

Learning Theories: The Basics to Learn in Medical Education

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The word “theory” is quite commonly used to represent the knowledge or cognitive component in our day-to-day work. The various learning theories in the educational field indicate that it is more like a set of principles/ideas that provide an explanation of working of a concept or basis of practical happenings or connections between various principles in a model or working together. Its like the script of a movie, i.e., script like a theory provides an explanation of happenings and movie is like actual happenings. Hence, movie director can ask questions like why I should make a movie on this script. The script should be able to explain why things would work, what are various connections, even add some evidence to show that these things do work, etc.

Several theories have been proposed for learning. There are number of concepts in learning which are essential components for an understanding of these theories. Sometimes, there is confusion between concepts, principles, and theories. Most of us are familiar with adult learning principles or andragogy. It is also one of the issues most discussed as the theory behind adult learning. It looks like a theory based on the fact the discoverer put it forward as a theory different from pedagogy. Hence, it was taken by people easily as something different from pedagogy, i.e., a different point of view for adult learning as compared to kids. However, if you rethink about how kids learn, they also learn what is relevant. The learning topics for adults are always not so free choices, for example, in a medical undergraduate class the students learn as a group based on a certain topic, here an individual student has no choice to learn something else but that topic only. Similarly, not all adult learners are equally intrinsically motivated, and this adds another gray area in adult learning.[1,2] The literature says there is modest evidence that supports andragogy. Adult learning is more like a concept/model but not actually a learning theory.

Similarly, experiential learning and work-based learning are more like concepts but not theories. In experiential learning, learning is based on experience. It says that there is a concrete experience followed by reflection on it, then abstract conceptualization and further experimentation or improvement.[3] This is again more of a model than a theory. However, the learning never happens in the real world in such a straightforward manner. Hence, experiential learning does provide us different aspects of learning but is not a theory *per se*. Interestingly, these principles (adult learning, experiential, workplace-based) do reflect some of the learning theories, for example, work place-based learning has elements of sociocultural theory, experiential learning has elements of constructivism and humanism theories. This fact again emphasizes that these are concepts or principles only that can be part of various theories but are not the learning theories *per se*.

Let us have a look at the learning theories in brief. Behaviorism theory says that learning is a “change in behavior in the desired direction” that happens due to using various techniques like reward and encouragement for correct behavior; repetition, feedback and reinforcement for corrections needed in behavior so that corrections are done and sustained. This is in response to an external stimulus. This is based on assumption that number of internal motives cannot be measured hence behavior which is observable can be studied. The system relies on continuous repetition and “skill and drill” exercise. This happens in small chunks and builds up leading to change in behavior.[4,5]

The second theory, cognitivism theory represents internal cognitive restructuring due to changes in individual's schemata (knowledge). The learner uses cognitive tools, such as insight, information processing, perceptions, and memory to facilitate learning. It involves acquiring, storing, and retrieving information. The learner develops capacity and skills for effective self-directed learning. The teacher facilitates the learner about “learn how to learn.”[6,7]

Constructivism theory explains how new understanding develops by building on individual's existing understanding. Learner constructs knowledge based on their experiences and that how they do so is related to their biological, physical, and mental stage of development. Learner assimilates, accommodates, and adapts knowledge to develop new understanding. The learning process involves construction of meaning from experiences through critical reflection.[5]

Sociocultural theory assumes learning to be a social process where learning happens in a social context. The learner is involved in apprenticeship in the community practice or as a full member in the community. Learning is in relationship between people and environment. An increasing amount of medical education occurs in workplace contexts; hence, this learning theory can be an appropriate explanation in this setting.[1,5]

Critical theory explains how to change society to make it equal for all by encouraging participation of all learners especially those who are marginalized or oppressed. Humanism theory says that learning is more related to one's own growth as a doctor and human being. During this learning, there are challenges like exploration of one's emotions and changing identify of one's self. The goal of this approach is for the learner to become autonomous and self-directed. Self-directed learning is one of the most important principles of this theory.[5]

There are a lot of similarities as well as differences between these theories. In a way, they represent learning in context with stage of learner and situations. They complement each other or are a part of evolutionary sequences in learning, for example, as learner memories and understands (cognitivism) he/she tries to build up connections between various issues (constructivism), during this process learning is influenced by context (sociocultural), some behavioral changes might have happened by this time (behaviorism). This leads him/her to think about changes in society (critical) and he/she might start thinking about one's growth as doctor as a good human being (humanism). Even at these stages, more behavioral changes might happen.

In almost all of these theories, learner is actively involved and hence, this seems to be a common factor. Active involvement may be reflected in various ways such as trying to understand, discussing, processing information, working in community, modulating feelings during learning, and during corrective actions. The last example, i.e., corrective actions based on provided feedback is in concern with behavior theory. Although it is mentioned that learner is passive in behaviorism theory, it is difficult to understand how the learner can be passive when he/she is

using feedback to correct their responses. The learner needs to be actively involved while correcting responses. Similarly, comprehending/understanding seems to be related with all theories as without understanding it is very difficult to construct, and think about sociocultural issues and make justice in society and to change society for betterment. The cognition, i.e., knowledge component is involved in all theories, however the extent and context is different.

Although there are overlaps in these theories, still they are individual characteristics in these theories which make them unique as single theories. The humanism theory is quite specific for thinking about emotions and one's growth as human being; critical theory is more inclined for justice and equality in the society; learning through involvement in community is quite specific for socioculturalism theory.

The role of teacher also changes in these theories, e.g., in behaviorism theory the teacher should have a good knowledge of subject and be active. Teacher arranges the appropriate learning environment to elicit correct responses. In cognitivism theory, a teacher structures content of learning activity. In constructivism theory, teacher acts more like a facilitator and guides the learning of the students. Therefore, the behaviorism theory is teacher-centered; cognitivism, humanism, and constructivism theory are learner-centered.

These theories can provide rational basis for the selection of specific teaching-learning methods/strategies, framing learning objectives, and select/design evaluation strategies. Remember that learners have different interests, different learning preferences, and different backgrounds. Integrate various positive aspects of these theories in the classroom environment to optimize learning.

After discussing various learning theories, let us see how these can be used in various scenarios. In a clinical and communication skills course, the behaviorism theory would be appropriate, as during this course the correct responses in performing skills can be learnt slowly over time as students are being provided feedback, rewards and encouragement by teachers. For clinical skills, their response can be corrected in small chunks and repetitions are provided so that they are eventually able to learn correct skills. Behaviorism emphasizes on the mastery of prerequisite steps before moving to subsequent steps; this learning orientation is aimed at reinforcing correct skills. In skills learning, teachers demonstrate specific desired behaviors, learners observe the manner or technique in which a desired skill or behavior should be performed, and some scoring rubric (checklists, rating forms, and direct observation) can be used to assess performance and provide reinforcement. This learning theory is most advantageous when a change in behavior is the desired outcome of an educational intervention.

For a basic science course, you can think of cognitivism and constructivism theory. If basic sciences course which is more conventional and happens more in isolation from clinical sciences then cognitivism looks appropriate as they need to process and retrieve information, use new knowledge, improve the schemata with new knowledge. This theory can facilitate the acquisition of knowledge and the development of learning skills that are applicable in other learning situations regardless of the topic or context.

However, if the basic sciences course is dynamic and involves the integration with clinical sciences the constructivism seems more appropriate as they need to apply this knowledge to clinical cases. The learner needs to understand the concepts in basic sciences and make

connections with its applicability in clinical sciences. There should be development of construction of understanding the relevance of learning basic sciences.

For a community-based education program sociocultural theory would be better here as it provides apprenticeship in the community and experience of working as part of community. The learning process can be viewed as an interaction with and observation of others in a social context. Physicians usually learn in the social context by observing each other's techniques and behaviors. The learner can role model the good health providers and rehearse it and do it when situation demands. The unique aspects of this learning theory combine role modeling behavior with cognitive learning to deepen the learner's understanding of how, why and for what purpose the role model performs a specific task in a certain way. The teacher is responsible for modeling new roles, guiding behaviors, and providing learners with opportunities to practice these new roles and behaviors.

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