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Instructional Design Theory and Process

From the perspective of an instructional designer, any undertaking that includes a learner and the subject matter necessary to learn requires an instructional system. Instructional designers need inputs like subject matter and resources, an Instructional Systems Design (ISD) process, and outputs like curriculum and materials to build a training course. This combination of elements is called an *instructional system*. Anything from a lecture to web-based training starts with the same fundamentals.

Instructional designers use many theories and models to design instruction. One of the most fundamental models is the ADDIE (analysis, design, development, implementation, and evaluation) model, or some variation of it, which provides designers with the necessary structure for designing any curriculum, regardless of the instructional methods employed. The relevant theme in all that is available is that learning and performance professionals use a systematic process that includes analysis, design, development, implementation, and evaluation.

Upon this foundation, instructional designers then design and develop courses—a task that includes developing objectives and creating evaluation tasks.

Learning Objectives:

- ☑ Describe the ADDIE model for designing instruction.
- ☑ List Gagne's nine instructional events.
- ☑ Define the key differences among the Dick and Carey, Seels and Glasgow, and Smith and Ragan approaches to ISD.
- ☑ Define accelerated learning.
- ☑ Describe how courses are designed.
- ☑ Discuss Mager's influence on the WLP profession.
- ☑ Discuss the theories of rapid instructional design and learner-centered instruction.
- ☑ Detail how Bloom's taxonomy aids WLP professionals in identifying the skills, knowledge, and attitudes to be learned during the instructional design process.
- ☑ Describe two types of objectives and the components of writing learning objectives in the A-B-C-D format.

Principles Guiding Training Design

Although WLP professionals have a wide variety of learning solutions to choose from, one of the first steps in the instructional design process includes conducting a needs analysis to ensure that the what is needed can in fact be remedied with training.

When new course designers and developers first start a project, many immediately rush to work on slides, quizzes, student workbooks, and similar material. After all, sponsors often provide course designers and developers with the particulars: the audience, the material that the course needs to cover, and the completion date for the project.

Although sponsors provide this information about projects, it might not be complete enough for instructional design purposes. It might be correct. However, it might reflect an incomplete understanding of the learners or the content.

When starting a learning project, the instructional designer's first task is to verify the information he or she has received and fill in any missing pieces through analysis. To get started, instructional designers need to understand and know the

- sponsor's request
- business need underlying the project
- desired performance
- tasks involved in performance
- learners and the influences on them
- constraints on the project.

In addition, the designer needs to be aware of some fundamental principles that underpin the design and development of learning.

Produce Measurable Improvements in Human Behavior

If the purpose of training is to help make workers measurably more effective in their work, then practitioners must specifically identify the behaviors that should improve and how to measure those behaviors before work begins on the training program. After workers complete the training program, learning professionals should follow the performance of learners on the job and measure changes in on-the-job behavior.

Furthermore, improvements in behavior must offer tangible benefits to the organization sponsoring the training. Ideally, these tangible benefits are financial. For example, if workers produce more widgets per hour, organizations have more widgets to sell. Or, if learners reduce the number of errors in their work, organizations reduce the cost of rework. But sometimes, benefits are intangible, such as more empathetic customer service. Such changes often lead to financial rewards, too. For example, better customer service can result in improved retention of customers.

Performance Improvements: Ensure That Training Is Appropriate Solution

Taking a training class alone does not always result in measurable changes in workplace behavior. This happens because training addresses only one of the six drivers of performance: skills and knowledge. In some instances, workers *do* have the skills and knowledge to handle a task but still do not perform the task effectively. In such situations, another factor affects performance. That factor might be one of the following:

- **A lack of motivation:** Even if workers have the skills, knowledge, and resources to do their jobs, a lack of motivation can negatively affect performance. Consider an example of consultants who do not generate new sales leads while they are working in the field. If skills and knowledge are the source of the problem, they may not generate leads because they lack sales training. However, if workers are compensated for the number of productive hours in the field and receive no compensation for generating new leads, they will not be motivated to generate new sales. Solving this problem requires changes in reward and compensation systems rather than training.
- **A lack of tools or resources needed to perform the task:** Suppose workers receive training on new word processing software, but the software has not yet been installed on their computers. The workers cannot perform the skills learned in the training course because they do not have the software resources on which to practice the skills.
- **An inadequate or nonexistent structure or process:** In the case of the rude customer service representatives, the problem could be strict time limits on calls. When customer service representatives exceed that time limit, they are reprimanded. As a result, representatives abruptly end calls with customers to avoid being reprimanded by their supervisors. Solving this problem would require removing the limit on the length of calls.
- **A lack of information:** Lack of information can also create performance gaps. Consider the example of a person whose reports are consistently late. Sending that person to a writing class will not solve the problem if the reason that he always delivers them late is that he lacks access to the information he needs to write the reports.
- **A lack of health:** Consider an employee on a production line who has been making an increasing number of errors. Sending this person to training will not solve the problem because he or she already has the skills to carry out the tasks. However, recent layoffs may have caused an increase in the number of hours that he or she is required to work, resulting in increased stress and perhaps reduced sleep, which may be the cause of the increase in errors.

Because some solutions for improving performance do not require training courses, they are sometimes called **interventions** by performance specialists. Using this term often helps WLP professionals keep an open mind about the approach they take. If the performance

problem results from a lack of skills and knowledge, a training course may be the appropriate solution. If the poor performance is due to a lack of motivation, information, or resources, inadequate or faulty processes and systems, or a health issue, the solution is then found through different answers or interventions.

Theories and Models for Designing Instruction

ISD is a systems approach to creating instruction. It may also be called instructional development (ID), curriculum development (CD), instructional systems for training (IST), or a variety of other terms. The differences among the many systems are usually modest in scope and tend to be linked to terminology and procedural issues.

ISD is based on the idea that training is most effective when it provides learners with a clear statement of what they must be able to do as a result of training and how their performance will be evaluated. The program is then designed to teach the skills through hands-on practice or performance-based instruction.

The advantages of using an instructional system are numerous, the most important being the ability to design projects quickly and efficiently. Nothing is left to chance or ignored when a designer stays within the framework of the ADDIE or other ISD models. One possible disadvantage is the necessity of a designer to be familiar with the ISD process. ISD works so well because it produces observable, measurable, and replicable elements. These elements include analytical methods, objectives, evaluation schemes, design plans, and other components.

Although ISD is a system, it is not so rigid that it lacks flexibility. In fact, the more instructional designers work with ISD, the more they realize that the system allows many opportunities to be creative.

The ADDIE Model

Several ISD models are named after individuals and institutions; however, the ADDIE model is based on and named after five elements of ISD: analysis, design, development, implementation, and evaluation. Most instructional designers use the ADDIE model or some variation of it as the basis for their work. The model is illustrated in Figure 2-1.

In the ADDIE model, analysis is the **input** for the system; design, development, and evaluation are the **process**; and implementation is the **output**. These elements overlap somewhat, depending on the project. More on each component of ADDIE follows.

Analysis

The terms **analysis** and **assessment** are often used interchangeably by learning and performance professionals. With regard to ISD, analysis is the process of gathering data to identify specific needs—the who, what, where, when, and why of the design process. Just as A is the first letter in the English alphabet, analysis should be the first item addressed in instructional design. Analysis is done for one reason—to find out what learners need to know to be successful.

Table 7-6. Advantages and Disadvantages of Work Samples

Advantages	Disadvantages
<ul style="list-style-type: none"> • This method is unobtrusive. • As is the case with records and reports, this method provides clues to trouble spots. • This method provides direct data on the organization's actual work. 	<ul style="list-style-type: none"> • Using this method may be costly and time-consuming. The wrong sample will provide little or no information. • To use this data-gathering method, the designer's skills must include specialized content skills. • Workers may alter their behavior if they know that some kind of observation is in progress.

Extant Data (Records and Reports)

Existing records, reports, and data comprise extant data, which may be available inside or outside the organization. Examples include job descriptions, competency models, benchmarking reports, annual reports, financial statements, strategic plans, mission statements, staffing statistics, climate surveys, 360-degree feedback, performance appraisals, grievances, turnover rates, absenteeism, suggestion box feedback, accident statistics, and so forth.

Learning professionals often use extant data for business needs analysis and current performance analysis. Table 7-7 lists some advantages and disadvantages of using extant data for training needs assessment.

Table 7-7. Advantages and Disadvantages of Extant Data

Advantages	Disadvantages
<ul style="list-style-type: none"> • It provides hard data and measures. • It can enable an examination of trends and patterns in data over time. • It has consistent measurements that provide reliable data. • It does not involve individual employee confidentiality issues because data is used in aggregate form. 	<ul style="list-style-type: none"> • Extant data is usually collected for purposes other than training needs assessment, so training issues must be inferred from patterns in the data. • The learning professional has no control over the methodology used to collect the data. • Extant data can be mixed in with data that is extraneous to the purpose, so it must be "sifted."

Once the learning professional has determined the type of data to collect and the instrument(s) to use, he or she is ready to collect the data. The following are some tips to help learning professionals implement the process efficiently and effectively:

- **Double check:** The learning professional should take a last quick pass over his or her choices and the reasons for choosing each method. He or she should not be afraid to make last-minute adjustments before starting. Being sure the selected methods will optimize time, access to resources, and the ultimate value of the data is important.
- **Make a plan:** WLP professionals should develop a calendar, timeline, flowchart, or some other tool to help stay on track and provide reminders of deadlines to complete data collection. They should monitor progress on the plan as they go along.
- **Be flexible:** One of the advantages of having a plan is that learning professionals know when to deviate from it. Things happen in organizational life that are out of the control of learning professionals, and they should be prepared to adjust their data collection as they go along.
- **Include the sponsor regularly and frequently:** The training sponsor must approve the WLP professional's data-collection plan. The learning and performance professional must also report to the sponsor periodically about progress. The report doesn't have to be formal; even a voicemail message or email will do. If the WLP professional stays in touch with the sponsor, if he or she must change the plan due to organizational circumstances, the sponsor will know about it and can help gain access to alternative data sources.
- **Keep personal interpretations and experiences out of the data collection:** This is critical. The data must be objective, or the ultimate data analysis will not be accurate.
- **Be objective:** The learning professional must avoid structuring data collection to play on a hunch. For example, if the WLP professional gets a hunch during an initial interview with a sponsor that part of a performance problem is obsolete equipment then asking a question in the interview or survey like "What problems have you had with equipment?" is leading and plays too closely on the hunch. Instead, the question might be "What keeps you from achieving the results that are expected of you?"
- **Use extant data correctly:** Extant data is rarely if ever collected for the learning and performance professional's purposes, so he or she must infer from that data and take steps to validate the inferences if necessary. For example, if the WLP professional hears consistent comments from an exit interview, he or she needs to validate the comments because they might not necessarily be true; employees may only believe them to be true.

Results of Needs Assessment

The final step in conducting a needs assessment is the opportunity to present the results. By organizing information and discussing interpretations from analysis, the WLP professional can succinctly and clearly convince management that the proposed learning will solve the identified problem or problems and respond to management's request. Communicating the results in writing and in a spoken presentation usually improves chances for success.

The final report defines and documents findings of the needs assessment process and summarizes the problem statement, the analyses used to determine the training need, and a proposed module design. In the final report, the learning professional discusses how the findings relate to the organization's overall strategy and goals and how the proposed change or training program will benefit the organization and the employees.

The results of needs assessments should include

- the organization's goals and its effectiveness in reaching those goals
- discrepancies between current and future performance
- a determination of root causes of suboptimal performance level
- a determination of whether a training requirement exists
- types of programs needed
- conditions under which learning will occur
- the target audience for the program
- a determination of desired performance (training results)
- baseline data
- content and scope of training
- participant and organizational support that involves appropriate SMEs, sponsors, and other vested stakeholders early in the process.

✓ Chapter 7 Knowledge Check

1. Which of the following best describes training needs assessment, which is often also referred to as training needs analysis?
 - a. Training needs assessment is the process of collecting and synthesizing data to identify how training can help an organization reach its goals.
 - b. Training needs assessment identifies the discrepancy between the desired and actual knowledge, skills, and performance and specifies root causes.
 - c. Training needs assessment identifies all duties and responsibilities and the respective tasks done on a daily, weekly, monthly, or yearly basis.
 - d. Training needs assessment is the process of identifying the specific steps to correctly perform a job function.
2. Which of the following is one way that an organization can find out what kind training and development should be promoted?
 - a. Conduct a needs assessment
 - b. Develop a strategic plan for the organization
 - c. Formalize the training department's instructional design model
 - d. Ask managers what training their departments need
3. Which of the following is one advantage of using interviews as a data-gathering technique?
 - a. Interviewees can receive additional information in the form of nonverbal messages. Interviewees' behaviors—their gestures, eye contact, and general reactions to questions—are additional data or cues for the next questions.
 - b. This method is unobtrusive.
 - c. This method gives observers an idea of a typical workday and provides a realistic view of the situation.
 - d. Interviews provide direct data on the organization's actual work.
4. Which of the following instruments has participants rate two contrasting ideas or words that are separated by a graduated line, either numbered or unnumbered? They indicate frequency of behavior or depth of opinion by circling points on the line.
 - a. Likert scale
 - b. Semantic differential
 - c. Alternative choice
 - d. Completion