

ISD

Faster

Better

Easier

by Darryl L. Sink

No, instructional systems design (ISD) is not dead. Recent criticism of ISD, however, is not without merit.

Those who overproceduralize ISD and concentrate on the process itself as an end, rather than as a means to an end, lose track of the fact that training and training development exist to help people do their jobs in ways that produce outcomes and results needed by their organizations. Unfortunately, many people have overgeneralized the criticisms of ISD and assume that ISD no longer is of value. In fact, ISD has and is evolving and changing to accommodate ever-increasing needs for rapid development, continuous content change, worldwide distribution needs, and cost savings.

This article is about the practice of ISD as it exists in the real world today and how it is being modified and used to produce training solutions that are *faster*, *better*, and *easier*. This article presents

several areas of ISD to illustrate how ISD has been adapted to meet real-world constraints and how it is best used with current delivery technologies, specifically web-based training. The article provides suggestions relating to some of the more important parts of the ISD process. The areas include needs assessment/analysis, content analysis, design strategies, try-out and revision strategies, and project management.

In Figure 1, a simplified ISD model is presented with these areas highlighted.

Needs Analysis Process: When to Use It and When Not To

ISD is a problemsolving process. As a part of that process, needs assessment and needs analysis are correctly considered the first steps. These analyses prevent development of training for issues that have nothing to do with real discrepancies in the knowledge, skills, and attitudes workers need. Before providing an example of how to do needs assessments and needs analysis *faster*, *better*, and *easier*, we share a note on when not to do one at all.

Needs analysis may *not* be necessary when training and its goal are mandated or already clearly established. Regulatory training required by law (for compliance) is mandated training. New-hire job training may be another situation where training is definitely required. This is especially true when it is not possible to hire enough people who already know how to do a job. Another situation where a needs analysis may not be necessary is in cases where a complete and accurate job description and analysis exist. The training goals in this case may be established from the job analysis and with the help of master tradespeople, high performers, or subject matter experts.

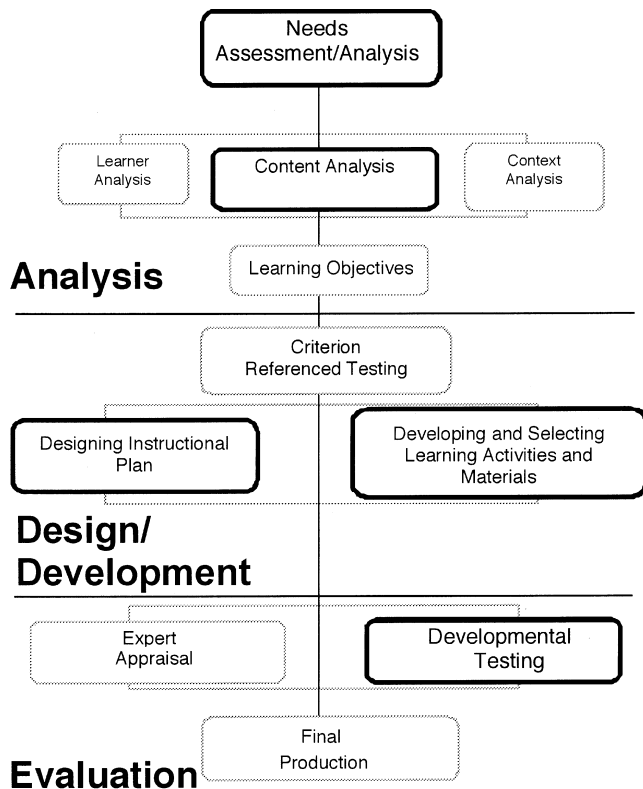


Figure 1. Instructional Development Model.

Needs analysis is the process of identifying problems and their causes, then matching solutions to the problems. Therefore, the formal needs analysis process is useful only when problems are not clearly identified or analyzed. Attention to the simple decision process illustrated in Figure 2 may save time and embarrassment by avoiding the effort of a formal needs assessment and needs analysis when they are not necessary.

It is important to recommend needs assessment and needs analysis when problems have not been clearly identified; and it is also important to intentionally avert this work when it is not necessary.

Needs Assessment/Analysis Interviews

If there are performance issues and a needs analysis is in order, how can it be done faster, better, and easier? One

IF	THEN
The training goal is clear or required as in mandatory training	Start with task analysis
You are training new hires to do a specific job	Start with job analysis then task analysis
New technologies, processes or programs are being introduced	Use subject matter expert analysis
BUT	
If there seem to be performance issues, something other than not knowing how to do the job may be involved	Use needs assessment/needs analysis studies

Figure 2. What to Use Instead.

data-gathering technique used often in needs assessment/analysis is the interview. Here is how interviews can be done faster, better, and easier:

- Develop a list of standard and supplemental questions. The questions can be used repeatedly, if modified to address each particular situation.
- Use the standard and supplemental questions to identify gaps in applicants’ knowledge, performance, or attitude.
- Ask which gaps are most important to resolve.
- Ask questions about the root cause(s) of the interviewee’s identified high-priority gaps (needs).
- Ask how the gaps can be closed (possible solutions to the problems identified).

By asking questions about the gaps, their root cause, and solutions, information for both the needs assessment and needs analysis is collected in the same interview.

To be more efficient and effective in collecting and handling the interview data, record the interviews and have them transcribed. A court reporting company or the services of a conference call center (if telephone interviews are used) will take the burden of transcription off the consultant and speed the process. The court reporters or the conference call centers will provide an electronic copy of the interview, as well as a hard copy, usually within 48 hours. Using this process, electronic copies of all interviews can be available within two days of the last interview.

Once the electronic copies are received, the comments can be sorted into problem categories. Comments are then summarized within each category. Recommendations are built from the summary information. This process makes the report more accurate (*better*) because what people actually said has been captured, rather than relying upon notes. The process moves more quickly using transcription services (*faster*), and it is certainly less time consuming and laborious (*easier*), compared to having instructional designers undertake all the work. The time and effort of instructional design professionals are saved for analysis, summarization, and recommendations.

Content Analysis

Content analysis involves the use of various techniques to determine the knowledge, skills, and attitudes required to meet a business need (problem or opportunity) or to do a specific job. For most practitioners, it is both the most difficult and the most important part of the ISD process. No other area of analysis in ISD involves as many different techniques as content analysis.

An excellent book on content analysis is *Task Analysis Methods for Instructional Design* (Jonassen, Tessmer, & Hannum, 1999). The book describes and illustrates 26 methods for task and job analysis. Three primary techniques

widely used are hierarchical task analysis, procedural task analysis (covert and overt), and concept analysis.

- Hierarchical task analysis is used primarily for intellectual skills. In a hierarchical task analysis, intellectual skills are sequenced from top to bottom, with problem-solving at the top. Beneath problem-solving are prerequisites of rule learning, then concepts, and beneath concepts is verbal information. Hierarchical task analysis is used to help identify prerequisite skills to performance and is sometimes called prerequisite analysis.
- Procedural task analysis (both overt and covert) is used for linear tasks. Overt procedural task analysis usually involves psychomotor behaviors, even when some cognitive processing may also be occurring. Covert procedural task analysis involves analyzing those procedures that are not directly observable but that are part of how people think through decisions.
- Concept analysis is used to identify the critical attributes of ideas and to identify examples and nonexamples of the ideas for training purposes.

The three types of task analysis mentioned above may be used in combination, as when there are certain prerequisite concepts to learn before one could adequately perform some procedural task. Here are some ideas for making this important and sometimes taxing process *better*, *faster*, and *easier*.

Content analysis should start with determining which kind of analysis is appropriate for a given training situation. If teaching topics have dependencies involving prerequisite learning, hierarchical analysis should be used. When teaching how to use a software program or how to operate something where people push buttons and recognize cues, procedural task analysis is a better choice. When teaching people to comprehend and use an *idea* (rather than a task), concept analysis should be used. There are many techniques for breaking content into usable chunks for teaching and learning. Using an appropriate technique based on the kind of learning undertaken will both speed the process and make it better in terms of identifying all the right content.

Key to any content analysis is identifying the necessary knowledge, skills, and attitudes needed by a trainee to perform on the job. One of the most common learning reasons for nonperformance is the lack of a prerequisite concept or skill. It is therefore important to ask content experts probing questions to be sure all the necessary and sufficient content has been identified.

When conducting a concept analysis, divergent examples must be collected so training can demonstrate the range of possibilities. Concept analysis should also identify nonexamples that closely resemble the concept, but are not the concept. These close-in nonexamples can be used to help trainees avoid misunderstanding the concept.

To aid in the transfer of training and generalization of content to many situations, content experts should be asked for a wide range of examples when the learning task is hierarchical in nature or is a concept.

One technique for aiding content analysis is to use sticky notes for displaying and sorting content. A separate task or topic is written on each note. The notes can then be arranged and rearranged in different combinations to discover how the topics and tasks are inter-related. Additions and deletions can be quickly and easily made. It is also a fast and fun way to do a task analysis with content experts.

Content analysis is best performed by seeking the input of more than one content expert. This provides for multiple perspectives. This is particularly important with overt procedural tasks, since many high performers develop idiosyncratic behaviors over time that do not necessarily contribute to good performance.

These suggestions for making content analysis faster, better, and easier can all help. However, content analysis is very important to most master instructional designers. They devote considerable time and effort to ensure all the necessary and sufficient content needed for acceptable learner performance on the job has been identified.

Design Strategies

The design phase of ISD, like content analysis, involves the use of many different techniques. Most master instructional designers are familiar with a wide variety of design strategies. To design quickly and effectively, they select macro-level designs based on the type of content, the target audience, and the context for the training. As they begin to work on the actual training modules, they think in terms of existing structures and formats that may be modified, then move on to the details. Below is one example of macro-level design thinking.

Software Training Development. An example of thinking at a macro level when designing instruction can be illustrated in what is a common scenario today, introducing new software. Software is often developed for a specialized area. In one recent instructional design project, enterprise-wide software was created to manage a large company's real estate holdings. No user guide had been developed for the software, and performance-based training was needed to realize the anticipated value of the software as rapidly as possible. How was this done faster, better, and easier?

- The user guide was created with the basic procedures for completing program functions at the same time training development was undertaken (*faster*).
- Separate from the user guide, performance-based exercises, demonstrations, and visual presentations were developed for the training. Keeping the exercises separate from the user guide allowed the user to have a

streamlined user guide after the training, whether on line or in hard copy (*better*). By having performance-based exercises, the training simulated the job tasks users face in the real work world.

- To complete this macro-level design, a module at the beginning of the training was added that discussed how to maneuver through the software.

In this example the client received two for one: the user guide and the training program (*easier* and *better*).

Developmental Testing

One of the keys to the systematic development of a training intervention (and nontraining interventions as well) is to test the intervention prior to implementation. While few would disagree that testing training materials and programs before releasing the programs is important, this step in the ISD process—developmental testing—is nevertheless often diminished or skipped altogether.

Those with experience know that developmental testing is an essential step in terms of learning outcomes, as well as in program acceptance. Master developers know that just *going with it* is a formula for disaster. Consider the consequences of putting on a play without a dress rehearsal. A poor opening night can result in lowered attendance and possible cancella-

tion. Training programs aren't much different, especially if learners have a choice in attending the training or not. So how can materials be tested faster, better, and easier?

Fortunately, much practical research exists in this area. Studies show that small-group trials are as productive as large-group trials in terms of collecting data for the purpose of improving an instructional program (Farrington, 1989; Stolovitch, 1985). Furthermore, there appears to be no significant difference in the quality of information collected for the purpose of revision when testing a program on a very small number of people (or even just one person) and testing the same version of the training material with larger groups of 15–20 people. This is a great finding for practitioners! Of note is the fact that the number of try-out and revision cycles the training programs are subjected to is more important for improvement purposes than the number of people in a single trial run. Therefore, using very small group trials as a strategy for developmental testing may not only be *faster* and *easier*, but it may be better as well, because more test and revision cycles are likely to be completed. It is also better because the risk of exposing the training program to many people before getting the bugs out of it is minimized. Remember, once the first class of 15–20 students has been run, there are 15–20 people who can function as advocates for your program.

Applying ISD to Web-Based Training

In the past 30 years training delivery systems have come and gone, but none with the apparent impact of the web. Each time a major new delivery system appears, similar things occur. Among them are feelings of euphoria that the new system will solve all training problems. This jubilation is usually accompanied by a total disregard for what we have learned in the past regarding learning and instructional design. After some time, people begin to realize that program substance and instructional design are what really matters when it comes to learning; they also realize that the delivery system itself does not inherently possess the capability to help people learn in any organized manner. Fortunately, more and more people are recognizing the need for the application of instructional design principles to this relatively new, dynamic delivery system.

Because this delivery system has such an impact on organizations, instructional designers have been trying to learn how best to apply ISD practices to it. How does ISD fit in?

Part of Web-Based Training

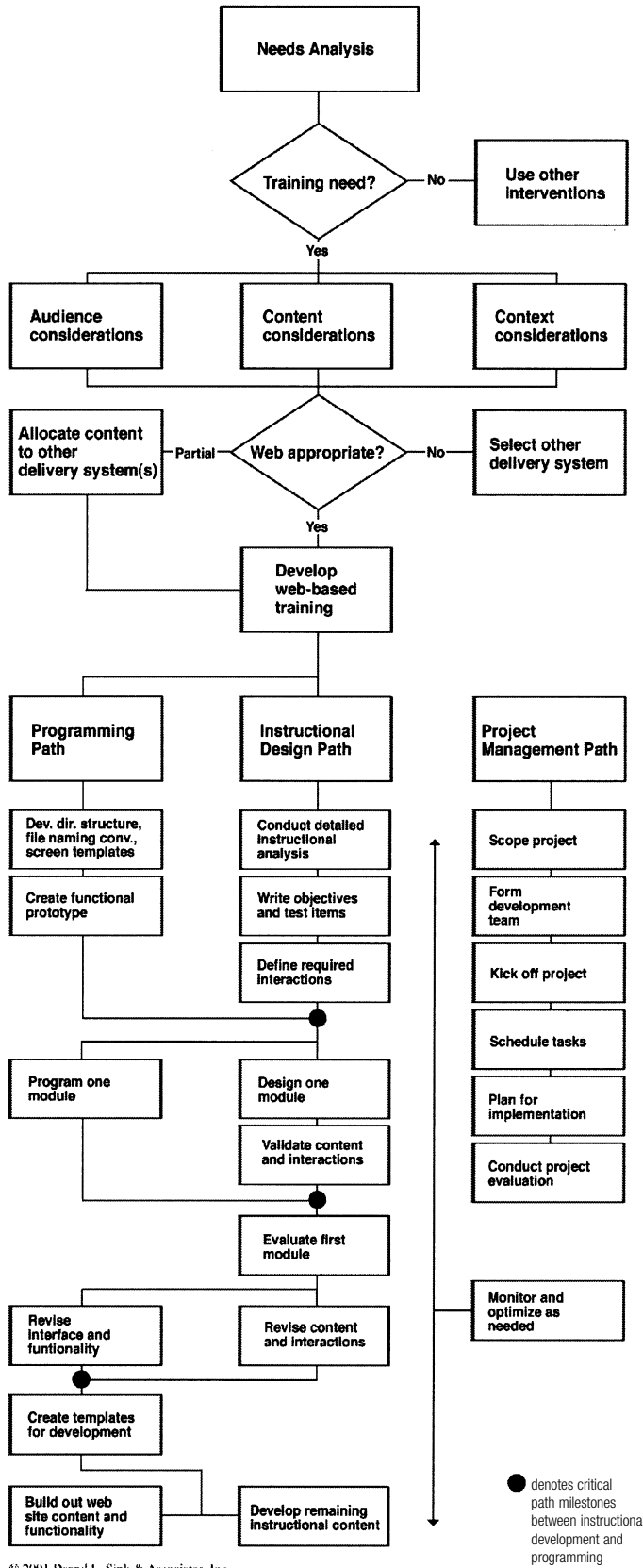
While good instructional design is vital for good web-based training, it is also important to know how ISD fits into the total process of web-based training development. Web-based training development involves software development with its own process. It also requires modifications in project management and a greater emphasis on the implementation and maintenance phases of ISD. Figure 3 is a representation of how ISD fits into the software development process and project management when developing web-based training.

Please note in the figure that web-based training is not a foregone conclusion. This part of the new model is not new at all; rather it is part of any good front-end analysis to performance issues.

Project Management

As can be seen in the model in Figure 3, project management takes on a special significance in more complicated projects such as web-based training. In this section, suggestions for managing the ISD process faster, better, and easier are provided.

Instructional developers always face constraints that require that they develop training programs in an expedient manner. These constraints may vary, but they are always present to some extent. Some of the constraints besides time are money, location, access to people, and access to equipment. How can the systematic instructional development process be maintained under these circumstances? What can be done to organize ISD work and manage projects in today's fast-paced, cost-conscious environment, while still getting the outcomes and results desired?



© 2001 Darryl L. Sink & Associates, Inc

Figure 3. Web-Based Training Development Process Model.

1. Team selection and formation for any given project may be the most critical factor in project success. Team selection should be based primarily on capability and reliability. Too often, the primary selection criterion is availability.
2. Large projects should be jump started with an extensive kick-off meeting (virtual or live) where project goals, the business need driving the project, the deliverables, milestones, means of communication, and methods for tracking progress throughout the project are clearly communicated.
3. To make *shorter time to completion* a way of thinking and acting, limit the number of projects instructional designers are assigned to, but hold them accountable for project deliverables and completion times.
4. Provide an environment that supports uninterrupted time every day for instructional designers to work on their projects. Mornings should be quiet time in an instructional development work environment; staff meetings and other routine interruptions and activities should be scheduled for late afternoon.
5. To avoid setting unnecessary controls and procedures that may distract from the primary effort of developing the instructional program, determine the fewest number of milestones that require approval.
6. Organize projects for speed and customer results (instead of organizing for process and control). Do not overproceduralize the ISD process; doing so makes it less effective.
7. Use technology to increase effectiveness and efficiency in communications and productivity: email, transcription services, and online file sharing are all examples of technologies that can help.
8. Ask all personnel to keep track of time on projects. Use experience/statistics from completed projects to do a better job estimating resources for future projects.
9. Consider using a lead designer with experience as the project manager to help anticipate bottlenecks and determine how to keep them from slowing the development process.
10. Provide production assistance and coordination to instructional designers towards the end of the project. Consider using production services that can provide a fast turn-around time allowing more time for the instructional developers to create the final product.

Conclusion

As mentioned in the introduction to this article, training departments too often have the wrong idea about why they exist. They exist primarily to help people do a better job at

ANNOUNCING THE

ISPI KnowledgeMax Resource Center At www.ispi.org

The International Society for Performance Improvement (ISPI) has entered into a partnership with KnowledgeMax to provide you with access to expanded book selections and a variety of other resources, including:

- One of the most powerful book-finding systems available anywhere, with over 100,000 searchable tables of contents (not available on the Internet) and more than 300,000 book titles in inventory ready to ship today,
- Thousands of other learning resources, including e-learning courses, CBT, training videos, and books on tape, and
- Free online advice from over 800 top business experts, with essays excerpted from their recent books.

Access the KnowledgeMax Resource Center as often as you wish through www.ispi.org for discounts on a wealth of Knowledge Resources.



www.ispi.org

getting the results an organization needs (not to provide training and training processes per se). Focusing on results, rather than on providing training, causes decisions to be made in very different ways. The ISD process and training are means, not ends.

So what can be done to keep focused on this primary goal of customer outcomes and results?

First, focus on helping customers get the results they want. This requires the training development organization to be project driven rather than process and control driven. The training organization should let customers know they have a process for helping them with their issues, and then move on to focusing on the customer's issues and needed results. The ISD process should be secondary to a focus that is results-driven.

When the training organization is process and control driven, trainers often make a big deal out of something that can be easily and quickly resolved. One way to help make sure this does not happen is to take a minimalist approach with customers. Give a simple solution when something doesn't really require a full ISD approach. For example, instead of developing a formal training program, it may be sufficient to produce a simple job aid, provide some structured on-the-job training, provide a briefing on a new tool (if the audience already possesses the necessary prerequisites to use the tool), design a well-articulated communication (when trying to implement a change), or produce better user documentation when existing directions are not clear. While some of these examples may be considered nontraining solutions, the training organization can often provide these services because the skills necessary for providing these solutions are within the ISD skill set.

ISD is a robust and lasting process that has evolved to meet today's increasing needs for speed, continuous content changes, worldwide distribution, and cost savings. No, ISD is not dead. It has not lost its value. We should not overgeneralize the criticisms of ISD, but rather take them at face value and continue to improve the practice of ISD within our organizations by focusing on the outcomes and results needed. 🏔️

References

Farrington, J. (1989). When you can't use a crowd: Single-subject testing. *Performance and Instruction*, 28(3), 22.

Jonassen, D.H., Tessmer, M., & Hannum, W.H. (1999). *Task analysis methods for instructional design*. Mahwah, NJ: Erlbaum.

Stolovitch, H.D. (1985). Learner verification and revision. *Performance and Instruction*, 24,10-17.

Related Readings

Gordon, J., & Zemke, R. (2000). The attack on ISD. *Training*, 37(4), 43-53.

Kaufman, R., Rojas, A.M., & Mayer, H. (1993). *Needs assessment: A user's guide*. Englewood Cliffs, NJ: Educational Technology Publications.

Silberman, M. (1998). *Active training: A handbook of techniques, designs, case examples, and tips* (2nd ed.). San Francisco: Jossey-Bass.

Silberman, M. (1999). *The 1999 training and performance sourcebook*. New York: McGraw-Hill.

Sink, D.L. (2001). *Designing instruction for web-based training*. Monterey: Darryl L. Sink & Associates, Inc.

Sink, D.L. (2001). *Project management for instructional development*. Monterey: Darryl L. Sink & Associates, Inc.

Sink, D.L. (2001). *The course developer workshop*. Monterey: Darryl L. Sink & Associates, Inc.

Sink, D.L. (2001). *The needs analysis workshop*. Monterey: Darryl L. Sink & Associates, Inc.

Thiagarajan, S. (1997). *Framegames by Thiagi* (7th ed.). Bloomington, IN: Workshops by Thiagi, Inc.

Zemke, R., & Rossett, R. (2002). A hard look at ISD. *Training*, 39, 27-33.

Dr. **Darryl Sink** is President of Darryl L. Sink & Associates, Inc. (DSA), a firm specializing in human performance consulting, custom training development, and delivery of workshops on ISD. DSA has twice been honored as winner of the Outstanding Instructional Product of the Year Award from the International Society for Performance Improvement (ISPI). A graduate of the Instructional Systems Technology program at Indiana University, Dr. Sink has earned a national reputation in the field of human performance improvement. His organization has developed more than 600 training courses, ranging from human resource development to enterprisewide software, technical, management and sales training.

Dr. Sink's workshops are particularly well known for providing practical approaches for applying the ISD process in real-world situations. He is a contributing author to both editions of the ISPI *Handbook of Human Performance Technology*. He is the recipient of ISPI's Professional Service Award for his service to that organization. Darryl may be reached at darryl@dsink.com.