
Read Ertmer and Newby on learning theories and strategies. Pay particular attention to when the authors connect learning theory with teaching/learning strategies.

Purpose: To make more meaningful the planning and implementation conducted by instructional designers, by detailing three learning theories: (1) behaviorist, (2) cognitive, and (3) constructivist. The disparities between these three theories may be delineated by considering answers to the following questions (p. 46), which will be repeated below and accompanied by answers relative to each theory:

- How does learning occur?
- Which factors influence learning?
- What is the role of memory [in learning]?
- How does transfer occur?
- What types of learning are best explained by the theory?
- What basic assumptions/principles of this theory are relevant to instructional design?
- How should instruction be structured to facilitate learning?

Designers need be familiar with each of these theories. In 1992, however, not even 3% of university-level courses in educational technology emphasized theory as a key concept. I wonder what the percentage would be now; I find it interesting that in an article published in 2013, such an old figure is used.

As a former (well, current, too) teacher who enjoys the act of instruction and as a current student becoming more immersed in learning theory, I am frustrated by the gap – no, the chasm – between theory and practice with regard to instruction. This article addresses that gap and how it may be bridged by instructional designers who learn about and consider more fully in their design such theory and its implications for practice. As such, Instructional Design is herein identified as performing the role of translating “relevant aspects of the learning theories into optimal instructional actions” (p. 43); however, “the real benefits of theoretical knowledge are, at present, not being realized” (p. 45).

Instructional designers thus play two critical roles, the first being diagnostic: designers must understand and analyze the reality and position (i.e., problems) of the practitioner. The second is problem-solving: designers must further understand what possible solutions exist, via familiarity with learning theories, in order to be able to then select and apply them to the problem. Theories themselves play four roles:

1. Providing verified instructional strategies and techniques.
2. Providing a foundation for the intelligent and informed selection of strategies.
3. Providing information about instructional components and design, and their interplay.
4. Allowing for reliable prediction of the success of specific strategies.

Numerous different definitions of “learning” include the following elements:

- Sustained behavioral change
- Practice or experience

As such, learning occurs through exposure (preferably repeated) to content and is evidenced by lasting change in behavior.
Focusing on each of the three theories:

❖ **How does learning occur?**
  - **Behaviorism**
    We react to our environment, providing a response to a stimulus. Reinforcement of behavior plays a role in learning, and learning is evident in the form or frequency of observable behavioral performance.
  - **Cognitivism**
    We learn through mental activity, including receipt, organization, storage, and later retrieval of information.
  - **Constructivism**
    We actively construct our own meanings of the world, based on our unique prior experiences and knowledge. As such, no two people will ever understand something in the same way; and as instructors, our learners will never understand what we teach them in quite the same way as we do. Learning this after having taught 150+ incredibly unique individuals per year, for several years, both makes a lot of sense and overwhelms me.

❖ **Which factors influence learning?**
  - **Behaviorism**
    Both the individual learner and his environment are important influences, but the environment (and possible reinforcers therein) is more so.
  - **Cognitivism**
    Both the individual learner and his environment are important influences, but the environment (and possible reinforcers therein) is more so. Practice with corrective feedback, demonstration and modeling, and explanation are helpful.
  - **Constructivism**
    Both the individual learner and his environment are important influences, since the environment is experienced uniquely by each learner and attached to unique prior understandings.

❖ **What is the role of memory [in learning]?**
  - **Behaviorism**
    Behaviorism does not consider the mental actions involved in learning, so memory storage and retrieval (or lack thereof) are not considered. “Forgetting” is represented by the lack of a response to a given stimulus; “remembering” is fostered through practice in the presence of a stimulus.
  - **Cognitivism**
    We meaningfully learn that which is well organized in our mental systems; this may be facilitated with advance organizers, hierarchies, analogies, and matrices that help organize information and tie it to already-stored, already-meaningfully organized prior knowledge.
  - **Constructivism**
    Because of the unique construction of knowledge/understanding by each learner, “memory” will be similarly unique and is continually evolving.
How does transfer occur?

- **Behaviorism:**
  Transfer results from generalization, wherein “situations involving identical or similar features allow behaviors to transfer across common elements” (p. 49).

- **Cognitivism**
  Prior knowledge combines with new information such that we understand how to apply what we already know in different contexts.

- **Constructivism**
  Via “involvement in authentic tasks anchored to meaningful contexts” (p. 54).

What types of learning are best explained by the theory?

- **Behaviorism**
  - Discrimination (recalling facts)
  - Generalization (defining and illustrating concepts)
  - Associations (applying explanations)
  - Chaining (automatic procedure performance)

- **Cognitivism**
  - Reasoning
  - Problem-solving
  - Information processing

- **Constructivism**
  Relative to the process of knowledge acquisition with three stages (introductory, advanced, and expert), “constructive learning environments are most effective for the stage of advanced knowledge acquisition, where initial misconceptions and biases acquired during the introductory stage can be discovered, negotiated, and if necessary, modified and/or removed” (p. 55).

What basic assumptions/principles of this theory are relevant to instructional design?

- **Behaviorism** (p. 49):
  - Emphasis on producing observable (behavioral!) and measurable student outcomes
  - Student pre-assessment
  - Mastery of early steps prior to progression toward more complex performance levels
  - Use of reinforcement
  - Use of cues, shaping, and practice

- **Cognitivism** (p. 53)
  - Emphasis on the learner’s active involvement in the learning process
  - Hierarchical analyses to identify and exemplify prerequisite relationships
  - Emphasis on structuring, organizing, and sequencing information for optimal processing
  - Development of learning environments facilitating students’ connections with prior knowledge

- **Constructivism** (p. 58-59)
  - Emphasis on identifying the context in which skills will be learned and then applied
  - Emphasis on the learner’s control and ability to manipulate information
  - Presentation of information in various ways
How should instruction be structured to facilitate learning?

- **Behaviorism**
  Presentation of the stimulus, cues associated with the stimulus-response pairing, and opportunity to practice the desired response. (Modeling is thus likely helpful herein.)

- **Cognitivism**
  Learners’ prior knowledge is a critical understanding; instruction need be designed around such existing knowledge and schema. Analogies, metaphors, careful organization, and meaningful feedback play a part.

- **Constructivism**
  Initially, focused on learners as individuals, as they will be constructing their own personal, unique understandings. Later, moving into collaborative work wherein learners will work together and thereby influence each other’s constructions.