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Assignment # 3

Essay: How Learning Theory Influences Instructional Design

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Behaviourism equates learning with changes in either the form of frequency or observable performance. Learning is accomplished when a proper response is demonstrated when a proper response is accomplished following the presentation of a specific environmental stimulus (Ertmer & Newby,1993). The behaviourist approach chosen for this paper is Radical Behaviourism. Radical Behaviourism is the school of thought pioneered by B. F. Skinner that argues that behavior, rather than mental states, should be the focus of study in psychology. Skinner's science of behavior emphasizes the importance of reinforcement and the relationships between observable stimuli and responses. The role of the learner is to be active in the environment, and consequences that follow behavior determine whether it is repeated. The role of the instructor is to identify learning goals; by determining contingencies of reinforcements and implement a program of behaviour change; ensuring that the learner's input is considered. Inputs or pre-conditions to learning and environmental conditions serve as discriminative stimuli, whereby cueing which behavior is appropriate to perform. The process of learning not specifically addressed in this theory.

Cognitivism reinforces the acquisition of knowledge and internal mental structures and, as such, are closer to the ra tionalist end of the epistemology continuum (Bower & Hilgard, 1981). Cognitive theories focus on the conceptualization of students' learning processes and address the issues of how information is received, organized, stored and retrieved by the learner (Ertmer et al. 1993). Cognitivists view learning as an active process involving the acquisition or reorganization of cognitive structures through which humans process and store information. The learner is an active participant in the process of knowledge acquisition and integration (Good and Brophy,1990, Merriam and Cafferella, 1999, Simon, 2001). The cognitive approach discussed in this paper is the Meaningful Learning & Schema Theory. According to Ausubel

(1978), " the most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly". Knowledge is constructed by the learner through their interpretation and linking new information to knowledge previously acquired. Knowledge begins with observation and recognition of events and objects through constructed concepts. Meaningful Learning is a process that related new information relevant to the concepts contained in a person's cognitive structure. Concepts are mapped out through teacher directed instruction using materials for learners to understand the correlation between ideas, images or words and create new linkages to prior knowledge. Meaningful Learning &Schema Theory provides all the necessary details to understand how learners learn and what mechanisms should be implemented to facilitate learning that has true meaning and will be seen as useful as the learner gets older. Meaningful Learning is the process of learning new material or internalizing new information to what the learner already knows in a non-arbitrary and applicable way (Driscoll, 2014). Schema is a general knowledge structure for a situation or event and is used to process and organize incoming information (McBride & Cutting, 2018). Notably, Ausubel's meaningful learning has instructional implications due to its structure thus creating an impact on how teachers or instructional designers arrange their learning environments to facilitate true learning. Cognitive theories have been around for years , Meaningful Learning & Schema Theory is most suited to improve the mental structures of a learner so the long term memory can be activated and the encoding, organisation and retrieval of information can be consistent and structured (Driscoll, 2014). The schema theory is an information-processing model to describe this aspect of perception and cognition. The model assumes that a person receives information which is less than perfect in terms of its completeness, its accuracy, and its reliability (Bartlett,1932). The Schema theory therefore reinforces the importance of prior knowledge to learning and the use of

tools such as advance organizers and memory aids to bridge new knowledge to older knowledge stored in schema (Merriam, Caffarella & Baumgartner, 2007).

The Constructivist theory believes learning “is a function of how the individual creates meaning from his or her own experiences” (Ertmer et al, 1993). Constructivism can be traced back to educational psychology in the work of Jean Piaget (1896–1980) identified in Piaget's theory of cognitive development. Piaget focused on how humans form meaning in relation to the interaction between their experiences and their ideas. Early work in the field of behavior was conducted by the Russian physiologist Ivan Pavlov (1849–1936). Howard Gardner in his 1983 book " The Theory of Multiple Intelligences" suggested that people can be categorized by eight kinds of intelligences. Students tend to display a bias towards content that is appealing to their category of intelligence or interest. Wang, Farmer, Parker and Golubski (2011) referred to andragogy as an adult learner (Wang et al 2011). Adult learners tend to be intrinsically motivated compared to younger learners who may, but not wholly, be motivated extrinsically. The constructivist approach examined is Social constructivism. Social constructivism was developed by Vygotsky. Vygotsky adamantly denied the claim made by Piaget that it was possible to separate learning from its social context. Vygotsky's social constructivism theory views human development as a socially mediated process in which children acquire their cultural values, beliefs, and problem-solving strategies through collaborative dialogues with more knowledgeable members of society. Vygotsky's theory is comprised of concepts such as culture-specific tools, private speech, and the Zone of Proximal Development.According to the theory of social constructivism, social worlds develop out of individuals’ interactions with their culture and society. Knowledge evolves through the process of social negotiation and evaluation of the viability of individual understanding.

Implications for instruction

All instruction involves or requires a strategy or an approach (Davies, 1981). Kenneth Moore (2005) states that most instruction can be categorized into two basic approaches: teacher-centered and student-centered. The teacher-centered model caters to a whole class instruction whereas the student-centered model provides a high degree of individualization since it allows students to participate at different paces (Moore, 2005). Many reformers advocate a move away from the traditional, teacher-centered instruction, where students are passive receptors of knowledge, toward a more student-centered understanding-based (constructivist) approach (Smerdon, Burkham & Lee, 1999). The conceptual underpinnings for the teacher-centered instruction are based on the behavioural approaches which are characterized by children making connections between experiences and behaviour (Santrock, 2006). Many teaching-centered strategies reflect direct instruction. Some of these methods include lecturing, explaining, demonstrating, questioning and discussing and seatwork (Santrock, 2006).

According to Larry Cuban (1983), everything about the teacher-centred approach makes the instructor the sole focus of attention. It lends to the rather overt message that the instructor is the only source of knowledge (Cuban, 1983).

The student-centred approach makes a radical departure from the traditional didactic approach. By contrast, this approach is derived from the constructivist views of education, in which the construction of knowledge is shared and learning is achieved through students' engagement with activities (Kain, 2003). In a student-centered classroom it is not quite as easy to distinguish between teacher and student (Zophy, 1982). Moore (2005) postulates that the student-centred approach to instruction allows students to actively participate in their own learning experiences. "As students construct their own understanding of content, they develop a

personal feeling that the knowledge is their own. Moreover, student-centeredness implies a heavy emphasis on inquiry and problem-based learning , goal based learning, group work and simulations (Jacobsen, Eggen & Kauchak, 2006, p. 7) Put simply, student-centered instruction is when the planning, teaching, and assessment revolve around the needs and abilities of the students. The teacher shares control of the classroom, and students are allowed to explore, experiment, and discover on their own. This does not mean that the students are in control of the classroom, but rather that they have some influence in the decisions that are being made about their learning. Students are given choices and are included in the decision-making processes of the classroom (Brown, 2008, p.31). In short, the focus is moved from the teacher to the student (Santrock, 2006).

Tomlinson (1999) described tiered lessons as "the meat and potatoes of differentiated instruction." A tiered lesson is a differentiation strategy that addresses a particular standard, key concept, and generalization, but allows several pathways for students to arrive at an understanding of these components based on their interests, readiness, or learning profiles. Many examples of lessons tiered in readiness have three tiers: below class level, at class level, and above class level. There is no rule that states there may only be three tiers, however. The number of tiers we use will depend on the range of ability levels in the classroom since the instructor forms tiers based on their assessment of the students' abilities to handle the material particular to this lesson . "At its most basic level, differentiating instruction means 'shaking up' what goes on in the classroom so that students have multiple options for taking in information making sense of ideas and expressing what they learn it is not just "tailoring the same suit of clothes". (Tomilson,2005)

Radical behaviorism helps with instructional design by increasing efficiency and moving toward personal goals. Radical behaviorism helps in changing behavior through behavior modification, managing learning and behavior in instructional systems, and creating a personalized system of instruction inclusive of improving performance on organizational systems.

Ausubel's Meaningful Learning and Schema Theory can guide and influence instruction in that Meaningful Learning must be active, constructive and rational. Implementing this theory provides learners with activities through a harmonious environment that allows them to give their opinion, exchange ideas and debate. Teachers/Instructors must guide the cognitive process of learning and seek to activate what students already know and introduce them to new information. Meaningful learning, schema theory, can be further used for instruction by:

1.Introducing students to reduced or bit-sized chunks of content which follows the 'seven plus or minus two' principle (Miller, 1952).

2.Carefully selecting stimuli to avoid extraneous overload. This means that educators should avoid presenting students with visual, oral and aural sensory at once. Moreover, educators should avoid redundancy of information such as a graphic which follows text that explains the graphic (Hultberg, Colonge, & Lee, 2018).

3.Affording students opportunities to activate their prior knowledge – by doing this, information becomes more readily available and is less likely to be forgotten (Driscoll, 2014).

4.Creating a routine for students. According to Schunk (2011), as skills become more routine, there would be a reduced time needed for processing information (Schunk, 2011)

5.Giving students opportunities to practice and recall concepts so that concepts are not forgotten (Schunk, 2011)

Ausubel further suggests that instructors choose texts with "standard" arrangement so that they

conform to student expectations, encourage students to read titles and headings and point out the structure of particular kinds of texts; e.g., what are the common features of published research articles? Continually ask questions to determine what students' current schemata might be. The teacher must pay attention to student answers and remarks that may give clues about how they are organizing information; i.e., what schemata are they using? Identify students' current "theories" or algorithms.Use student errors as a source of information about their mental models.Use "think aloud" activities, since these help to uncover current models.Model real problem-solving for students. Students need to see that solving problems is not just a matter of plugging numbers into an algorithm; rather it is a matter of determining the kind of problem so that an algorithm can be successfully applied. Explicitly teach problem-solving strategies. Focus on processes, structures, and decisions, not answers.Provide a mix of problem types, rather than grouping problems of one type.

The definition for learning is changing because of "society's expectations about what students need to learn as well as the delivery mechanisms, or the "technology," available to serve that need." (Twigg,1994). " Twenty-first century learning is the accumulation of knowledge, work habits and soft skills, including digital literacy, critical thinking and problem-solving, that will help students lead successful careers in the modern workplace. Twenty-first century learning refers to developing learning, literacy and life skills as part of the classroom experience. Learning skills encompass critical thinking, creativity, collaboration and communication, which have been identified as essential for successfully adapting to modern work environments. Learning in the 21st century is being able to retrieve and use any information given to make a difference in behaviour.Twigg (1994) re-examined the way we as humans perceptualize learning in his article. Education is changing rapidly to the point where it is expected that the physical

school will no longer exist and syllabii worldwide will have to be changed to facilitate new learning. As we can see, COVID19 has really forced the world to see things differently in regards to how we approach the teaching and learning process.

Application of social constructivism theories in the education, dictate that teachers need shift and reshape their perspectives. Instructors now take on the student centered approach where the teachers are more "facilitators of learning." A good constructivist teacher is one who questions students' answers, whether they are right or wrong, to make sure the student has a good grasp of the concept and can use their knowledge to explain why they have answered the way they did. Additionally, instructors should further encourage students to explain the answers without regulating words or equations without explanations. They should also encourage students to reflect on their answers.Social constructivism teaches that all knowledge develops as a result of social interaction and language use, and is therefore a shared, rather than an individual, experience. Social constructivist learning attaches as much meaning to the process of learning as it does to the acquisition of new knowledge. It is then fair to say that under this scope, the journey is just as important as the destination.

Examples

Examples include teachers encouraging critical thinking and encouraging students to test them for viability. Instructors encourage errors resulting from the learners' ideas, instead of minimizing or avoiding them and then guide them to the desired outcome. Guidance and further encouragement by their instructors to perform open-ended investigations, working to solve problems with realistic and meaningful contexts. This activity enables the learner to explore, and

come up with either supporting or conflicting possibilities. Contradictions need to be investigated, clarified, and discussed.

Further examples may be observed when we acknowledge that “Learning is always going on; it is a process that begins at birth and continues in some form or other throughout our lives” (Lindgren, 1980, p. 14). In earlier times most theories of learning can be categorized as either cognitive or behavioural (Biehler & Snowman, 1982). These perspectives represent very different views on the complex process of learning (Gage & Berliner, 1998) and now acknowledge the constructivist contribution. Furthermore, Watson denied that hereditary factors had any effect on behaviour - a view which is referred to as environmentalism, (Ormrod, 2004). Human beings use schemes as they explore and function in the world. For example, a baby may use his or her scheme to find out whether an object makes a loud or soft sound when it is banged or how something tastes (Slavin, 2006). Piaget also stipulates that as children or individuals mature, they experience a process referred to as ‘adaptation’, where they begin to adjust “schemes in response to the environment by means of assimilation and accommodation” (Slavin, 2006, p. 32). Through assimilation, individuals can comprehend new experiences in terms of existing schemes (Slavin, 2006, p. 32). Accommodation refers to modifying “an existing scheme in light of new information or a new experience” (Slavin, 2006, p. 33) Piaget also emphasized what he referred to as the equilibrium principle. He deemed that people strive to maintain a balance between assimilation and accommodation as they impose order and meaningfulness on their experiences. A state of disequilibrium or an imbalance occurs when a person realizes that his or her current way of thinking are not functioning to solve a problem or to understand a situation (Slavin, 2006).

According to the Orton -Gillingham approach cognitive strategies and techniques of teaching and learning used to support students with a learning disability should include be language/sound based, multi-sensory, structured, sequential, cumulative, thorough and flexible. Further examples include use of graphic Organizers (word webs, concept maps, flow charts, etc.), first letter mnemonics- (ROYGBIV, BODMAS, Big Elephants, etc.) Peer tutoring by students who are who are strong but humble ,flashcards ,(- sight words, fun facts, symbols of Independence,) ,

summarization strategies, visualization (Draw me a picture) verbalization and chunking.

Constructivists and cognitivists view learning as the construction of knowledge, where a learner makes meaning of the world around them through their experiences (Elliott et al., 2000, p. 256). This construction of knowledge takes place through a series of actions (process). "Technology plays a pivotal role of learning in the 21st century instructors and learners alike must adapt to new ways of instructional design using technology". Driscoll (2005) agreed that the greater use of computer technology has given future Instructional Designers the ability to create complex graphics that allows students to enhance problem-solving skills in various subject areas. Covid 19 has altered our interaction with technology and how we accommodate new learning methodologies. Under this umbrella it is fair to state that the adoption of a multimodal approach based on the learners' preferences fosters a desire in people to learn. Blended learning modes provides a comfortable learning experience whilst challenging learners to adopt new ways of learning to deepen their knowledge, understanding and experiences. (goal based learning and problem based learning in the classroom. Furthermore, the Covid-19 pandemic, has taught instructors and learners alike that we must adapt to new ways of instructional design using technology. In addition to the adoption of technology for learning ;social constructivism

demands further development to garner greater collaboration, critical thinking, problem solving and computer literacy skills as we move forward.

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