The Basics of ISD Revisited

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### THE BASICS OF ISD REVISITED

A SYSTEMS APPROACH TO CURRICULUM DEVELOPMENT

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**Infoline** is a real got-a-problem, find-a-solution publication. Concise and practical, *Infoline* is an information lifeline written specifically for trainers and other workplace learning and performance professionals. Whether the subject is a current trend in the field, or tried-and-true training basics, *Infoline* is a complete, reliable trainer’s information resource. *Infoline* is available by subscription and single copy purchase.

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Instructional Systems Development (ISD) is the gold standard for curriculum development professionals in every aspect of education and training. From a quick training course for volunteers at a community youth sports team to the most sophisticated simulations and college courses, ISD provides the design framework that professionals trust, and corporations, nonprofits, apprenticeship programs, military, and academic organizations are now insisting on for their programs.

From humble origins during the training-rich war years of the early 1940s, ISD has now evolved to consume the professional careers of seasoned instructional designers and entire graduate school programs at several leading universities. The beauty of ISD is that even a little knowledge pays major dividends when designing curriculum, and designers with advanced degrees are managing multi-million-dollar training programs around the world.

At this point you are probably thinking, “So what’s the magic with ISD?” The quick answer is that ISD combines a systems design environment with the latest learning practices and implementation variables. From social media to online courses, ISD’s reliance on practical and proven curriculum design processes allows a quick adoption of the latest trends while also providing traditional classroom courses with cutting-edge design techniques. All this is possible because a system’s approach to curriculum design means that every variable from learner to delivery system is based on careful analysis and informed decisions.

The other magical element of ISD is that every aspect of the design process is driven by detailed behavioral objectives and evaluation tools. This guarantees that learners are never an afterthought and organizations never forfeit valuable time or resources on shoddy and unproductive learning efforts because results are observable and measurable.

This Infoline sets the stage for ISD by first explaining its origin and approach and then presenting the classic ADDIE Model, with each phase of the model discussed in turn. Then it examines the role that objectives and evaluation play in instructional design as well as new developments in emerging technologies and ISD quality control. Finally, it concludes with suggestions that help you put it all together and get started.

A SYSTEM’S APPROACH TO CURRICULUM DEVELOPMENT

ISD is a systems approach to analyzing, designing, developing, implementing, and evaluating any instructional experience. Its DNA is can be traced back to the earliest system theorists, especially Ludwig von Bertalanffy (1950). Centuries earlier, Aristotle summed up system’s theory best when he wrote that “the whole is greater than the sum of its parts.” With ISD, the elements of analysis, design, development, implementation, and evaluation will always create a better instructional product than is possible by leaving any of these elements out of the design process.

ISD is a complex adaptive system in that instructional designers learn and adapt to changes in instructional systems elements to improve instructional products. While some have been quick to criticize ISD for its perceived rigidity related to a systems approach, they fail to realize that ISD allows incredible flexibility, and designers actually learn and adapt from each new variation in population, content, or delivery system. This is critical when new technologies enter the design landscape. You only need to look at the recent seachange in design involving online learning, social media, and smartphone technology for examples. Whatever comes next, ISD will be waiting with a plan and an instructional product.
The systems approach 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 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 across the organization, 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 TO BE A SME?

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. The myth of having to be a subject matter expert (SME, pronounced sh-mee) to design curriculum is exactly that—a myth.

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 ends. We don’t need to know how many volts of electricity power a certain microprocessor requires or how many pints of green stuff need 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.

For more on successful partnerships with SMEs, see Designer-SME Collaboration (no. 251005).
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 (see sidebar). ADDIE represents the first letter contained in each of the five separate elements of this model:

- Analysis
- Design
- Development
- Implementation
- 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—customized to fit 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 then follows.

ANALYSIS

Analysis is 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)
- any additional data needed to successfully complete the project.

DESIGN

Design is the real heart of the instructional design process. As the designer, you will

- prepare instructional objectives
- develop instructional evaluation techniques and tasks
- create a program evaluation plan
- determine the sequence and structure of the course
- prepare logic and objectives maps
- draft necessary materials.
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. As many analysis techniques exist 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 in a training consultant 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, every day for a year on blueprint reading and still not have improved the maintenance efficiency to a measurable level.

Other first-step analysis issues to consider include target population profiles, various types of training and training platforms, resources, constraints, and data collection methods and tools.

TARGET POPULATION PROFILES
A population analysis provides trainers with the information they need to ensure that they communicate in ways their audience will understand. The first step in creating a target population profile is to list 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. For a simple matrix to help you establish which of these issues may influence the project’s success, see the job aid, Population Analysis Matrix, at the back of this Infoline.

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

RESOURCES
The resources available for the project may vary considerably and may 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 multimedia projectors, video playback equipment, or even computers for simulations.

CONSTRAINTS
A constraint can be any issue that can cause problems before, during, or after a training. Unreasonable deadlines, limited access to training facilities, platform-related deficiencies including broken or aging equipment, to name a few, can all influence a project’s success or failure.

DATA COLLECTION
You can use a number of methods during the analysis phase to gather and review data:

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

For more detailed information on analysis methods and how to gather and review data, refer to the following Infolines: Data Collection for Needs Assessment (no. 250704), Surveys From Start to Finish (no. 258612), and Be a Better Needs Analyst (no. 258502).