what lessons, who will run the equipment, etc.). Rehearsals in the studio help the team become familiar with the script and comfortable with how the transition from one instructor to another will occur.

7.1.5 Collaborating with the studio crew

The studio crew provides the technical expertise of the television medium (lighting, camera operators, teleprompters, etc.). They are essential in helping the instructor deliver material effectively and feel comfortable in the studio environment. A best practice ensures that the instructor is familiar with each crew member's responsibilities and makes all aware of how they can best support the instruction delivery.

7.1.6 Creating a Positive Learning Climate for Your Trainees

In a traditional classroom, instructors establish a positive learning climate by showing and telling the trainees that it will be safe for them to ask questions, experiment, and make mistakes. Trainees also need to be told what is expected of them, assignments, deadlines and acceptable behavior. Getting all of this accomplished at a distance can be a challenge.

One way to create a positive learning climate is to acknowledge the sites either through introductory remarks or by calling them by name. Include some kind of discussion, question, or activity within the first 5 minutes of the program, perhaps a discussion of a prerequisite or pre-class exercise, or an “ice breaker” activity coordinated by the distance facilitators.

7.1.7 Anticipate the Unexpected

Remember - there is always a possibility that something will go wrong. Be sure to have an alternate plan if equipment fails. Audio or video equipment failure means you will need to know what to do to help students understand the problem and to provide them with alternative ways to reach you with questions or comments. Distance Facilitators can ensure activities are completed, student materials provided ahead of time can “back up” on screen content, and explanatory messages can be left on a hotline number. But, do not wait until it happens to fix it. Plan ahead and remember Murphy’s Law!

8.0 Evaluation

The Evaluation phase serves as the quality management component for training development and ensures that the course functions as designed. With a keypad response system, students can respond to an instructor's on-screen posted questions with a simple press of a selected button. Answers are recorded and tallied in report format and automatically saved to a database by the associated software.

With a push to talk system, participant assessment and evaluations are most often handled by the distance facilitator or remote site coordinator, who collects a paper-based evaluation and forwards it back to the studio. Other methods include e-mail or Web-based distributed evaluations that are collected and analyzed electronically.

An evaluation best practice is one that conducts both formative and summative evaluations. The formative evaluation typically involves gathering information during all phases of the ADDIE process; with a focus on finding out if efforts are unfolding as planned, uncovering any obstacles, barriers or unexpected opportunities that may have emerged, and identifying adjustments and corrections which can help insure the success of the training. A summative evaluation typically involves the preparation of a formal report outlining the impact of a program - typically who participated in a program, what activities affected them, and what gains or improvements resulted from their participation

The importance of the evaluation phase cannot be overstated. It is through this phase that results and lessons learned from internal and external user feedback can be captured and distilled. By analyzing these results, action plans can be defined to inform future course development efforts - thus "closing the loop" of the ADDIE process.

9.0 IVT Schedule and Checklist

The following represents a baseline schedule to consider in your IVT production.

IVT Task Checklist	Weeks Before Broadcast	Person Responsible
Conduct Training Needs Assessment	12	ISD
Identify Course Goals and Objectives	11	ISD/SME
Develop Course Outline	10	ISD/SME
Conduct Delivery Methods Analysis	9	ISD/Instructor
Facilitate Kick-off Meeting	8	PM
Build script outline	7	ISD/SME/Instructor
Schedule broadcast & rehearsal time with studio and program team	7	ISD/SME/Instructor
Identify on camera talent (presenters, panelists, moderator)	6	ISD/SME/Instructor
Determine instructional strategies	5	ISD/Instructor
Develop program format	5	ISD/Instructor/Producer
Determine delivery medium for prerequisite and participant materials	5	ISD/Instructor
Provide list of planned visuals	5	ISD/SME/Instructor
Identify evaluation plan	4	ISD/SME/Instructor
Provide final detailed course outline (draft script)	4	ISD/Instructor
Submit Course Design Document	4	ISD/Instructor
Develop visuals (graphics, PowerPoint(PPT) slides, etc)	3	GD/Developer
Market program to target audience	3	SME/PM/Instructor
Provide draft script and visuals to Studio Producer/Director	3	GD/VAE/Developer
Distribute registration packets to sites	2	PM/SC/DF
Develop participant materials	2	Developer/Instructor
Conduct walk-through with program team	1	PM
Finalize interactivity guidelines	1	Director/Instructor
Distribute or post participant materials	1	PM/SC/DF
Develop program credits	1	Producer
Provide final script and visuals to Studio Director	1	PM
Conduct practice session with program team outside of studio	1	Producer/Director
Provide prompter text in .txt file	1	Developer
Conduct 1st Rehearsal in Studio	0	Producer/Director
Conduct 2nd (Dress) Rehearsal in Studio	0	Producer/Director
Conduct Site Operation Checks	0	Director/SC
Air program	0	TEAM
Collect and forward participant evaluations to project manager	1 wk post	SC/DF
Schedule and facilitate debrief meeting with program team	2 wk post	PM
Produce and file After Action Report	3 wk post	PM

10.0 Glossary of Terms

Audio Technician (Engineer, Recordist) – The person who places microphones, sets up and operates audio mixers, and who monitors sound quality and levels during recording/broadcasting.

Broadcast Engineer – The person responsible for the proper functioning of all video, audio, and transmission equipment. Maintains and repairs equipment as needed. Routinely takes care of equipment alignment, system timing and phasing, and general troubleshooting.

Chroma-Key – An electronic device used in television to insert graphics or video into another broadcast picture. Replaces a background color (the key color) with a different image. Requires special equipment, sets, and careful lighting. Can be used to insert a person's picture into a remote location, or to create various illusions. Most commonly used to project a computer-generated weather map behind a meteorologist's image. See also "Key."

Character Generator (CG) - A device which creates electronic text for insertion into a picture. The term "Chyron" is often used interchangeably with "CG" although Chyron is a brand-name for a well-known manufacturer of character generators.

Chief Engineer – See "Broadcast Engineer."

Close-up – A camera shot that fills the screen with the subject. When the shot involves a person, a close-up would include only the person's face. Because the screen size makes television a close-up medium, most directors rely heavily on the close-up.

Crane Operator – A technician who operates a camera crane (or jib arm, or camera boom), used to raise and lower a camera for high-angle shots.

Cue Card – Reminders of what the talent should say, written out on cardboard, and held near the camera lens by a cue card technician.

Cut – The simplest video transition from one shot to another; one image replaces another instantaneously.

Director –The Director supervises the activities of camera operators, audio and tape operators, lighting technicians, the Technical Director, and other personnel directly involved in the technical aspects of production.

Dissolve – A transition from one video segment to another, involving the blending of two images as one fades away while another one replaces it. Often selected to denote the passage of time or the shifting of viewpoint.

Dolly Grip – see "Grip."

Dolly Shot – A shot involving moving the camera on a wheeled dolly while the image is being recorded or broadcast. See also "tracking shot."

Downlink technician – See “Site Coordinator.”

Dub – A copy of a videotape, audiotape, DVD or CD-ROM.

Editor – The person responsible for assembling “raw” footage into a finished production. The final product can be recorded on any of a variety of media, including film, videotape, DVD, CD-ROM, or any of a variety of electronic file formats. The editor’s work may be supervised by the Director, the Producer, or both.

EFP – Shorthand for electronic field production. Denotes use of portable equipment to capture sound and picture on location, rather than in the studio.

Fade, Fadeout – Replacing of the picture with a blank screen. Usually involves a fade to a black screen, but other colors can be used. Used to denote the beginning (fade up) or ending (fade out) of a major program segment.

Field Production – See “EFP.”

Field Producer – A producer assigned to work with a crew in the field, or on location outside the studio, as distinguished from a producer who acts as editor and production manager for a specific broadcast.

Floor Director – A type of stage manager who gives visual cues to on-air talent, and who manages entrances, exits, and traffic (people) on the studio floor.

Gaffer – The chief electrician in a facility or on location.

Grip – A technical assistant. The “Key Grip” is the chief grip on the set. In television, grips may take care of equipment setup and cabling, or may double as audio recordists or general assistants. A “Dolly Grip” operates a camera dolly or moving platform on which the camera is mounted. “Lighting grips” assist the Gaffer, creating shadow effects with lights.

Intercom Fold-Back (IFB) - a one-way device that allows the control room to provide information and cues to on-air talent, usually via a hidden earpiece. IFB signals are not audible to the audience.

Interactive Video Teletraining (IVT) – A video system that permits interaction between instructors and participants in real-time. An IVT system may feature two-way communications for audio and video (e.g. a multi-site videoconference), or an IVT system may feature one-way video with two-way audio.

Make-up Technician – Makeup for television requires a specialist experienced with the idiosyncrasies of television lighting and cameras.

Producer – The person who decides how a telecast will be organized. The producer schedules production activities, commissions and takes delivery of a script, decides the order of the program’s contents, supervises the casting of talent, and manages logistics and expenditures. The producer also sees to program duplication and distribution. The Producer may or may not directly

supervise the post-production and editing process, depending on the organization. In educational and institutional settings, the Producer may also function as Director or in any of the other technical specialties, as needed.

Prompter – A device that displays the script on a piece of one-way glass mounted in front of a camera lens. With training, talent can learn to read the script from the prompter while maintaining constant eye contact with the audience. Requires an electronic copy of the script, pre-formatted for prompter display. Also requires a trained prompter operator to advance the text as the talent reads. The term “TelePrompTer” is the trademark of one manufacturer of prompting equipment.

Roll-in – A pre-recorded, edited video segment designed to be played (rolled-in) during a live broadcast.

Site Coordinator – The person who prepares a remote site to receive a telecast; tunes in the receiver, tests the equipment, distributes course materials, maintains an attendance log, collects and returns evaluation forms, etc.. If an IVT system is available, the Site Coordinator also establishes the voice or video link and tests the circuit for 2-way communication.

Sound Bite – A short portion of a pre-recorded interview which is edited into the final program.

Talent – Term for anyone who appears on-camera, including reporters, anchors, presenters, instructors, etc.

Technical Director (TD) – The control room technician who operates the SEG or “switcher” (q.v.). Usually, the TD acts on verbal commands from the Director, setting up and triggering effects, switching shots from camera to camera (or to/from tape), inserting text from the character generator, etc.

Teleprompter – See “Prompter.”

Voice-Over – Voice that is recorded separately, then joined with a picture during editing. Because voice-over often is mixed on top of (louder than) natural sound (q.v.), we hear the voice “over” the natural sound.

Wide Shot – A wide-angle camera shot, showing a broad area or a group of people. A wide shot of one person would depict the person from head to toe. The wide shot also is referred to as a “long shot.”