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Instructional Systems Development

If you had to choose one metaphor to help describe the Instructional Systems Development (ISD) process, you might consider the humble road map. You know the one—the one that shows countless destinations and endless ways to get your destination. On your road map your destination is a city, town, or possibly a major intersection. In training and education, the destination is a successful training program, a multimedia courseware, or a distance education course.

As simple as a real road map is to use, there are still hapless millions who refuse to take the time to look at one before leaving home. On any given day you can easily spot the mapless—they can usually be identified by the puzzled look on their faces and the familiar arched back silhouette as they lean from their minivan windows asking for directions. In the world of instructional design, the ISDless can typically be identified by the puzzled look on their faces as learners fail to reach their desired training destination—all the while wasting valuable organizational resources on unsuccessful programs.

Traveling provides many opportunities to use different kinds of maps. Observing the daily numbers of subway riders traveling the Metro Rail System in the Washington, D.C., area is an ever continuous example of people who would rather get off at the wrong stop than look at the highly visible and easy-to-read maps posted in each Metro railcar and station. This doesn’t just apply to the many tourists who stream in to visit the D.C. area either—it’s also the wave of blue suits and denim that daily invades the subway to emerge from the darkness just in time to be late for work. The net result of these individuals’ failure to follow the simple navigational system is a loss of valuable and irreplaceable time, a confusion about where they are at any given moment, a loss of momentum from starting and stopping, and a loss of confidence in their ability to travel successfully at all. Applying this metaphor to training and education, these same symptoms exist in learners and other stakeholders when designers fail to use a system of instruction as a road map. Instructional Systems Development provides the means by which a road map can be created and followed, leading learners down the path of success.

ISD is not a cure for the common cold or the answer to world peace but it is a valuable tool to be used in the fight against mediocre training efforts that bore or frustrate participants and rarely provide the sponsoring organization anything more than a bad day in the training department. Current challenges in training will not be sufficiently addressed by industrial age approaches that appear as out of date in the training world as the steam engine does in the space program.

Today, ISD is used in every imaginable type of training and education. From preschool classes to multimedia courseware for the masses, ISD is the strength behind the product and the process that ensures compliance with best practices in the field of instructional design. The ISD map to success is paved with methodological milestones, quality markers, and mega opportunities for creativity.

What Is ISD?

Instructional Systems Development, or ISD as we will refer to it, is a systems approach to analyzing, designing, developing, implementing, and evaluating any instructional experience. It may also be called Instructional Development (ID), Curriculum Development (CD), Instructional System for Training (IST), or a variety of other acronyms. The differences between the many systems are usually modest in scope and tend to be linked to terminology and procedural issues.

Regardless of what you call them, each of these systems operates on certain basic principles. If you are a “systems” thinker you already know that systems are present in every facet of our lives. We elect our representatives in the political system and we prosecute them in the legal system. We pay taxes as a result of the legislative system and we travel from place to place as a result of a transportation system. Instructional systems are no different in theory than any other system; only the details change.
The reason training and education work so well in a systems environment goes to the very essence of systems themselves. The systems that seem to work best are those that have observable, measurable, and replicable elements. In the case of ISD, these elements include analytical methods, objectives, evaluation schemes, design plans, and a number of other system components.

While ISD is a system, it is not so rigid that it lacks flexibility. In fact, the more you work with ISD, the more you realize that the system allows you greater opportunities to be creative. For example, a system-less training organization with an intra-organizational communications problem might decline to pursue that “analysis and evaluation stuff” and concentrate on creating very attractive participant materials and a video that features the company CEO looking casual, sitting on the corner of his or her desk. This is what I refer to as the four-color and Hollywood approach to training—all flash and no substance. A systems approach that contains analysis and evaluation allows for creativity necessary to focus on the real workplace issues and provide solutions that can be evaluated and replicated organization wide, proffering some assurance that the intervention was worth the monies and resources expended.

Before going any further into ISD, it is important to herald the universality of this process. The notion that ISD only works in training environments is as accurate as saying that maps only work if you are driving a red sports car in towns with a population of fewer than 500. The process of assembling a curriculum is built on the same concepts and principles. This applies to whether you are designing an English as a second language course, a third grade reading lesson, or a jet airline simulator. The variables that exist in any curriculum design process, including population variables, delivery systems, and resources, are just that—variables.

Do You Need Subject Matter Experts?

The myth of having to be a subject matter expert (SME, pronounced sh-mee) to design curriculum is exactly that—a myth. One of the first questions usually asked by new ISD students relates to a common misconception concerning whether you need to be a subject matter expert before you can design curriculum in any given subject matter. While a little subject matter expertise may be helpful, it is not a requirement for success. Every day, ISD practitioners design exciting and successful curricula in subject areas that are only vaguely familiar to them. Remember, ISD is a systems approach to developing training, and the “system” includes methods of working with folks that are SMEs. Most SMEs, in fact, really appreciate the ISD process; once freed of the responsibility of designing curricula, they can concentrate on the subject matter while you worry about that “design stuff.”

This is analogous to the relationship many of us have with machinery—especially cars and computers. For the most part, we have no real knowledge of these technologies beyond what is called the “appliance operator” mode. In other words, we can turn them on, hope they work, and then use them to our own selfish ends. We don’t need to know how many volts of electricity power a certain microprocessor or how many pints of green stuff needs to be in our car’s radiator. We only need to know whom to ask when we need help, especially when we get the “fatal error” message on our computer monitor or when the green stuff that was once happily circulating in our cars is now dripping onto our driveway.
The ADDIE Model of ISD

There are a number of ISD models named after individuals and institutions, but we are going to use the generic, or ADDIE, model as our point of reference. Although a nice name for a cat, ADDIE actually represents the first letter contained in each of the five separate elements of this model: Analysis, Design, Development, Implementation, and Evaluation. Most instructional designers use the ADDIE model or some variation of it as a basis for their work. Eventually, most experienced designers adopt their own unique models—one that fits their work styles and the demands of their clients or organizations.

Below is a short profile of each component. A more detailed and in-depth explanation follows.

Analysis

The who, what, where, when, why, and by whom of the design process. In this element you must determine:

- if a problem exists that can be appropriately addressed by training
- what goals and objectives the training should address
- what resources are available for the project
- who requires the training and their needs (population profiles)
- all additional data needed to successfully complete the project

Design

This is the real heart of the instructional design process. Here the designer will:

- prepare instructional objectives
- develop instructional evaluation techniques and tasks
- develop a program evaluation plan
- develop the sequence and structure of the course
- prepare logic and objectives maps
- determine and prepare draft copies of necessary materials
Development

In this phase the designer will:

- prepare all participant and instructor materials for the course
- prepare all support materials including audio, video, and other media
- program any computer-based materials
- field or beta test the project

Implementation

In this phase a project is:

- put into service
- evaluated by learners, facilitators, and funders
- changed, restructured, or improved as necessary

Evaluation

This phase actually takes place throughout the instructional design process. The major evaluation elements demand that a designer:

- confirm that all subject matter is correct and reviewed by SMEs
- consult with stakeholders to ensure adherence to established project goals
- adhere to the design plan and procure sign-off on all critical design elements
- review and act on all evaluations from participants, facilitators, and other end users of the project
- ensure quality control of the process by constant and thorough evaluation of all remaining project elements

Analysis

Just as A is the first letter in the alphabet, analysis should be the first item addressed in instructional design. Without analysis, you really have nothing to work from or any information to work with. There are as many analysis techniques as there are analysts and it can be very confusing to the uninitiated. There are, however, several basic building blocks in analysis that designers need to consider.

Getting Started

The first question that must be asked in analysis is critical to the success of any training endeavor: “Is there a problem that can be reasonably remedied by a training intervention?” Many a novice designer has turned enthusiasm into disaster by assuming that a problem was training related and later discovering that no appreciable change took place in the target population because the cure was not training but in solving the nature of the problem itself. While this may seem to be too obvious to take seriously as a critical first step, here is an example that might make you change your mind.

A rather large manufacturing company called a training consultant in to bid on what they perceived as a blueprint reading problem in their maintenance department. It seemed that every time a major piece of equipment broke down, the maintenance crews were constantly making mistakes when repairing the equipment. This suggested that the crews could not read the blueprints.

Being a good instructional designer, the consultant asked about the process of repairing broken equipment. He learned that a crew initially visited the broken machinery, returned to the blueprint room,
wrote down the needed information, returned to the broken equipment and attempted to repair it. When asked to be shown the blueprint room, the consultant discovered a small, windowless room, illuminated by a single, low wattage incandescent bulb. The consultant also observed a sign posted in the room, which reminded everyone that no blueprints could leave the room. In less than a day, the entire problem was fixed by installing new lighting and providing extra copies of the blueprints for repair crews to take on site. This consultant could have trained everyone, everyday for a year on blueprint reading and still not have improved the maintenance efficiency to a measurable level.

Other first-step analysis issues you may want to consider include:

- **A Target Population Profile**
  This includes every variable that might affect outcomes: education levels, cultural influences, language skills, learning styles, levels of participants’ motivation, organizational political streams, and relevant past experience with the subject matter.

- **Types of Training**
  Preliminary categorization of a training assists in narrowing the range of options available for instructional design. This should not be confused with training platforms (see next entry). Types of training include skills enhancement, technical, marketing, managerial, cross-cultural, sensitivity, second language acquisition, organizational change, literacy, and traditional academic training.

- **Training Platforms**
  These are the delivery systems for any training. Examples include classroom, on-the-job, multimedia, computer-based, distance learning, teleconferencing, and seminars.

- **Resources**
  These are the resources available for the project and might include access to subject matter experts, sources for print materials including manuals, books, videos and other reference materials, funds procurable for the project, existing courseware and materials, facilitators on hand for implementation, and support equipment such as overhead projectors and video playback equipment.

- **Constraints**
  These are issues that might cause problems including unreasonable deadlines, limited access to training facilities, platform-related deficiencies including broken or aging equipment, and anything else that can influence a project’s success or failure.

A number of methods are used during the analysis phase to gather and review data including:

- surveys
- focus groups
- materials review
- subject matter expert panels
- existing programs review
- Internet and Web-based searches

Types of Structure

Plans for sequencing and structuring a lesson, course, or instructional program are made during the design phase. Sequence and structure are very closely related. Sequence is the order in which skills or information is taught, while structure refers to the relationships among skills and topics. Structure is important because it provides a framework for learning; structured information helps you learn more quickly and allows you to remember what you have learned more efficiently. You can prove this by trying the following experiment:

Look at the words listed below for 30 seconds, cover the list up, then try to rewrite it.

- orange
- grapefruit
- apple
- beef
- lemon
- pork
- cabbage
- fish
- lettuce
- pea
- chicken
- bean

Now look at this structured word list for 30 seconds, cover, and rewrite it.

<table>
<thead>
<tr>
<th>Food</th>
<th>Furniture</th>
<th>Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>apple</td>
<td>bed</td>
<td>cow</td>
</tr>
<tr>
<td>cookie</td>
<td>chair</td>
<td>dog</td>
</tr>
<tr>
<td>pear</td>
<td>desk</td>
<td>elephant</td>
</tr>
<tr>
<td>toffee</td>
<td>sofa</td>
<td>horse</td>
</tr>
</tbody>
</table>

Which list did you remember better? There were exactly the same number of words to remember, but the second list was structured by main topics and alphabetized within topics.

Task-Centered Structure

A task-centered structure arranges skills and knowledge by their relationships to job tasks. This type of structure is particularly helpful when there is a specific order in which tasks must be done on the job. The structure tends to reinforce the order in a training participant’s mind.

The following example shows a task-centered training program for a gas station attendant. The topics have been divided into units according to tasks that were identified by the program designer. The design might have used a variety of different task classifications as the program structure.

<table>
<thead>
<tr>
<th>Training Topic</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greeting</td>
<td>Welcome customer</td>
</tr>
<tr>
<td>Determining customer need(s)</td>
<td>Welcome customer</td>
</tr>
<tr>
<td>Windshield cleaning</td>
<td>Regular service</td>
</tr>
<tr>
<td>Gas pumps</td>
<td>Regular service</td>
</tr>
<tr>
<td>Gas tanks</td>
<td>Regular service</td>
</tr>
<tr>
<td>Oil maintenance</td>
<td>Regular service</td>
</tr>
<tr>
<td>Wiper fluid refill</td>
<td>Regular service</td>
</tr>
<tr>
<td>Air pumps</td>
<td>Repair</td>
</tr>
<tr>
<td>Tires</td>
<td>Maintenance</td>
</tr>
<tr>
<td>Tire patches</td>
<td>In-stock</td>
</tr>
<tr>
<td>Jacks</td>
<td>In-stock</td>
</tr>
<tr>
<td>Tow truck operation</td>
<td>Towing</td>
</tr>
<tr>
<td>Tow bar attachment</td>
<td>Towing</td>
</tr>
<tr>
<td>Prices</td>
<td>Payments</td>
</tr>
<tr>
<td>Cash registers</td>
<td>Payments</td>
</tr>
<tr>
<td>Credit card transactions</td>
<td>Payments</td>
</tr>
</tbody>
</table>
**Topic-Centered Structure**

This structure arranges instruction by topic. Main topics are divided into unit headings. This is useful when training participants are required to learn a lot of information—this framework makes it easier for participants to learn and retain related information. There are many possible ways to arrange a topic-centered structure. Consider how you would rearrange the topics from the task-centered example if you use the following topical titles as unit headings:

- gas
- oil
- windshields
- tires
- towing
- customer contact
- billing and payment

**Problem-Centered Structure**

This type of structure is helpful when training participants are expected to learn how to solve problems. Structuring a course around the problems learners have faced or will face on the job helps them focus on finding solutions. For example, a training program designed to prepare a mechanic to diagnose car problems might have unit headings as follows:

- stalling
- not starting
- slow pick-up
- bucking
- vibrations
- low gas mileage

This structure is based on symptoms of car problems. The instructional emphasis will be on diagnostics. If the program were structured by topic or task, training participants might not learn to think in terms of diagnosing a car problem from its symptoms.

**Design**

In this phase the designer provides the basic foundation and structure for the training project. The foundation consists of the goals, objectives, and evaluation tasks that must be developed and how they are sequenced. The structure comes from the many decisions that must be made regarding training platforms and other implementation questions.

A design plan will be developed that includes a working map for the project. This will serve as the blueprint for developing the training and will also list all of the objectives written for the training program along with a list of additional items needed such as:

- printed support materials including manuals and handouts
- audio and video support materials
- scripts and storyboards for computer-based projects
- evaluation materials including tests, quizzes, and other formal evaluations
- lesson plans and other forms of facilitator support
- program documentation strategies
- staff assignments and responsibilities
- project management plan with milestones and deadlines

**Development**

It is in this phase that the tangible and most easily recognized components of the training begin to take shape. The project moves from the blueprint to construction stage using the design plan as a guide.

Major development phase elements are as follows:

1. Manuals and materials are prepared in draft form and reviewed by SMEs and designers for accuracy.

2. Nonprint media such as audio, video, and computer-based programs are prepared and reviewed.
3. Programs are pilot tested, changes are incorporated into the final program, and materials modified as necessary.

4. Programs are packaged and distributed in preparation for implementation.

**Implementation**

This is the traditional time when projects are placed in service and the evaluation process begins in earnest. In most implementations you can expect to see the following:

- evaluation of learner’s ability to meet program objectives
- evaluation of program design by facilitators
- review of materials prepared for the program
- review of implementation-specific elements such as class size, format, and so on
- modification of design and materials as suggested by evaluation

**Evaluation**

While the evaluation element of the ADDIE model appears to be the last function, in reality, evaluation takes place at every point throughout the ISD process. In fact, every action in the ISD process has an equal and counterbalancing evaluation element associated with it.

In the **analysis** phase, evaluation usually consists of the following:

- review of all research data by SMEs and the design team
- survey, focus group, or other analytical method to validate population, delivery systems, course design, and other important training components
- evaluation of resources and constraints data based on reviews by key decision makers
- review of process issues such as deadlines and deliverables

During the **design** phase, evaluation is usually done on the following:

- objectives and evaluation tasks
- materials and medium plans
- process issues associated with deadlines and deliverables

**Development** phase evaluations include the following:

- review of materials by SMEs, the design team, and the target audience
- pilot testing of training components and materials
- review of deadlines and deliverables in preparation for implementation
During implementation, evaluations usually consist of the following:

- full course reviews based on evaluations of learners and facilitators
- review of deadlines and deliverables based on targets set in the design element

Objectives

The use of objectives in curriculum design is identical to the use of a road map to show our intended destination and the best way to get there. You will not find too many people who just get in their cars and drive toward a new destination without knowing how to get there. Objectives are the destination points in the curriculum design adventure and without them, learners and designers have no reference point for any single destination.

An objective must be stated clearly and describe the intended exit competencies for the specified unit, lesson, course, or program that it has been written to identify. There are two general categories of objectives: terminal and enabling. The classification of an objective is determined by where it falls in the curriculum design. If it describes an exit behavior for the unit of instruction, it is usually a terminal objective. If it describes a behavior that supports a terminal objective, it is considered an enabling objective. For example, if writing a terminal objective for a unit of instruction in the subject area “Learning the Internet,” it might look like this:

*Given a computer system, modem, and software, the Internet 101 student should be able to access the Internet and check for any email messages waiting on the system at least five times without error.*

This enabling objective breaks down the expected exit competency into more manageable chunks or enabling objectives. Using our road map metaphor again, if we are traveling from Annapolis, Maryland, to Dallas, Texas, the terminal objective would be arriving in Dallas, the enabling objectives would be arriving in St. Louis and Oklahoma City.

Four Components of an Objective

The four building blocks of an objective are:

1. Audience.
2. Behavior.
3. Condition.
4. Degree.

When objectives are written in this format they are cleverly called A-B-C-D objectives. These four components are used to clearly and succinctly describe the learning environment and desired outcome for terminal or enabling objectives.

While some might consider the level of detail involved in four-part objectives either terminal banality or a behaviorist’s dream, designers consider them the real foundation of “best practices” grade design work. There are several reasons for this philosophy, but the most persuasive is that without objectives you really have nothing to evaluate—objectives provide all the building blocks for gauging success. Until you define success (in this case with objectives) you can never hope to reach it.

An example of a four-part objective might be as follows:

*Given a complete copy of the Infoline on Instructional Systems Development, the Introduction to ISD participant (UMBC course number EDUC 602) should be able to accurately describe the four components of an objective without error when given at least three opportunities to do so.*
Course Mapping

Mapping is a visual representation of a unit of instruction. It usually depicts either terminal or enabling objectives. A map can be drawn for any number of different instructional units including courses, units, and lessons. The map seen below represents all of the terminal objectives for EDUC 602, a graduate course in Instructional Systems Development.

Maps drawn for ISD projects use a bottom-up format with the lowest level depicting the first objective, in this case Systems & Models as shown in the lowest box. Each higher level of objectives builds up from the level below. In this particular case, you must complete the module on Systems & Models before you can take the module Generic ISD Model, and so on.

When a level has more than one box, the boxes can be taken in any order, but all of them must be taken before progressing on to the next level. For example, a learner must complete both the Evaluation Tasks and Objectives modules before progressing to the Syllabus Elements module. Learners then progress through the modules on Gagne’s Nine Events and then Lesson Plans in preparation for the final project.

The larger boxes outlined with dotted lines represent the three main course areas and the objectives associated with each. The first two objectives are required for both the research project and the final project, whereas the remaining enabling objectives relate to Element One and Element Two of the final project.

Terminal objectives for this course are depicted in hexagonal boxes. In EDUC 602, participants are required to successfully prepare two portfolio projects to meet the objectives for the course.
Let’s look at the four components of this objective:

1. **Audience**: The Introduction to ISD Learner (UMBC course number EDUC 602).

2. **Behavior**: Should be able to accurately describe the four components of an objective.

3. **Condition**: Given a complete copy of the Infoline on Instructional Systems Development.

4. **Degree**: Without error when given at least three opportunities to do so.

Now let’s look at what each of these components really tells us about the objective.

**Audience**: The first element of an objective must offer as complete a description of the intended learner as possible. At first, the audience component might seem simple to produce, but this is a deception. Defining a population for an objective requires a designer to really picture the intended audience and then describe that audience in concise terms. It’s not good enough just to say “the learner” because that could refer to anyone.

The audience component of an objective provides a lot of information. It should begin to narrow the focus of the objective and offer important clues concerning possible prerequisites and the sequencing and placement within a larger series of objectives. In our objective we learn several important things concerning the intent of the objective. First, our learner is going to be working at the introductory level of this subject (Introduction). Second, this learner is taking a course in Instructional Systems Development (ISD). Third, this course may be one in a series of courses since it has been assigned a designating number (UMBC course number). Fourth, it is probably being offered by the Education Department (EDUC). Fifth, it is probably a graduate-level course (602).

**Behavior**: The behavior component is the core of an objective. It is here that we define the real work to be accomplished by the learner. Behaviors must be observable and measurable, and then written as concisely as possible. Commonly misused behaviors such as learn and understand really do not provide much information and should be avoided.

In our objective, the behavior is both observable and measurable as the learner is required to accurately describe the four components of the objective. This objective leaves little doubt about what is required, and it builds a solid platform for the evaluation task necessary to ensure mastery.

**Condition**: The condition component of an objective provides the learning environment that supports the intended outcome. Conditions can be as simple as providing physical elements such as books or tools or as complex as requiring learners to successfully complete a series of lessons or courses before attempting a particular objective.

In our objective, the condition statement, “given a complete copy of the Infoline on Instructional Systems Development,” ensures that each learner will be given the tools necessary to meet the objective, thereby eliminating the issue of environmental support if a learner fails to meet the objective.

**Degree**: This component designates the required efficiency level to successfully complete the objective. Examples of degree include the following:

- four out of five times
- with a score of 80 percent or greater without error
- in an hour or less

In our degree statement there is little doubt concerning the objectives’ requirements for success, “without error when given at least three opportunities to do so.”
Evaluation Tasks

For every objective (terminal or enabling) there should be a corresponding evaluation task. Some are formal, others are informal. Formal evaluation tasks include taking tests or quizzes and writing an essay. Informal evaluation tasks might include having a learner describe a given concept or principle or state a rule in mathematics or grammar.

Objectives should closely match evaluation tasks in two important areas: behavior and condition. When these elements match, an objective is said to have performance agreement. The performance agreement principle ensures consistency between what we expect of learners in the objective and what we require them to do in an evaluation.

In our objective for the Internet class, we call for the learner to access the Internet and check for waiting messages using the supplied computer system, modem, and software. A corresponding evaluation task might include the following:

*Using any computer station located in the classroom with a modem and software installed for telecommunications, access the Internet and retrieve any waiting messages in your account.*

This evaluation task matches the objective in both behavior and condition. It ensures that the learner will be evaluated in a way that is consistent with the intent of the objective.

Performance agreement problems usually exist when either the behavior or condition (or both) are inconsistent with the objective. In our Internet example, requiring the learners to write an essay on how they would access their email accounts is not the same behavior as actually requiring them to get on the computer system and meet the objective. This evaluation lacks performance agreement. It is important to remember that it makes no difference which behaviors and conditions you specify in your objectives and evaluation tasks, only that they match and provide performance agreement for the objective.

Objective Domains

It is useful to define objectives by the primary domain in which they are intended to be implemented. By domain we mean the classification of the objective into one of four general categories: cognitive, affective, psychomotor, and interactive. The divisions represented by each domain typically have these characteristics:

**Cognitive:** skills and knowledge relating to intellectual activity.

**Affective:** attitudes, feelings, and values.

**Psychomotor:** skills related to physical activity.

**Interactive:** skills related to interactive and interpersonal exchanges.

Objective domains assist you in writing objectives and evaluation tasks and also help ensure performance agreement. Inappropriate use of domains in training can cause dissonance in learners and threaten the success of any program. An illustration of this principle would be using an objective written for one domain and an evaluation task written for another domain. An example might be having an objective that requires a learner to successfully operate a piece of equipment and the evaluation task that asks for an explanation of the theory of operation.
Putting It All Together

Now that we have covered the basics of ISD, it is time to pull it all together in a way that makes sense for you. All of the discussion about the ADDIE model and A-B-C-D objectives starts to sound like alphabet soup until you have a way to make it work for you. Remember our road map analogy! You need to be sure of your destination and how you will get there. Here are some suggestions that might help you get started.

1. Always use a systems approach like ISD in your curriculum development work. This is true if you are designing training you will implement yourself or training that will be distributed to a thousand sites around the world. Nothing substitutes for the power of ISD. The ADDIE model is an easy and proven way to use ISD for almost any training situation.

2. Never, ever start a curriculum design project without doing analysis. Your first question should always be “Can I address the problem with training?” Next, be sure that you have gathered all the data you can about your population. Determine your training type and then analyze your resources and constraints.

3. Always establish clear, observable, and measurable objectives. Writing great objectives will establish a clear foundation for everything you design. No matter how simple or complex the subject matter and other details of your training, objectives will always get you started in the right direction.

4. Create evaluation tasks that accurately determine a learner’s ability to meet objectives. Remember, it is important that evaluations match objectives in terms of behavior and condition. Then, objectives and evaluation tasks are said to have performance agreement.

5. Use the Accumulation of Advantages principle to guide your decisions regarding instructional design. Every successful training effort is the result of a number of separate decisions that support the “best practices” approach to curriculum design. Since no single element of any training project will ensure success, it takes a systems approach like ISD to ensure victory in the battle against mediocre curriculum design efforts.

Set your goals, write your objectives, evaluate your results, and accumulate the advantages that Instructional Systems Development offers new millennium training organizations.
References & Resources

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Books


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Internet Sites

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http://www.astd.org

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http://www.cudenver.edu/~mryder/itc_data/idmodels.html

Nine Step Approach to Systems Design
http://infoweb.magi.com/~broadb/sat.html
A Training Program Instructional Systems Design Checklist

Use this checklist as a guide to track your progress in developing lessons, courses, or training programs. You can also use the completed checklist as a reminder of program aspects that need to be evaluated.

Course/Program Title: ________________________________________________________________________________

Analysis

☐ Organizational needs have been determined.
☐ Program goals have been set.
☐ Training population needs have been defined.
☐ On-hand resources have been determined.
☐ Constraints have been identified.
☐ Job(s) have been broken down into tasks or responsibilities.
☐ Tasks have been broken down into skills and knowledge.
☐ Job performance standards have been identified.

Design

☐ Objectives reflect organizational needs and goals.
☐ Objectives reflect training population’s needs.
☐ Test item(s) have been written for each objective.
☐ Each test item matches its related objective.
☐ Training strategies reflect resource constraints, but honor population needs.
☐ Logical training sequence has been determined.

Development

☐ Training materials support objectives.
☐ Media selection is appropriate for objectives.
☐ Media selection reflects resource constraints.
☐ Evaluation forms are prepared.
☐ Training documentation tracks participant’s progress.
☐ Course documentation meets organizational documentation needs (for planning, legal, other purposes).

Implementation

☐ Qualified instructors have been selected.
☐ Problems with the training design or materials are recorded.
☐ As they become necessary, revisions are made in the program—up to and throughout implementation.

Evaluation

☐ Evaluation plan was carried out.
☐ Evaluation data were used to make refinements or corrections in the course or program.