Instructional Design Theories and Strategies: A Powerful Tool
Thomas M. Risk, M.Ed.

I thoroughly enjoy working as an instructional designer, particularly the creative side of the development process. I have a passion for envisioning an idea (analysis); watching it grow and come into fruition (goals & objectives); and creating a finished product (outcome & assessment) that will change what a person knows, can do, or believes. In my career, I have been very fortunate to have the opportunity to learn from many instructional technologists and theorists. When I was accepted into the graduate program in the Instructional Technology Department at Utah State University, I was given some great advice from the Department Head Dr. Don Smellie. He advised me to stop thinking of myself as just a media producer (up until that time, my career was mainly focused on multimedia development) but also as an instructional designer and view media as a tool for instruction. This counsel changed my perception of media and allowed me to understand how powerful instructional technology can be when used as an effective teaching methodology.

Instructional design is a beneficial tool when used as a guide in the development process of training, curriculum, and multimedia in achieving positive learning outcomes; identifying clear goals and objectives for a project, business, or organization; and providing creative and strategic leadership in project and personnel management. Today's ever-changing technological environment has created the need for effective instructional design more than ever. With advances in the media industry and convergence, new digital technologies are affecting the types of skills instructional designers need today to design training, curriculum, and multimedia.

What my experience has taught me when working with diverse organizations is that instructional paradigms and theories should be prescriptive and situation-based. How we learn and ensure that the desired learning occurs and how we apply instruction to a project, course, or training is all about the "science of instruction," and instructional technology is a science. It is a systematic way of planning, designing, carrying out, and evaluating the process of learning and teaching with new technology. To better describe the *science of instruction*, an instructional technologist is one who imposes a logical rigor supported by decades of reliable research in the process of instructional design. Goals and objectives are established according to specific sources utilizing the instructional design process. Instructional design is based on what we know about learning theories, information technology, systematic analysis, and management methods. John Dewey, in his presidential address to the American Psychology Association in 1899, called for the development of a "linking science" between learning theory and educational practice and saw instructional design as a process for designing instruction based on sound practices—hence the *science of instruction*.

An instructional design theory that has had a profound effect on my career and that I continue to use today is Dr. M. David Merrill's Component Display Theory. His theory uses a set of prescriptive relationships that guide the design and development of learning activities. I find the Component Display Theory very effective for developing instructional design strategies. Dr. Merrill identified three major categories of instructional strategies: organizational, delivery, and management. I use the Component Display Theory in a wide variety of subject matters and content organizational schemes with different techniques for managing instruction.

- *Organizational strategies* can be subdivided into two subcategories: micro and macro strategies. Micro strategies are characterized as presentation strategies, because they are concerned with the details of individual presentations to the learner. Macro strategies are concerned with the selection, sequence, and organization (structure) of the subject-matter topics to be presented.

- *Delivery strategies* are those decisions affecting the way information will be carried to the learner. Delivery strategies affect the selection of the instructional media that will be used to present the learning activities.

- *Management strategies* are those decisions affecting the way the individual learner will be helped to interact with the learning activities. Management strategies involve motivational techniques, individualized schemes, scheduling, resource allocation, and other implementation activities.

In early 1987, I had the opportunity to attend a conference workshop where Dr. Merrill and Dr. Robert Gagne debated the differences in Merrill's Component Display Theory and Gagne's Conditions of Learning Theory—even though the Component Display Theory was founded on the same assumptions as Gagne's research; namely that there are different categories of outcomes, and each of these categories require different procedures for assessing achievement and promoting the capability represented by the category. However, a one-dimensional classification system, such as that originally proposed by Gagne in 1965, seemed too limiting; hence a two-dimensional classification system was proposed by Dr. Merrill with performance forming one dimension and type of content forming the other. From these two theories, I have applied learner control to the development process based on the need for practice items and the learner's need to optimize test performance.

Dr. Charles M. Reigeluth's Elaboration Theory of Instruction deals with organizational strategies at the macro level, which is made up of four problem areas: selection, sequencing, synthesizing, and summarizing of subject matter content. The concept of a learning prerequisite is particularly useful and involves the fact that some knowledge must be acquired before other knowledge can be learned. Procedural types of relationships describe the order in which tasks must be performed as opposed to the order in which they must be learned. One can learn how to do the last step in a procedure first, but one cannot do the last step first in a performance of that complete procedure. I had the opportunity to attend a training session with Dr. Reigeluth. What a great theory—one that has always stayed with me and continues to influence me as an instructional designer.

When designing training, curriculum, or digital media projects, I build in interactivity or learning activities in the development process. Interactive instruction has the ability to provide different outcomes depending on different user input. That capability presents an excellent way to enable students, trainees, educators, and other users to see the consequences of their choices. The application does not just provide information while the user sits idly by and watches what is presented. The more effective design would be that the user is provided an opportunity to give control over the input, which will determine what will happen next. However, the learning outcome should remain the same. The extent to which a learner is actually participating in and engaging with the content material focuses on the outcomes of the learning process. Evaluation strategies at the end of a block of instruction (training session, course, or program development) that specify in measurable and observable terms what learners know and/or can do could include:

- Thought-provoking questions to enable the user to mentally process information.
- Active participation in a simulation or educational game.
- Providing feedback, both detailed and elaborative.
- Building on current knowledge and experience—allowing learners to compare predictions and solutions.
- Learner control of pace and sequence.
- Learner comments and annotations for later analysis and comparison.
- Learner modifications to the computer program by including their own material.

Simply put, the secret to designing successful learning is to align four elements: goals, activities, feedback, and evaluation. This is true whether the instruction is designed and delivered from a constructive or behaviorist perspective or if the learning is done online, in person, or in a blended environment. The effective use of instructional design guarantees success in reaching the goals and objectives that you aspire to achieve in training, course or program development, business, and in life.