# WHAT IS INSTRUCTIONAL DESIGN?

## INTRODUCTION

*Instructional Design* (ID) is commonly defined as a systematic procedure in which educational and training programs are developed and composed aiming at a substantial improvement of learning (e.g., Reiser & Dempsey, 2007).

Usually, such definitions are associated with the assumption that certain models of instructional design can serve as a frame of reference. Also, can serve as a regulation of the development of courses and lessons. Aiming at the improvement of learning, and influencing the learners' motivation and attitudes. In such a way that they can achieve a deeper understanding of the subject matters to be learned. Evidently, the starting point of instructional design consists in the clarification what students should learn. Thus, Gagné (1965, 1985) has identified five major categories of learning: *verbal information, intellectual skills, cognitive strategies, motor skills, and attitudes*. Each type of learning is characterized through different internal and external conditions. For example, for cognitive strategies to be learned, there must be a chance to practice new solutions to a class of particular problems, or to learn attitudes, the learner must be exposed to persuasive arguments.

## LEARNING AND TEACHING: THE CENTRAL CONCEPTS OF INSTRUCTIONAL DESIGN

Prior to Gagné, Roth (1963) has specified eight categories of learning that will serve as the point of reference throughout this textbook:

1. Learning in which the *emergence of an ability* is the main goal as well as the automation of abilities to form motor and mental skills.

2. Learning centers on *problem solving* (thinking, understanding, "insight")

3. Learning, which aims at *construction, retention, and remembrance of knowledge.*

4. Learning in which the main goal is *to learn a procedure* (learning to learn, learning to work, learning to do research, learning to look things up, etc.)
5. Learning in which *transfer to other domains* is the main point, i.e. the heightening of abilities and efforts (learning Latin as an aid for learning other Romanic languages).

6. Learning in which the main goal is to *develop one's social positions, value positions, and attitudes.*
7. Learning in which the main goal is to gain an *increasing and heightened interest in a topic* (differentiation of motives and interests).
8. Learning in which the goal is a *change of behavior*.

Scholars in the field of education commonly agree on the point that there is a strong relationship between learning and instruction. A long time ago, Willmann (1889) introduced the notion of "teaching as the making of learning" and about 60 years later Skinner (1958) distinguished between the "science of learning and the art of teaching." Correspondingly, traditional approaches of instructional design start with a clarification of learning objectives and then identify instructional events that are suitable for achieving the learning objectives. "Gagné nine events of instruction" provide a well-known example for this combination of learning and instruction.

*Gagné's Nine Events of Instruction*

1. Gain attention of the students

Methods for gaining the learners' attention include stimulating with novelty, uncertainty and surprise, as well as thought-provoking questions.

2. Inform students of the objectives

to help them understand what they are to learn during a course: Describe required performance and criteria for standard performance.

3. Stimulate recall of prior learning

Help students make sense of new information by asking questions about previous experiences and their understanding of them.

4. Present the content

Organize the content in a meaningful way, provide explanations and present multiple versions of the same content.

5. Provide learning guidance

Provide instructional support when needed (as scaffolds, hints), model varied learning strategies (e.g., concept mapping, visualizing, role playing), use examples and non-examples, provide case studies, analogies, visualizations and metaphors.

6. Elicit performance by practices

Help the students to internalize new knowledge and skills and confirm correct understanding of the concepts, elicit recall strategies, facilitate student elaboration.

7. Provide feedback

Provide immediate feedback on learners' performances to facilitate learning.

8. Assess performance

In order to evaluate the effectiveness of instruction, test the expected learning outcomes.

9. Enhance retention and transfer

with the aim to help learners in developing expertise.

According to Gagné et al. (2005), these nine events of instruction create a general framework for preparing and delivering instructional contents. The authors suggest defining the course goals and learning objectives before implementing the nine events. From the perspective of traditional instructional design, instructional

events are assigned to learning objectives to make sure that learners will be able to know or do something that they had been not able to know or do before instruction. Shortly said instruction is the "stimulus" and learning the "response".


In the 1990s, this behaviorist (or objectivist) perspective was attacked and contrasted with a constructivist perspective (e.g., Jonassen, 1991). Combined with the idea of social constructivism and situated cognition, the so-called *objectivist-constructivist-debate* in the field of instructional design evoked, in terms of Gage (1989), a "war of paradigms." It took only short time for recognizing that the objectivist-constructivist-debate was more confusing than helpful in clarifying the "philosophical foundation" of instructional design (Cronjé, 2000). Now, it could be argued to let bygones be bygones and to consider the objectivist-constructivist-debate as finished. But this would only be half the truth because the debate gave rise to alternative approaches of instructional design. Among them, the idea of *Learning Design*, or as some argue the *Design for Learning*, plays an important role (Koper, 2006; Laurillard, 2013; Mor & Craft, 2012). According to this approach, the role of instruction is "not to transmit knowledge to a passive recipient, but to structure the learner's engagement with knowledge, practicing the high-level cognitive skills that enable them to make that knowledge their own" (Laurillard, 2008, p. 527).

> A *learning design* is defined as the description of the teaching-learning process that takes place in a unit of learning (e.g., a course, a lesson, or any other designed learning event). The key principle in learning design is that it represents the learning activities and the support activities that are performed by different persons (learners, teachers) in the context of a unit of learning. (Koper, 2006, p. 13)

When we replace the term “learning design” through “instructional design”, the definition of Koper is correct, too. Basically, both terms refer to the same universe of discourse, and consonantly they aim at the same product: a *learning environment* as a specific arrangement or setting of teaching and learning. The only difference is that the focus of instructional design is on teaching activities aiming at the improvement of learning, whereas learning design focuses on learning activities initiated and facilitated through instruction. In other words: *Instructional design and learning design are the two sides of the same coin*! With reference to the necessary procedures and steps of the design, there are practically no differences.

The purpose of both instructional and learning design is the creation of learning environments that provide the learners with opportunities to learn in accordance with the categories of learning introduced by Gagné (1965) or Roth (1963). It is plausible to assume that the idiosyncrasy of a learning environment depends to a large extent on the type of learning and the related learning objectives. For example, a learning environment aiming at problem solving will differ from an environment aiming at the proceduralization of skills. And a learning environment aiming at the construction and retention of declarative knowledge will differ from an environment, which aims at the development of social attitudes or morality.



*Learning Environments*

Learning is considered as a constructive process of organizing available cognitive resources in such a manner that new knowledge or new skills are placed at the disposal for mastering new learning tasks. The basic assumption is that learners do not possess a priori the knowledge and skills that are necessary for solving problems (Kozma, 1991).

Thus, the given *environment* provides an essential cognitive resource to attain information that can be assimilated into the knowledge bases.

Based on this argumentation the idea of *learning environments* advanced to a central concept of educational psychology and instructional design (Collins et al., 1994). The point is to organize the environment of learners by means of well-designed teaching materials and the social conditions in such a way that intended processes of learning are initiated and facilitated. Thus, the "Florida Commission on Education Reform and Accountability" (1992) stated shortly: "The school authorities care for learning environments, which are beneficial for teaching and learning." – Well spotted! However, it remains open what kind of learning environment is beneficial.

Everyday experiences with schooling indicate that there is a great variety of learning environments concerning the degree of guidance by instructors. In educational practice, the spectrum of possible learning environments might range from highly restricted and supervised learning (*tutelage*) to a both largely unrestricted and weakly supervised learning.

At this point, the "philosophical orientation" of education and instruction makes the difference. The behaviorist tradition (e.g., programmed teaching and learning) favors a rigid tutelage, whereas constructivists argue that learning cannot be externally forced but rather only supported by the environment. Aiming at learning support, the environment must be designed in such a way that it provides learners with optimal conditions for the development of their own initiatives. Instructional interventions must be reduced to a minimum (Farnham-Diggory, 1972).

This corresponds with Stolurow's (1973) concept of *transactional instruction* aiming at the creation of learning environments that provide opportunities for reflective thinking. Learning environments must organize the external conditions of a maximal cognitive and motivational evolvement; they should operate with minimal interventions in order to offer a wide space for learning and thinking.

Accordingly, Hannafin (1992, p. 51) proposed the following definition of learning environments: "Learning environments are comprehensive, integrative systems that promote engagement through student-centered activities, including guided presentations, manipulations, and explorations among interrelated learning themes."

In accordance with the previous argumentation, we can specify some general requirements for effective learning environments:

1. Learning environments have to motivate the learners by means of provoking expectations that initiate reflective thinking about the objects to be learned.

2. Based on an appropriate preparation of the teaching materials as well as specific instructional activities (presentation, interpretation, explanation, development of lines of thought, and scaffolds), learning environments eventually aim at self-organized learning. This presupposes a continuous feedback about the learning outcomes.

3. Learning environments aim at those learning processes that contribute to the development of the abilities of cooperation and communication, exploration and identification of social relations within peer groups.

The implications for the design of learning environments are obvious: First of all, learning environments have to provide an appropriate context or organizing issue for learning activities; then they have to provide assistance and scaffolds as well as other resources among which the learner can choose the very best for a more thorough comprehension.

The development and organization of learning environments is a complex task, which demands the simultaneous consideration of numerous components and their relationships. This can be illustrated with reference to the “Larnarca Declaration on Learning Design”