

# Appendix A

## Firefighters for the Digital Age: A Practice Case

### Introduction

The purpose of this case is to provide an opportunity for students of instructional design to practice different procedures associated with ADDIE while constructing a solution for a performance problem. Solutions not provided and additional details, such as dilemmas and problems encountered by one or more characters as a result of the decisions made by other characters in this case, should be generated by the individual or team in this case. Each student is expected to provide data and information for a client, who will then render a decision. Students are directed to use these data as a starting point, generate additional information as needed to close the parts of the performance gap that are attributable to a lack of knowledge and skills.

This case is intended for situations likely encountered within an organization, such as a higher education system, a government agency, and an international business. Multiple stakeholders are often affected by the solutions that are eventually adopted by the organization. This case provides an opportunity for participants to practice the five ADDIE phases of instructional design as they relate to issues of gender, age, physical ability, technical aptitude, and cultural diversity. These hypothetical data are based on present-day emergency response situations.

### Context

Universal Carrier is a worldwide transportation business that employs 102,000 people in 71 countries throughout in Africa, Asia, the Caribbean, North, Central and South America, Europe, and the Middle East. Universal Carrier was founded as Harlem Movers and Shakers in 1957 in the Bronx, New York,

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This is a hypothetical case about a fictitious situation. Any resemblance to a real person or real organization is coincidence. All information is negotiable, and subject to change, however, all changes must be realistic, empirically supported, and believable.

as an independently owned and operated nationwide moving company. Harlem Movers and Shakers acquired the Kalahari Courier Service, located in Compton, California, in 1959, and heralded by the *Amsterdam Times* newspaper as “having revolutionized the people moving business.” Five years later, Harlem Movers and Shakers merged with the London-based Trans Continental Air Lines and changed its name to Universal Carrier. Universal Carrier grew to 93,500 employees, added a fleet of seagoing vessels to its air and ground vehicles, and was incorporated in 1968. During the 30-year period between 1969 and 1999, Universal Carrier slumped and rebounded along with the United States economy, and initiated a stock split, but remained a growth company, and moved its headquarters to Atlanta, Georgia. The International Quality Sigma Association recognized Universal Carrier with its Exemplary Award in the Transportation category in 1996. The American Society for Performance and Development named Universal Carrier as having the best Learning Services Organization for the year 2000. While Universal Carrier has experienced uneven profits during the past 5 years, the company remains remarkably healthy overall. Market analysts attribute Universal Carrier’s continued success in today’s global economy to leadership that implemented a strategy that shifted the business emphasis from the weaker segments to stronger segments consistent with demand, the purchase of a communications company as a wholly owned subsidiary, the replacement of practically all of the company’s equipment worldwide to digital technologies, and a focus on performance at every position throughout the entire company.

The unique quality that made Harlem Movers and Shakers so successful in the early years of its operation was the complete service package offered by the company to clients which included making all of the travel arrangements for a family that was relocating from one place to another, including the arrangement of essential services at the new location prior to arrival of the client. Universal Carrier has grown into an enterprise that requires the infrastructure of a small town for each of their physical locations around the world. Thus, Universal Carrier has instituted its own fire and rescue teams for its worldwide operations.

While this total quality service philosophy continues until today, there is one area of today’s Universal Carrier business that has experienced a decline in quality over the past 24 months. The response capability of Universal Carrier’s fire and emergency rescue units is approaching unacceptable performance levels, and therefore threatens the very foundation of the company’s existence.

The Director of the Emergency Response and Rescue Unit has been informed by the Vice President of Security to enhance the capacity of its firefighter and rescue teams. The Director of Emergency and Rescue Unit contacted Human Resources. The Director of Human Resources has consulted with the Chief Learning Officer and proposed a *Firefighters for the Digital Age* training project as a company-wide priority for the next two fiscal years. The Director of the Fire Management Department has been assigned as the project manager. The Fire Management Department is responsible for the prevention

of hazardous situations, emergency response, and rescue equipment maintenance. The department’s newly designated areas of responsibility require different job tasks for newly hired firefighters and current firefighters as well.

<b>Character</b>	<b>Role</b>	<b>Background</b>
Vice President for Security		
Director of Emergency Management		
Director of Human Resources		
Chief Learning Officer		
Manager of Technical Operations		US Air Force–Retired
Project Manager		
Lead Instructional Designer		
Senior Instructional Designer		
Instructional Designer		
Media Development Specialist		

**Fig. A.1** Primary characters, their roles, and their backgrounds

Preliminary interview results indicate a lack of knowledge in basic facts of what and how firefighters conduct themselves during an emergency situation. This lack of knowledge is due to the over romanticizing of the job, as well as Hollywood’s portrayal of the duties of firefighters. These duties and abilities are the primary focus of the training. The typical candidate indicated little or no actual knowledge or experience in the field of firefighting. Figure A.1 is a summary of the primary characters, their roles, and their backgrounds. Figure A.2 contains a list of resources that will be made available by the client at the time of the request for training.

<i>Human</i>	<i>Content</i>	<i>Administrative</i>	<i>Technology</i>
<ul style="list-style-type: none"> <li>• Thomas Tomjonavich, Program Manager Training and Development (770) 502–5432</li> <li>• Steve Brown, Manager Customer Programs (404) 294–1237</li> <li>• Keisha Hall, Instructor Learning Services (706) 255–0198</li> <li>• Rre Hernandez Senior Firefighter (212) 227–3810</li> </ul>	<ul style="list-style-type: none"> <li>• The International Fire Safety and Rescue Federation is the primary source of knowledge, rules, regulations and procedures for the orientation and subsequent firefighting courses</li> <li>• All existing training manuals</li> <li>• Details from partner companies and subsidiaries</li> </ul>	<ul style="list-style-type: none"> <li>• Senior Executive Assistant, Department of Fire Management Sharon Blazer (770) 502–5432</li> <li>• Video and Technical Services</li> <li>• Overnight accommodations with room and board</li> <li>• Special offices have been made available at company headquarters for the duration of the design and development of the project</li> </ul>	<ul style="list-style-type: none"> <li>• State-of-the-art educational media and technology are available</li> <li>• Classrooms, simulators, mock-ups and actual working equipment</li> <li>• Five acre [off-site] training facility with life size buildings representing various architectures</li> <li>• Construction materials for erecting small frame buildings</li> </ul>

**Fig. A.2** A list of the initial resources that will be made available by the client at the time of the request for training

<ul style="list-style-type: none"> <li>• <b>Fire and Rescue Advisory Board</b>  <i>(See local Office Directory)</i>                      Janice Scott                      Paul Hogan                      Bill Katz                      Bennett Johnson                      Jen Baker                      Ora Panabianco                      Richard Garfein                      Mike Winthrope</li> </ul>			<ul style="list-style-type: none"> <li>• Classrooms and laboratories with Internet access</li> </ul>
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Fig. A.2 (continued)

**Primary Characters** (*This section should be completed by your design team*)

The chief learning officer of Universal Carrier has confirmed the following project outline.

*Time Span: Four Months*

- Request for training received on September 4, 2007
- Pilot course planned to start on January 4, 2008
- Six-week course
- New course cycle implemented on March 1, 2008
- Course cycle last for 3 years
- Course to be offered 5–10 times during the year

**Case Events**

Since 2001, the average number of women applicants has increased from 2 to 18%, physical requirements have been reduced due to more operations that increasingly involve data and knowledge management, the number of employees eligible for retirement has peaked to 37%, and there has been a paradigm shift to a “more educated” firefighter. Some of the positive aspects of

Universal Carrier's infrastructure since 2001 have included a completely new satellite-based worldwide communications system, and practically all new surveillance equipment, especially computers and other digital technologies.

Last year, the independent accounting firm of good, fast, and cheap found absolutely no fiscal improprieties during its audit, and Wall Street Industries gave Universal Carrier its highest financial rating. However, Universal Carrier is in jeopardy of losing its security and safety accreditation, which means the loss of eligibility for United States government funding, the loss of World Bank funding, and other downgrades that will adversely affect the business.

The lead designer has been given the following charge and is ready to start the project: "The purpose of the course is to prepare candidates to demonstrate their ability to appropriately respond to fire emergency situations." The applicants have satisfied a preliminary written examination administered via a computer terminal at a regional emergency and rescue operations center. The original plan is for the participants who successfully complete the orientation to be hired for a 1-year probationary period with progress evaluations at 3-month intervals during the first year. Each candidate who successfully completes the *Firefighters for the Digital Age* course will undergo subsequent extensive firefighting and emergency response training in both general and specific duty areas. The preliminary expectations given to the design team are that employees who successfully complete the course should be able to

1. Perform appropriate fire management duties
2. Use firefighting equipment
3. Define different types of fire and rescue emergencies
4. Select appropriate protection garments and devices
5. Be youthful and energetic
6. Identify various architectures
7. Calculate fundamental computations
8. Interpret standard operating procedures
9. Analyze safety risks
10. Estimate emergency medical needs
11. Synthesize action plans
12. Evaluate potential fire and emergency hazards
13. Leap tall buildings in a single bound . . . well, maybe not ☺

# **Appendix B**

## **Self-Test of Instructional Design Knowledge**

### **Choose the Best Answer for Each Item**

1. What are the five components of ADDIE?
  - A. Assess, design, determine, implement, enact
  - B. Analyze, design, develop, implement, evaluate
  - C. Analyze, determine, design, implement, enact
  - D. Assess, develop, determine, instruct, evaluate
2. Student-centered spaces dedicated to training, education, and other forms of intentional learning
  - A. Can be situated at remote sites, accessed at convenient times, and personalized to match the capacity of individual learners
  - B. Are synchronized in order to maximize the efficiency of the learning process
  - C. Occur in primarily a constant location
  - D. Are patterned after models that seek replicate our desire to compartmentalize didactic and de-contextualized rote learning consistent with the industrial age
3. The primary reason for conducting a performance assessment or performance analysis is to
  - A. Assess the quality of the available instructional products
  - B. Gather and validate the instructional materials
  - C. Identify probable causes for a performance discrepancy
  - D. Determine what computer-based training should be implemented
4. When working with subject matter experts, it is best to
  - A. Follow the direction of subject matter experts regardless of its plausibility
  - B. Interact with subject matter experts as little as possible to reduce costs
  - C. Work with subject matter experts only through the client
  - D. Prepare an agenda prior to meeting with subject matter experts

5. Analysis is used in instructional design to determine
  - A. How to organize the terminal tasks for a given set of learners
  - B. If training is the best response to a performance discrepancy
  - C. The effectiveness of instructional materials
  - D. Which research methodology should be used to verify the outcomes
6. Instructional designers should apply development models that are
  - A. Dependent on the context of the project and available resources
  - B. Solely based on the designer's philosophy and preferences
  - C. Exclusively linear and mostly procedural
  - D. Best suited for low-level cognitive tasks
7. Terminal tasks in instructional design are
  - A. Constructed by the student unrelated to the judgment criteria
  - B. Tasks the student should be able to perform at the conclusion of an entire course
  - C. Self-directed learning objectives without input from the teacher
  - D. The same as prerequisite tasks
8. Instructional design is a set of procedures intended to respond to situations where there is a lack of
  - A. Knowledge and skills
  - B. Motivation
  - C. Resources
  - D. All of the above
9. Criterion-referenced objectives describe what the students should be able to perform
  - A. Prior to an episode of guided learning
  - B. During a future episode of guided learning
  - C. As a result of an episode of guided learning
  - D. On a norm-referenced, standardized test
10. A student's prerequisite knowledge and skills should be confirmed
  - A. During a future episode of guided learning
  - B. As a result of an episode of guided learning
  - C. On a norm-referenced, standardized test
  - D. Prior to an episode of guided learning
11. The correct order of Bloom's taxonomy is
  - A. Knowledge, application, synthesis, comprehension, evaluation, analysis
  - B. Knowledge, comprehension, application, analysis, synthesis, evaluation
  - C. Comprehension, knowledge, application, analysis, synthesis, evaluation
  - D. Knowledge, comprehension, analysis, application, synthesis, evaluation

12. The performance component of a criterion-referenced objective is best described as
  - A. A preposition
  - B. A noun
  - C. An adjective
  - D. A verb
13. While working with a client, it is important to
  - A. Ask vague questions during interactions
  - B. Comply with their wishes regardless of other factors
  - C. Document all communication and interactions
  - D. Obtain sign-off only during the design phase
14. What are the two most common categories of evaluation used in instructional design?
  - A. Declarative and expository
  - B. Formative and declarative
  - C. Formative and summative
  - D. Summative and declarative
15. Which of the following precept about instructional design is *false*?
  - A. Instructional design is only relevant for highly defined low-level cognitive tasks
  - B. Instructional design is student centered
  - C. Criterion-referenced objectives are expressed in performance terms
  - D. Instructional outcomes are measured in a reliable and valid way
16. Instructional design is a responsive process because
  - A. Instructional design is only relevant for highly defined low-level cognitive tasks
  - B. It accepts whatever goals are established as its orientation
  - C. Criterion-referenced objectives are expressed in performance terms
  - D. Instructional outcomes are measured in a reliable and valid way
17. Which of the following is the main function of media within instructional design?
  - A. Enhance the quality of the instructional strategies
  - B. Facilitate the performance objectives
  - C. Meet the needs of different learning styles
  - D. All of the above
18. The purpose of the design phase of ADDIE is to
  - A. Conduct the training sessions
  - B. Verify the desired performances, the learning tasks, and the appropriate testing strategies
  - C. Enhance the performance of the instructors
  - D. Select the computers needed for the course

19. Instructional design is usually most effective when practiced by
- A. Individuals working independently toward different goals
  - B. Adopting a simple linear procedural model
  - C. Computer sub-routines embedded within instructional technology
  - D. Cross-functional teams with diverse expertise collaborating to achieve the same goals
20. A performance discrepancy is caused by
- A. The difference between the actual performance and the desired performance
  - B. The actual performance being equal to the desired performance
  - C. The desired performance being equal to the actual performance
  - D. Lack of sufficient computing technology
21. Instructional design is intended to be
- A. Responsive only
  - B. Generative only
  - C. Responsive and generative
  - D. Neither responsive nor generative
22. The purpose of the implement phase of ADDIE is to
- A. Filter out participants who are unsuited for the program
  - B. Pre-assess the student's capabilities
  - C. Prepare the learning environment and engage the students
  - D. Determine if there is a performance discrepancy
23. Learning that is domain specific or executive in nature, as in meta-cognitive, describe
- A. Intellectual skills
  - B. Attitudes
  - C. Learning resources
  - D. Motor skills
24. Which of the following procedures is typically conducted in the develop phase of ADDIE?
- A. Select or develop supporting media
  - B. Conduct Level 6 evaluations
  - C. Learner analysis
  - D. Project management plan
25. The purpose of the evaluate phase of ADDIE is to
- A. Assess the quality of the instructional products and processes, both before and after implementation
  - B. Conduct Level 6 evaluations
  - C. Calculate return on investment (ROI)
  - D. Assign student grades

26. Three essential components of a performance objective are
- A. Performance, comprehension, and criteria
  - B. Performance, condition, and criteria
  - C. Technology, condition, and knowledge
  - D. Performance, skills, and technology
27. The ADDIE procedure of validating instructional strategies and learning resources during the develop phase is called
- A. Content analysis
  - B. Needs assessment
  - C. Summative evaluation
  - D. Formative evaluation
28. Performance objectives are valuable because they inform the student about what
- A. Knowledge and skills they should bring to the class
  - B. Level of evaluation the teacher will use to validate their learning
  - C. Technology resources they will learn in class
  - D. They are expected to learn
29. **Conditions** -> **Methods** -> **Results** describe
- A. Computer-based education
  - B. Computer-based instruction
  - C. Educational media and technology
  - D. An input process–output model
30. Instructional design is a process used to
- A. Generate curricula, courses, teaching units, and single episodes of guided learning
  - B. Resolve personal conflicts in the workplace
  - C. Respond to performance discrepancies that are caused by a lack of resources
  - D. Respond to performance discrepancies that are caused by a lack of motivation
31. The component of a performance objective that describes the important circumstances under which the performance is expected to occur is the
- A. Condition
  - B. Test item
  - C. Performance
  - D. Criteria
32. The component of a performance objective that describes the quality or standard of performance that will be considered acceptable is the
- A. Condition
  - B. Test item
  - C. Performance
  - D. Criteria

33. The type of test that compares the performance of a student with the degree to which the objectives were achieved describe a
- A. Recall test
  - B. Criterion-referenced test
  - C. Non-recall test
  - D. Norm-referenced test
34. The type of test that compares the performance of a student with the performance of other students describes a
- A. Recall test
  - B. Criterion-referenced test
  - C. Non-recall test
  - D. Norm-referenced test
35. ADDIE is
- A. A short form for describing the nature of the work done by subject matter experts
  - B. The name of the daughter of the person who invented the process
  - C. A paradigm used by subject matter experts when composing their final report
  - D. An acronym for a common product development process that can be effectively applied to instructional design

### Answer Key

- 1. B
- 2. A
- 3. C
- 4. D
- 5. B
- 6. A
- 7. B
- 8. A
- 9. C
- 10. D
- 11. D
- 12. D
- 13. C
- 14. C
- 15. A
- 16. B
- 17. D
- 18. B

19. D
20. A
21. C
22. C
23. A
24. A
25. A
26. B
27. D
28. D
29. D
30. A
31. A
32. D
33. B
34. D
35. D



# Glossary

**Action Learning:** A performance-oriented, student-centered, problem-based strategy that promotes immediate and long-term knowledge and skill transfer. Action learning is effective because of the fidelity sought between classroom-based activities (learning space) and requirements outside the classroom (performance space).

**ADDIE:** A product development paradigm. The components include analyze, design, develop, implement, and evaluate.

**Affective Domain:** The division of Bloom's taxonomy of educational objectives that references those objectives and test items demonstrating interest, appreciation, attitudes, values, and psychological adjustment.

**Analysis Summary:** The document completed at the conclusion of the analyze phase that records your research and describe your findings, conclusions, and recommendations. Components include a statement describing the cause of the performance discrepancy and the potential value added for training, a purpose statement for the training project, a list of the instructional goals, a learner audience profile, a list of resources you will require, and recommended training delivery system options including cost estimates for each option.

**Analyze:** The first phase of the ADDIE instructional systems design process; its purpose is to identify the probable causes for the absence of performance and recommend a solution.

**Asynchronous:** Any place and any time.

**Attitude:** Personal choice and human modeling are manifestations of attitudes.

**Behavior:** An action that is an overt, observable, measurable performance.

**Bloom's Taxonomy:** A classification of behavior and learning developed by Benjamin Bloom and several colleagues; organized into three different domains of learning: cognitive (or intellectual), affective (or emotional/attitudinal), and psychomotor (or physical, motor).

**Classroom Model:** One type of models in which ISD is commonly applied. The model assumes that the context includes a few hours of classroom instruction as seen in schools where the instructor is often the developer of the instruction. Classroom models usually outline only a few ISD functions and offer instructors a general road map to follow.

**Classroom Training:** Any instructional or training technique, which utilizes classroom environment.

**Criteria:** Criteria is the third component of a learning objective that describes the quality or standard of performance that will be considered acceptable.

**Criterion-Referenced Test:** Criterion-referenced test is the type of test that compares the performance of a student with the degree to which the objectives were achieved.

**Criterion-Referenced Test Items:** Test items whose responses are compared with some objective standard rather than with other responses as in norm-referenced items.

**Coach:** The coach's overall role is to help the team accomplish their given tasks by answering questions and offering advice and guidance on how to approach a given situation using the methodology adopted by a community of practice.

**Computer-Based Training (CBT):** Any instructional or training technique, which features a computer.

**Cognitive Strategies:** Learning that is domain specific or executive, as in meta-cognitive, describes cognitive strategies.

**Condition:** Condition is the component of a learning objective that describes the specific situation in which the performance occurs.

**Content Analysis:** Content analysis is a procedure that, when applied to an instructional goal, results in the identification of the relevant knowledge, skills, and procedures required for a learner to achieve the goal.

**Content Resources:** Content resources include existing course material, existing videos. These pre-existing resources may be available that contain valuable content. They could be used in one of the following ways, such as reference for content, as reference for learning strategies, parts used in the training without alteration, parts used for illustration or examples only.

**Concurrent Engineering:** An ISD approach first used in industrial engineering that refers to direct involvement of all stakeholders in all stages of the process.

**Debriefing:** Debriefing is the process of helping people reflect on their experiences to develop meaningful learning. The purpose of a debriefing session is to gather oral feedback from test participants. A designer or an evaluation professional will write the debriefing question. During the debriefing session, make sure that all comments are captured and that discussions stay focused and relevant.

**Deliverables:** Any measurable, tangible, verifiable output that must be produced to complete the project or a training course.

**Delivery System:** Term used to describe the means by which instruction will be provided to learners. Includes instructor-led instruction, distance education, computer-based instruction, web-based instruction, and self-instructional materials.

**Design:** The second phase of the ADDIE instructional systems design process; its purpose is to verify the learning tasks, performance objectives, and testing strategies.

**Design Brief:** The document completed at the conclusion of the design phase showing a detailed overview of the training. Components included are a sequenced list of learning tasks; a sequenced list of performance objectives; a list of testing strategies, a summary of benefits derived from the training.

**Develop:** The third phase of the ADDIE instructional systems design process; its purpose is to generate and validate the training materials.

**Embedded Tests:** Opportunities for student to demonstrate their knowledge and skills in meeting objectives during the episodes of intentional learning.

**Evaluate:** The fifth phase of the ADDIE instructional systems design process; its purpose is to assess the quality of the training materials prior to and after implementation and the instructional design procedures used to generate the instructional products.

**Evaluation Plan:** The deliverable for the evaluation phase of ADDIE.

**Facilitator Guide:** The print resource that is used by the facilitator to lead the instruction. Incorporates all aspects of analysis and design into its development, making it the primary vehicle to house all facets of the instruction: instructional strategies, testing strategies, learning objectives, content, pacing, timing, introductions, closure, transitions, and reviews.

**Facilitator Plan:** The portion of the implementation plan that describes how the facilitators will be selected and prepared to lead the training event includes the following components: identification, schedule, preparation (train-the-trainer).

**Feedback:** Information received that is either confirming or corrective of some action.

**Field Trial:** The final stage in formative evaluation, referring to the evaluation of the program or product in the setting in which it is intended to be used.

**Flowcharting:** Procedure for identifying and graphically representing the sequential and alternative relationships among processes and decision points relevant to completing a project.

**Formative Evaluation:** The process of collecting data that can be used to *revise* the instruction *before implementation*, thus making the instruction more effective. A pilot test is an example of formative evaluation.

**Gagne's Nine Events of Instruction:** A method for organizing instructional strategies within the lesson designed by Professor of Instructional Design, R.M. Gagne. The nine events of instruction include gain attention, inform learners of the objectives, stimulate recall of prior learning, present the stimulus (content), provide learner guidance, elicit performance, provide feedback, assess performance, enhance retention and transfer (closure).

**Group-Based Instruction:** The use of learning activities and materials designed to be used in a collective fashion with a group of learners; interactive, group-paced instruction.

**Hierarchical Analysis:** A technique used with goals in the intellectual skills domain to identify the critical subordinate skills needed to achieve the goal and their interrelationships. For each subordinate skill in the analysis, this involves asking, "What must the student know how to do in order to learn the specific sub-skills being considered?"

**Human Resources:** Human resources include facilitators, coaches, manager contact, and subject matter experts.

**ID Model:** A graphic representation of a systematic approach. Designed to facilitate efficient and effective development of instruction.

**Implement:** The fourth phase of the ADDIE instructional systems design process; its purpose is to conduct the training.

**Implementation Plan:** The deliverable for the implement phase consisting of the learner plan which is used to identify and prepare the learners to participate in the instruction and the facilitator plan which is used to identify and prepare the teachers to facilitate the instruction.

**Instruction:** Instruction is the delivery of information and activities that facilitate learner's attainment of intended learning goals.

**Instructional Goals:** Brief statements describing the terminal tasks those learners will perform as a result of the training. Note that they describe performance and *do not* specify the criterion (standards) for neither the performance nor conditions under which the performance will be demonstrated.

**Instructional Design:** Instructional design refers to the systematic process of translating principles of teaching and learning into plans for learning resources and instructional strategies.

**Instructional Designer (Instructional Developer or ID):** This is the person who performs consulting and development tasks necessary to create learning resources. This person (or team) typically gathers and analyzes information

about content and skills. Determines performance objectives based on the results of information gathered. Writes the Blueprint and draft materials. Works with media people to assure that all-master materials adhere to the design of the course. Organizes the test session and rehearses the instructor. Prepares the materials for the reviews required at each stage of the instructional development process. Makes revisions specified by the project manager or sponsor.

**Instructional Facilities:** Instructional facilities include number of rooms, room capacity, and times available.

**Instructional Strategies:** The means by which the content and skills are transferred from the training delivery vehicle (instructor or CBT or video or Web) to the learner. Examples include demonstrations, role plays, hands-on practice, simulations, discussion, lecture, illustrated diagrams with explanations, step-by-step review; self-study exercises, reviews, on-the-job training exercises, practice with coaching, video demonstrations, examples or role plays, and others. Often organized by these categories: pre-instructional activities, content presentations, learner practice, feedback, and closure.

**Instructional Systems Design:** (Also known as instructional design) The name given to the process of creating instruction in order to close a performance gap that is due to a lack of knowledge and skills.

**Iterative Process:** One that is nonlinear; offers the opportunity to return to parts of the process and make changes due to knowledge gained in other parts of the process.

**Intellectual Skills:** A skill that requires some unique cognitive activity; involves manipulating cognitive symbols, as opposed to simply retrieving previously learned information.

**Jargon:** Special terms generated, adopted, or adapted by members of a profession that enables a shorthand communication that is efficient for practitioners who understand the terms but may be confusing to those unfamiliar with the jargon.

**Job Aid:** A teaching device intended to be self-explanatory and self-instructional; a formalized set of textual and graphical step-by-step directions for accomplishing a task through one or more techniques.

**Knowledge:** A thought, fact, or concept such as a cognitive task.

**Learner Analysis:** Data collected about the student group(s) used to inform decisions throughout the ADDIE. Components include learner group(s) identification, general characteristics, numbers, and location, experience level, attitude, and skills that impact the training delivery system.

**Learner Guide:** A print resource used in the instructional process by the participants to enhance the learning during the training and, in some situations, to use as a reference tool following training.

**Learner Plan:** The portion of the implementation plan that describes how the learners will be selected and prepared to participate in the training includes the following components: identification, schedule, notification, tracking plan.

**Learning Context:** The actual physical location (or locations) in which the instruction that is under development will be used.

**Lesson Plan:** A formal design for a particular instructional segment. Lesson plans can range from single-page outlines to comprehensive instructor manuals. Specifically, a lesson plan guides the teacher in producing and delivering the instruction. A lesson plan relates learner outcomes to instructor and student activities for accomplishing the outcomes and to resources required supporting the activities.

**Levers of Performance:** Common factors that influence the performance of employees such as re-engineering, information, authority, and timely feedback.

**Media:** The physical means selected or developed to communicate instructional messages. Examples include drawings, slides, audiotape, computer, person, model to name a few.

**Media Selection:** A function carried out during the development of the instruction whereby various media are selected in order to enhance the quality of the learning, present or reinforce key points, and meet the needs of different learning styles.

**Model:** Model is defined as an example or pattern that prescribes relationships in a normative sense.

**Module:** An instructional package with a single integrated theme that provides the information needed to develop mastery of specified knowledge and skills, and serves as one component of a total course or curriculum.

**Motor skills:** Executive subroutines and past skills: learned through practice describe motor skills.

**Multiple-Choice Test Item:** A test item that contains a stem setting forth a problem, followed by a correct solution randomly placed among several foils or distracters.

**Norm-Referenced Test:** Norm-referenced test is the type of test that compares the performance of a student with the performance of other students.

**Objectives (Learning):** The desired outcomes for the training event (*what the training should accomplish in terms of performance the learners should exhibit in the learning environment in order to be considered competent*) consist of three components (the performance, criterion, and standard), are congruent with the tasks and testing strategies. (Objectives can also be established for on-the-job performance, business or impact performance, or ROI) (often referred to as performance objectives although performance objectives are actually a description of the performance shown on-the-job rather than in the learning environment.)

**One-to-One Evaluation:** The first stage in formative evaluation, referring to direct interaction between the design team and an individual student.

**Performance:** Performance is the component of a learning objective that describes what the learner should be able to do at the completion of the instruction.

**Performance Analysis:** Actions taken to discover the cause of the performance discrepancy.

**Performance Discrepancy:** (Also known as the performance gap) the gap that exists between what we call *actual performance* (the current performance of the employee) and the *desired performance* (the required or requested performance of the employee).

**Performance Test Items:** Test items used to determine whether someone can directly apply specific skills and newly constructed knowledge in appropriate situations.

**Pilot Test:** The last step in the field trial (the third phase of formative evaluation). Students who participate in the pilot test are expected to meet the objectives in the instruction. Data collected from the pilot test is provided to the client who uses it to make the final decision about whether to proceed with implementation.

**Posttest:** A criterion-referenced test designed to measure performance of objectives to be taught during a unit of instruction, given after the instruction. Typically does not include items on prerequisite knowledge and skills.

**Pretest:** A criterion-referenced test designed to measure performance of objectives to be taught during a unit of instruction and performance on prerequisite knowledge and skills, given before instruction begins.

**Procedure:** Procedure describes a sequence of tasks.

**Project:** A temporary endeavor undertaken to accomplish a unique product or service.

**Problem:** A condition in which someone desires a certain state of affairs but does not immediately know how to attain it.

**Prototype:** A functional version of a new process and/or product, usually in an unfinished state, whose effectiveness and efficiency to be tested.

**Psychomotor Domain:** The division of Bloom's taxonomy of educational objectives that references those objectives and test items demonstrating manipulative or motor skills.

**Purpose Statement:** A brief statement (approximately 25 words) in which the overarching expectation identified for closing a performance gap is clearly and succinctly stated.

**Reliability:** The degree to which a test instrument consistently measures the same group's knowledge level of the same instruction repeatedly.

**Resource Inventory:** Data collected about the resources available to complete all five phases of the ADDIE process. Components include content resources, technology resources, instructional facilities, and human resources.

**Short-Answer Test Items:** Test items used for determining the degree of students factual recall, where they respond to a question with a brief written answer in a designated space, usually below the question.

**Skill:** Skill describes something physical, usually involving motor tasks.

**Small-Group Evaluation:** The second stage of formative evaluation, referring to the use of a small number of tryout students who study an instructional program without intervention from the designer and are tested to assess the effectiveness of the instruction.

**Sponsor:** This is the person who is paying for the project and who has requested that the project be undertaken. Often referred to as the client.

**Storyboarding:** A design technique for showing as individual scenes the proposed sequence of visual and audio elements in a production using some form of optically projected media, e.g., television, slid/tape, interactive video.

**Summative Evaluation:** The process of collecting data following implementation in order to determine the degree to which the instructional goals are being accomplished.

**System:** System describes interdependence, dynamic, synergistic, and responsive to the environment.

**Script:** A written document that provides for talent in a film or video production, details about their lines, where to stand, and the timing of their activities.

**Subject Matter Expert (SME):** This is the person who must take responsibility for the accuracy of the facts, concepts, and other content that will be presented. Subject matter experts are important resources during the instructional design process and should be considered as partners in the ADDIE process.

**Synchronous:** Any place, but same time.

**Systematic:** Following procedures or rules describe systematic.

**Task Inventory (or Task Analysis):** Identifies the primary performances that are required to close the performance gap. A process of identifying, sequencing, and relating the tasks and subtasks to the instructional goals.

**Technology Resources:** Technology resources include computer, video monitor, LCD (laptop) projector, and flip chart. It is important to evaluate the available technology that is available for the training delivery.

**Test Criteria:** Test criteria are the component of a learning objective that describes the quality or standard of performance that will be considered acceptable.

**Testing Strategy:** The type of evaluation conducted during the training in order to determine if the learner met the specified objective (performance, criteria, and condition) is congruent with the related task.

**Trainer** (Instructor or facilitator): The person who will be presenting the portions of the training that require lecture, facilitation, or other types of live coordination.

**Training Delivery Systems:** The vehicles available to deliver the training to the learner in order to most effectively provide the outcome desired. Examples include classroom training, computer-based training (CBT), video, web-based training, combination (two or more of the above, for example, classroom with video).

**Tryout:** the testing of a prototype or some subset of its elements, under actual or simulated conditions that are representative of those in the targeted system.

**Validity:** The degree to which a test measures what it was designed to measure.

**Verbal Information:** A network of organized knowledge describes verbal information.

**Web-Based Training:** Any instructional or training technique, which utilizes the Web environment.



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