



6.1 | Analyze: Theory Comparison Chart [Answer Key]

We used Tables 6.1 through 6.5 (in Chapter 6 of *Streamlined ID*, 2027) to complete a version of the learning theory chart here. See how your answers compare to ours:

Point of Comparison / Contrast	Instructivist Pedagogical Approach		Constructivism (both Cognitive & Social)	Connectivism	Theory of Your Choice
	Behaviorism	Cognitivism			
How does Learning occur?	Learning is a change in either the form or frequency of observable performance. The brain is a black box – we can't observe what goes on in the brain, so it should therefore NOT be used as a basis of planning instruction. Learning has occurred if the learner gives the desired response to the presentation of a specific environmental stimulus. Behaviorism assumes an objective truth, and the world is real and external to the learner.	Learning is equated with discrete changes between states of knowledge rather than with changes in the probability of a response. It includes how information is received, organized, stored, and retrieved by the mind. Cognitivists are concerned not so much with what learners DO but with what they know and how they come to acquire it. Cognitivism assumes an objective truth, and the world is real and external to the learner.	Constructivists believe that the mind filters input from the world to produce its own unique reality. What we know of the world stems from our own interpretations of our experiences. The internal representation of knowledge is constantly open to change; there is not an objective reality that learners strive to know. Therefore, meaning is created by each learner personally, as well as by the group collectively. Rather than the acquisition of knowledge, learning occurs when each individual makes sense of and constructs knowledge within his/her own context from his/her experiences.	Knowledge is distributed within and across networks. The act of learning is social, typically technologically enhanced, and involves forming a diverse network of connections and recognizing and interpreting attendant patterns. Connectivism brings together ideas of neuroscience, cognitive science, network theory, complex systems, and related disciplines. It emphasizes the primacy of the connection – to a person, a concept, and/or an idea. It is therefore important to understand how and why connections form. Connections are formed at various levels: neural, cognitive/conceptual, and social.	
Basic Assumptions & Principles	• An emphasis on producing observable and measurable outcomes in students [behavioral objectives, task analysis, criterion-referenced assessment]	• Emphasis on the active involvement of the learner in the learning process [learner control, metacognitive training (e.g., self-planning, monitoring, and revising techniques)].	• An emphasis on the identification of the context in which the skills will be learned and subsequently applied (anchoring learning in meaningful contexts). • An emphasis on learner control and the capability of the	Connectivist Principles (Siemens, 2005): • Learning and knowledge rests in diversity of opinions. • Learning is a process of connecting specialized nodes or information sources.	



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	• Pre-assessment of students to determine where instruction should begin [learner analysis] • Emphasis on mastering early steps before progressing to more complex levels of performance [sequencing of instructional presentation, mastery learning] • Use of reinforcement to impact performance [tangible rewards, informative feedback] (i.e., responses followed by reinforcement are more likely to recur in the future.) • Use of cues, shaping and practice to ensure a strong stimulus-response association [simple to complex sequencing of practice, use of prompts].	• Use of hierarchical analyses to identify and illustrate prerequisite relationships (cognitive task analysis procedures). • Emphasis on structuring, organizing, and sequencing information to facilitate optimal processing (use of cognitive strategies such as outlining, summaries, synthesizers, advance organizers, etc.). • Creation of learning environments that allow and encourage students to make connections with previously learned material (recall of prerequisite skills; use of relevant examples, analogies).	learner to manipulate information (actively using what is learned). • The need for information to be presented in a variety of different ways (revisiting content at different times, in rearranged contexts, for different purposes, and from different conceptual perspectives). • Supporting the use of problem-solving skills that allow learners to go "beyond the information given," (e.g., developing pattern-recognition skills, and presenting alternative ways of representing problems). • Assessments are focused on transfer of knowledge and skills (e.g., presenting new problems and situations that differ from the conditions of the initial instruction).	• Learning may reside in non-human appliances. • Nurturing and maintaining connections is needed to facilitate continual learning. • Ability to see connections between fields, ideas, and concepts is a core skill. • Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities. • Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.	
What factors influence Learning?	• The environment and its arrangement of stimuli, consequences, and reinforcement. • The learner's current knowledge level and the reinforcers that motivate them.	• Existing schema, prior knowledge and experience. • Role that environmental conditions play in facilitating learning, especially instructional explanations,	• Both learner and environmental factors are critical to the constructivist, as it is the specific interaction between these two variables that creates knowledge. Constructivists argue that	• Diversity of the network • Strength of ties/connections • Context of occurrence	



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		demonstrations, illustrative examples and non-examples, practice, and corrective feedback. • Focuses on the mental activities of the learner that lead up to a response and acknowledges the processes of mental planning, goal-setting, and organizational strategies. • Key elements include the way that learners attend to, code, transform, rehearse, store and retrieve information. • Learners' thoughts, beliefs, attitudes, and values are also considered influential. • The focus is on changing the learner by encouraging him/her to use appropriate learning strategies.	behavior is situationally determined. • It is essential that content knowledge be embedded in the situation in which it is used, because the context actually co-produces knowledge (along with cognition) through activity. Every action is viewed as "an interpretation of the current situation based on an entire history of previous interactions." • For this reason, it is critical that learning occur in realistic settings and that the selected learning tasks be relevant to the students' lived experience.		
What is the role of Memory?	Memory is the hardwiring of repeated experiences through rewards and punishment. The acquisition of habits. Periodic practice or review serves to maintain a	Memory plays a prominent role through encoding, storage, and retrieval. Designers are responsible for assisting learners in organizing that information in some optimal way.	The goal of instruction is not to ensure that individuals know particular facts but rather that they elaborate on and interpret information. Understanding is developed through continued, situated use	Adaptive patterns, representative of current state, existing in networks.	



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	learner's readiness to respond.	Designers use techniques such as advance organizers, analogies, hierarchical relationships, and matrices to help learners relate new information to prior knowledge. Forgetting is the inability to retrieve information from memory because of interference, memory loss, or missing or inadequate cues needed to access information.	and does not consist of a specific definition that can be called up from memory. A concept will continue to evolve with each new use as new situations, negotiations, and activities recast it in a different, more densely textured form. Therefore, "memory" is always under construction as a cumulative history of interactions. Representations of experiences are not formalized or structured into a single piece of declarative knowledge and then stored in the head. The emphasis is not on retrieving intact knowledge structures, but on providing learners with the means to create novel and situation-specific understandings by "assembling" prior knowledge from diverse sources appropriate to the problem at hand.		
How does Transfer occur?	Transfer is a result of generalization. Situations involving identical or similar features allow behaviors to transfer across common elements.	Transfer is a function of how information is stored in memory. When a learner understands and is able to apply knowledge in different contexts, then transfer has occurred.	Constructivism assumes that transfer can be facilitated by involvement in authentic tasks anchored in meaningful contexts. Understanding is "indexed" by experience, so the authenticity of the experience becomes critical to the individual's ability to use ideas.	Transfer occurs when the learner connects to (adds) nodes and grows the network (socially, conceptually, biologically).	



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This theory is best suited to what types of Learning?	Behavioral instruction is good for strengthening stimulus-response associations, including through the use of instructional cues, practice, and reinforcement. Behavioral instruction is also generally effective in facilitating learning that involves discriminations (recalling facts), generalizations (defining and illustrating concepts), associations (applying explanations), and chaining (automatically performing a specified procedure).	Cognitive instruction is appropriate for explaining complex forms of learning (reasoning, problem-solving, information-processing). Goal of instruction for both behavioral and cognitive instruction is often the same: to communicate or transfer knowledge to the students in the most efficient, effective manner possible.	Constructivist learning environments are most effective for advanced knowledge acquisition, where initial misconceptions and biases acquired during the introductory stage can be discovered, negotiated, and if necessary, modified and/or removed. In contrast, introductory knowledge acquisition is better supported by more objectivistic approaches. Constructivist approaches are good for dealing with complex and ill-structured problems.	Connectivist learning environments are good for complex learning, for content with a rapidly changing core, and for topics with diverse knowledge sources.	
What instructional structures does this theory use or advocate to facilitate Learning?	Instruction is structured around the presentation of the target stimulus and the provision of opportunities for the learner to practice making the proper response. To facilitate the linking of stimulus-response pairs, instruction frequently uses cues (to initially prompt delivery of the response and reinforcement and to strengthen correct responding in the presence of the target stimulus).	Simplification and standardization, content chunking. Cognitive theories emphasize making knowledge meaningful and helping learners organize and relate new information to existing knowledge in memory. Instruction must be based on a student's existing mental structures, or schema, to be effective, and it should be organized to help learners connect new information with	The role of instruction in the constructivist view is to show students how to construct knowledge, to promote collaboration with others to show the multiple perspectives that can be brought to bear on a particular problem, and to arrive at self-chosen positions to which they can commit themselves, while realizing the basis of other views with which they may disagree. While the emphasis is on learner construction, the designer's	The teacher or facilitator: 1. Amplifies 2. Curates 3. Fosters wayfinding and socially driven sense-making 4. Aggregates 5. Filters 6. Models 7. Acts as a persistent presence	



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		existing knowledge in a meaningful way. Examples of effective strategies include analogies, metaphors, framing, outlining, mnemonics, concept maps, advance organizers, practice, and feedback.	and/or educator's role is still important: • Instruct the student on how to construct meaning, as well as how to effectively monitor, evaluate, and update those constructions; and • Align and design experiences for the learner that feature authentic, relevant contexts. Specific structures include cognitive apprenticeships, modeling and coaching of experts, and use of authentic cases.		