

Gagne's Nine Events of Instruction

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INTRODUCTION

Robert Mills Gagne (1916-2002) was an American educator, experimental psychologist, and theorist, whose research led to the development of learning theories on instructional design and effective teaching practice. While serving as the Director of the U.S. Air Force's Perceptual and Motor Skills Laboratory (1949-58), Gagne conducted a series of studies that culminated into his learning theory: *Conditions of Learning*. Out of this theory, Gagne formulated a model of direct instruction entitled the "Nine Events of Instruction."

BACKGROUND

Educated at Yale (A.B. 1937) and Brown (PhD 1940), Gagne taught at Connecticut College for Women (1940-49), Penn State University (1945-46), and then at Florida State University. Initially a behaviorist, Gagne reinforced learning theories that involved conditioned responses and stimuli induction. Although he favored the theories of sequenced learning, Gagne's views somewhat shifted after his work as the Director of the Perceptual and Motor Skills Laboratory of the U.S. Air Force (1949-58). In his early research for pilot training, Gagne observed the outcomes of sequenced learning events and evaluated the cognitive processes resulting from these events. Following a series of published articles examining isolated tasks within learning sequences, Gagne began to examine how external events contributed to the learning process. In 1962, Gagne published an article entitled, *Military Training and Principles of Learning*, in which he raised questions regarding how instructional design could better facilitate the process of learning.

In response to his own inquiry, Gagne published *The Conditions of Learning* (1965) which identifies the cognitive processes that occur in learning. Gagne's work was primarily derived from his observations on information processing and cognitive mapping, and placed

great emphasis on the acquisition of intellectual skills. To organize the discussion of his results, Gagne identified five taxonomies of learning: verbal information, intellectual skills, cognitive strategies, attitudes, and motor skills. Gagne argued that connections between internal and external conditions (found within each of the taxonomies) must be established to generate the desired response of learning. Gagne refers to internal conditions as the innate capabilities possessed by the learner whereas external conditions are independent in their action. In his view, Gagne argued that differences in the conditions for learning can lead to differences in the *types* of learning.

To identify the sequence of tasks needed to facilitate learning, Gagne suggests that activities for acquiring the intellectual skills needed should be organized in a hierarchy according to complexity. This hierarchy included the following: stimulus recognition, response generation, procedure following, use of terminology, discriminations, concept formation, rule application, and problem solving. In turn, the hierarchy could outline the conditions (external and internal) that need to occur to ensure learning takes place at each level. To illustrate his theory, Gagne (1970) and further updated by Gagne and Briggs (1974) outlined nine instructional events and corresponding cognitive processes that must occur for learning to take place:

1. Gaining attention (reception);
2. Informing learners of the objective (expectancy);
3. Stimulating recall of prior learning (information retrieval);
4. Presenting the stimulus (perception);
5. Providing learning guidance (encoding);
6. Eliciting performance (responding);
7. Providing feedback (reinforcement);
8. Assessing performance (assessment retrieval); and
9. Enhancing retention and transfer (generalization).

In turn, these “nine events” serve as the basis for designing instruction and selecting appropriate media (Gagne, Briggs, & Wager, 1992).

Gagne's theory served as a building block for instructional design because it prompted learning theorists to re-examine existing models of practice. Applications of Gagne's theory of learning included a large scale project entitled *Science: A Process Approach* (SAPA) as part of the American Association for the Advancement of Science (AAAS). Fields (2005) cites Gagne's research as the foundation for problem solving and scientific inquiry in science texts well into the 1980s. According to Fields, Gagne (1965) argued that the process approach was the bridge between content understanding and creative ability. In turn, Gagne's influence on science curriculum also contributed to the development of instructional programs for mathematics, computer programming, and instructional technology. Gagne's research has also been applied to developing a design model for successful training in business and industry as well. More recent use of Gagne's model has been applied to instructional design and information processing.

FOCUS

To understand the application of Gagne's nine instructional events, it is necessary to explain how each of the events functions in the process of learning. The first instructional event that must occur involves *getting the attention* of the learners. Students are motivated to learn when they are curious. As the students express interest in the material, it is necessary to *inform them of the learning objectives* involved in the instruction. Objectives organize the instruction and serve as the basis for assessment. If students understand the objectives, they can be alert to the key elements of the instruction.

Once students are aware of the objectives, they also need to understand that participating in the learning activity will foster an outcome. The goal is to *create a sense of expectancy* for the learner. In Gagne's view “expectancy may be established by telling a subject what will happen when he/she has completed a learning act” (p. 147). As students begin to learn new information, instruction should involve the *recall of prior learning* to establish a common foundation of understanding. It is easier for students to grasp information when there are connections made to their prior learning experiences.

Simply doing a pre-test or pre-lesson assessment of the material will help the educator adjust instruction to accommodate students that need additional information to understand the new concepts. By assessing the knowledge base of students, the instructor can accommodate the lesson to meet the needs of the students.

The next learning event involves the *actual presentation* of content. To respond to different learning styles, educators should be prepared to present content in different modes or learning environments. Gagne's early discussions regarding the significance of adaptable environments for learning are significant because they anticipate the modes of distance learning. These ideas also promote the importance of instructional design. As students work to learn the new information, *guidance* is necessary. Learning guidance serves as the next event of instruction. Guidance includes providing supplemental instruction, analogies, examples, and other devices to assist with the comprehension of information.

The next three events of instruction relate to assessment. Initially, to ensure the students are learning the material, they may be asked to *practice* this skill. Homework, quizzes, or discussion may occur to determine the level of understanding. Once an educator has determined if the students have understood the instruction, *feedback* is necessary to help students understand whether or not they have understood the material. Feedback should be immediate and formative. Educators should not wait until the end of a semester to determine whether learning has occurred. Multi-levels of assessment are encouraged, and summative assessment should occur when the educator believes the students have been given opportunity to respond to the formative assessment. The outcomes derived from the *assessment of performance* should also be used to modify instructional events (objectives, guidance, etc.). Finally, the last event of instruction is to *reinforce the retention* of information through application and transfer. An instructor may review the material that was learned in a lesson prior to the lesson being taught to ensure that the previous material has been recalled.

Although Gagne's nine instructional events are presented in a sequence, it is important to note that the nine events need not occur in a single lesson, nor does the sequence of events have to occur in the exact order as listed. Denton, Armstrong, and Savage (1980) argue that Gagne's intent was that these events should all be considered in terms of establish a framework for instructional planning. Kearsley (1994) emphasizes

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