Review
Relevance of Educational Theories in Medical Education

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Citation

Submitted: Oct 29, 2019; Accepted: Jan 18, 2020; Published: Feb 28, 2020

Abstract: In modern times, learning in the medical profession is taking place on a large scale in various settings such as classroom, patient’s bedside, simulation laboratory and community. It is important for a teacher to understand how learning can take place in these settings and ensure that the desired learning outcomes are achieved. The purpose of the present article is to review the explanations of the various ways the learning can take place in various settings and explore where and how educational theories can help us in planning the student learning. The understanding of educational theories has implications for session planning, planning an educational research and programme evaluation. Thus, the teachers’ subject knowledge and their assumptions on how learning could take place, forms the base for effective student learning, educational evaluation and research. These theories were developed over the period of years and there is no single theory which alone can explain the process of learning in all the situations. Hence, the teachers should be able to make a choice of educational theory to explain the learning process for the given teaching-learning activity. The faculty should develop the practice of considering educational theories while planning their teaching assignment and educational research.

Key Words: Medical Education, Theory, Student, Learning.

Context of past and present education system
In Vedic times, India’s teachers were gurus in Gurukulas located in remote forest areas. The education was focused on “holistic value-based learning through gaining perspectives on material and moral, the physical and spiritual and the perishable and the permanent” (pp. 3).[1] It was believed that such holistic learning could take place in a setting close to the nature under the supervision of knowledgeable and parent-like person called guru. The education was seen as a moral and sacred duty. Bhatt (2017) in his extensive review of the Upanishads – ancient Indian scriptures, found that various teaching approaches such as lectures, questioning, debates, visualization, field visits, experimentation, internalization, realization and refinement were used for teaching in different situations, indicating that they had a thought on various ways to facilitate learning in various settings.[2] The system of children’s education was based on peer learning and teachers had to integrate theory and practice by setting an example to students in daily life activities.[1] Later, the education in India started getting organized under various forest and temple universities and finally it got institutionalized under universities.[1] Thus, the context of learning slowly shifted from the natural settings to more organized and controlled environments.

In recent times, learning in the medical profession is taking place on a large scale in various settings such as classroom, patient’s bedside, simulation laboratory and community. The present medical education system has been influenced by the political changes leading to the shifting purpose of education. The duality on the purpose of education (knowledge to be gained by self-reflection – rationalism, or knowledge to be acquired by scientific methods from the outside world – empiricist) and how the learning should take place, remains a matter of debate even in current times.[3] Apart from the fundamental question on the purpose of education, the question on how learning takes place and what are the different pathways to learning, led to the generation of lots of explanations for it. The purpose of the present article is to review where and how educational theories can help us in understanding the student learning with suitable examples.

In the modern setting, medical students learn in controlled environments such as classrooms, laboratories, hospitals, simulation laboratories, peripheral health facilities, and local communities. As practitioners, they have to work in teams at real work settings such as hospitals or communities for the common goals of patient/community health. The modern medical teachers have a big challenge of aligning the context of education to the future practice setting. In order to align the context of learning and practice, the understanding of how the desired learning could take place in different situations by using different teaching-learning approaches is crucial to plan educational activities. Mostly, the novice young medical teachers learn to plan and teach sessions through imitation of their senior teachers, without understanding the various theoretical assumptions about expected learning in the session.
This has an implication on session planning and its delivery. The teachers’ subject knowledge and their assumptions on how learning could take place, forms the base for successful teaching-learning session.

We now use various teaching methods such as large group teaching, small group teaching, clinical and community postings etc., for teaching medical undergraduates. In order to ensure that students learn what they are supposed to learn in the given situation, a teacher should have an approximate idea of what is going on at thinking level inside the head of learners’, who have different levels of understanding, motivations and diverse backgrounds. The various educational theories which have evolved over the period of time might help teachers in understanding of learning process in a given situation, guide them in making decisions about curriculum and classroom management for meaningful learning outcome. In other words, as in research, we have assumptions for designs, methods and statistical tests; in the same way, educational theories guide us on the assumptions about learning. Notably, these theories do not offer any solutions to problems or how to teach, but they offer explanation how learning could take place in the given situation and context.

**Purpose and approach to Education**

Aristotle believed in the empirical approach to education where knowledge is assumed to be constructed by the use of scientific methods. Here the purpose of the education is to produce the skilled human resource through vocational training for the benefit of the society. It led to ‘apprenticeship model’ and ‘rote learning’ of the facts, where education is seen as a process of transmission of information rather than transformation.3 India’s current educational system is predominantly based on empirical approaches to education, which is slightly in contrast to its ancient education system, where the philosophical values, practical skills and cognitive skills were valued and integrated together. Like the ancient Indians and the Greek philosophers, Plato believed that knowledge and truth can be discovered by self-reflection. This rationalist theory of Plato formed the foundation for many modern and popular educational theories such as Thorndike’s stimulus-response learning theory, Piaget’s theory and Vigotsky’s theory. According to Darling-Hammond et al (2001), “theory is a way of thinking and a model of how things work, how principles are related, and what things to look for. Theorizing, which is open to empirical investigation.”[3] Unlike the ancient sciences where theory is based on objective facts and measurable phenomenon leading to generating valid and reliable evidence, theory in the field of education tend to be socially constructed in the given social and cultural context. Educational theories tend to evolve over the time with changing social values and build upon the previous ideas to offer better explanations of the learning process. As theories in education are based on the perspectives to explain learning in multiple situations, no single theory can inform decision-making in education.

**Educational Theories and its relevance to educational practice**

Edward Thorndike’s stimulus-response learning theory (1874-1949) believed that learning of a behaviour is a product of positive reinforcement (e.g. Reward to students) for a desired behaviour.[3] Learning is seen as a change in behaviour of the learner. According to Thorndike, who was the first formal and modern education psychologist, learning is a product of trial and error, which forms the connections (bonds) between the stimulus and response. Hence, Thorndike’s theory is called as ‘connectionism’.4 His work was based on observations in animal experiments. He denied the influence of any mental process in learning. This behaviourist theory explains the formation of habits among learners and guided the development of structured curriculum, workbook and instructional approaches.[3] This theory of behaviourism fails to explain the learning of complex tasks such as thinking and problem-solving in patient care which are often required in health professional education. Later, Jean Piaget (1896-1980) – Swiss Psychologist proposed the idea of developmental cognitive process, where the students are assumed to progressively construct and create knowledge based on their experience.[3] The act of learning is seen as the process of connecting new knowledge with the pre-existing knowledge.[5] Learning is seen as a change in a person’s way of thinking through mental processing of the information. This theory is based on three components – ‘Schema’ (building blocks of knowledge), the processing of new knowledge by accommodation and assimilation and stages of cognitive development.[3] This theory helps to understand how knowledge of basic science can form the basic building blocks upon which the knowledge of para-clinical and clinical skills can be progressively developed. The prior knowledge acts as a base for the development of new cognitive understanding. This ‘cognitivism theory’ helps us to understand the cognitive development of learners over the period of their educational course of medical students from first year student to the final stage of development as a health professional.

Vigotsky (1896-1934) – Russian high school teacher further extends the idea of Piaget by proposing the concept of ‘Zone of Proximal Development’ (ZPD).[6] Here the learning is seen as continued development of understanding in the given social and cultural context.[7] He proposed that the students learn best when they go beyond their own experiences and interact with teachers and peers. Zone of proximal development consists of what we can learn by interacting with peer/faculty/community/patients. His work explains how active learning can take place in the settings of ‘community of practice’, cooperative learning, interactive learning and mutual interactions.[3] This emphasize the importance of interactions in educational settings. Communication between teachers, other students and the community help the students to validate their understanding. One of the recent variants of lecture such as flipping classroom, where the roles of teachers and students are flipped to ensure their active participation and facilitate student-teacher and student-student interaction.[8] In Inter-professional education (IPE) and practice (IPP), we can increase our ZPD by interacting with other professionals for better patient outcomes. In Community-based Medical Education, we can enhance the learning of students by increasing their ZPD through networking, which facilitate mutual interaction among peers, with teachers and community interactions. As a part of continuing professional development, the doctors learn from each other in workplace settings. It may be through peer review, consulting each other, joint ward round and exposure visits.[9] The conversational learning through web-based interaction platforms such as Listserv, Chat rooms and virtual discussion forums etc. is assumed to lead constructivist learning among the participants.[10] Densnik (2016) argued that scientific reasoning and clinical diagnostic reasoning is called on constructivist theory, where the initial phase consists of assimilating sensory information such as history taking. The next phase is to develop the hypothesis or differential diagnosis. Later, there is more
In addition to clinical teaching, constructivism is useful in small group teaching where the facilitator can evoke responses from the students and build the group's understanding of an issue or topic. Overall, education being a social science, most of the decisions are based on different perspectives, dominant opinions and consensus building among experts. ‘Different perspectives mean the different ways people look at the world.’[11] Needless to say, most of the educational theories are the product of constructivist thinking. In addition to educational theories, leadership, and management theories are also the product of the constructivist thinking of different experts over the period of time. Understanding of leadership and management theories are useful in planning a curricular change during the process of regulation and accreditation of a medical college. The educational activities such as teaching and research which are based on appropriate assumptions tend to be focused, relevant and effective. Thus the educational training for health professionals in education, leadership and change management is based on constructivist paradigm, where the leader has to accommodate the different views of the team members to arrive at a meaningful decision at the end and facilitate change through collaborative team-effort.

The ‘critical theory’ defines learning as a process of liberation of thoughts from oppressions and focusing critique on pressing issues, aiming to bring equity and social justice. It sees learning as a moral and ethical process of change. The purpose is to collectively identify the problems in the community and facilitate a change through collective efforts. This approach envisions empowerment of participants for the future sustainability of the change.[12] It was inspired by Paulo Freire’s (1968) book on ‘Pedagogy of the Oppressed’ and thus aims to empower the actions of poor and marginalized people.[13] Here the purpose is not only to understand the social issues, but to facilitate a change in the desired direction addressing the conflicts and empower the marginalized community. Like constructivism and socio-culturalism, critical theory acknowledges the role of social context in the knowledge building and takes the purpose of learning forward to bring a desired change in the society. It has been argued that education being a political act where knowledge is socially constructed; critical thinking should not be simply cognitive, but moral, social and political. This theoretical approach is seen as better than others as it helps to contextualize the curriculum and it is more democratic.[14] This theory can form a philosophical base for community-based-oriented medical education, where teachers help the students to understand the community’s health problems and help the students to understand the various ways to involve community in problem-solving. This philosophy can guide a medical college to ensure social accountability, where the medical college aligns their curriculum and research to local health needs and develop partnerships with local institutions for their empowerment and sustainable development.[15]

In recent times, the humanism theory where the learning is seen as a development of one’s own intrinsic potential to fully function as a human being seems to revisit the purpose of ancient Indian and Greek education system. Abraham Maslow’s work on ‘hierarchy of needs’ and Carl Roger’s ‘theory of personality’ contributed to the development of this theory.[14] Here, the learning is seen as an emotional and cognitive process of change of individual understanding, ultimately leading to the full manifestation of one’s own hidden talents and potential.[14] The central focus of humanistic theories is self-actualization, personal growth and synthesis of the living in the present and openness to experience.[14] This is crucial for individuals overall development as a professional. This theory introduced ideas such as giving equality in the relationship between students and teachers, and encouraging the students to discover their learning approaches. There is a shift in focus from how to teach well to how students can learn well.[16] The teacher is seen as a facilitator who support the student learning. This expectation is well reflected in small groups teaching under various curriculum models such as integrated, problem-based and six-step models. These new ideas which are now advocated in current educational systems are seen as a shock to the followers of traditional educational approach.

In summary, theories help to think of the most suitable educational framework for the given curriculum, educational research and teaching-learning approach. Different theories explain learning in different situations. Hence, the curriculum which incorporates multiple teaching methods based on various educational theories tend to be educationally effective. These theories have evolved over the period of years and there is no single theory which alone can explain the complex process of learning in all the situations in health profession education. Hence, teachers should make a choice of educational theory to explain the learning process for the given session and context. The choice of theory to explain learning would also depend on the purpose of education in the given context, expected learning outcomes, knowledge levels of the learners, teaching and learning culture, types of curriculum and the context of learning. This will help the teachers in their self-reflection and improve knowledge building in students’ learning. The teachers should be aware of the factors such as the purpose of education, type of curriculum, knowledge levels of students and capacity of teachers. The application of these theories should reflect in planning of teaching sessions such as large group, small group, clinical and community-based teaching. The faculty should develop the practice of considering educational theories while planning their session and educational research.

References