Medical Education theories

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Introduction

The way people learn, has intrigued scientists and scholars alike. The definition of learning remains elusive and several theories have been formed to explain the process of knowledge acquisition and learning (Ramsden, 1996). Given that there is no uniformity in the way scholars understand learning, numerous educational theories provide some insight as to how people actually learn. Each theory is the result of various epistemological, philosophical social and personal beliefs and attitudes of those who have formed it. It is intriguing to see that these theories are so diverse ranging from neuroscience to social construction of knowledge. In reality, all learning theories are simply different lenses through which learning can be understood (Mann, 2004). As a result, a neuroscientist's approach will focus on the processes of the neural cells and the formation of stimuli that release certain neurotransmitters that will trigger certain cognitive responses. In contrast a social approach will mainly focus on how the social interactions play a pivotal role in the acquisition of knowledge. Educational theories cannot be understood in isolation, deprived of their philosophical or epistemological underpinnings and they are not a panacea, they are tools that can be used by educators to ascertain that learning is achieved.

It might be interesting to compare educational to scientific theories. Researchers often fail to make their philosophical base explicit – or worse, they are still themselves unaware that they have made methodological decisions by default. Any approach to research is based on often contentious philosophical assumptions about these matters. A number of different assumptions are made in research depending on the paradigm that is adopted by the researcher, these inform and shape the views held regarding the research and in turn impact on the ontological, epistemological and methodological choices

made. Kuhn (1970) argues that scientific theories are always influenced by the prevailing social and scientific ideologies which shape the ways in which knowledge is organized. He rejects the rationalist view of scientific development and asserts that scientific theories are always influenced by the prevailing social and scientific ideologies or ways of organizing knowledge. It is intriguing that educational theories seem to follow exactly the same pattern. Moreover, educators use the theories for achieving learning, but on the other hand, many educators may be unaware of the educational theory they are following, and make pedagogical assumptions, where no such assumption may exist. If the educator remains unaware of his preferred learning theory, he may be misled in his/her decisions during every educational episode.

There is also little doubt that these educators who know the learning theories tend to be faithful in a specific educational approach. They tend to apply the assumptions of the same learning theory in every audience they encounter. Important as this may be, there are certain limitations that each teacher needs to bear in mind when applying any educational theory. It appears that one size may not be appropriate to all and as a result, the experienced educator needs to understand that each learning theory has specific and more importantly predetermined applications and can only be addressed to a specific audience (Ertmer, 1993). Therefore, all teachers need to know the assumptions of every educational theory and be prepared to swiftly switch their educational approach accordingly. In reality, true educators need to be able to switch roles and leave their comfort zone, should the need arise. The interwoven relationships in the educational theories can be seen in figure 1.

Behaviourism, the end of an era

Behaviourism drew its assumptions from the work of scientists, such as Pavlov, Thorndike, Watson and Skinner. All of them advocated that learning can be understood as conditioning and is the result of a conditioned stimulus. Skinner added the element of operant conditioning and the use of positive and negative reinforcements. All of them used animals for their experiments in highly controversial settings. Education was greatly influenced by these experiments and their echo can still be heard today in various settings.

Behaviourism is one of the longest established educational theories and has been used extensively in education in general and it is still widely practiced in medical education (Mann, 2011). Behaviourism is concerned with observable behaviours and is often criticised as being reductionist, as it suggests that human actions can be explained in terms of behavioural responses. There have been many critics of behavioural approaches to teaching but there are also many examples of behavioural techniques still being applied, examples include setting behavioural objectives, giving rewards and prizes and using repetition as a reinforcer (Ertmer, 1993).

The main learning principles assumed by the behaviourists' approach, is that learning should be divided into small steps, through task analysis, behaviour can be shaped through the use of reinforcements, either positive or negative, feedback should be provided immediately and that accuracy in behaviour is necessary. As a result, behaviourism aims at shaping people who follow the patterns of the dominant cultural ideology. Behaviourism's assumptions are apparent in procedural skill teaching in medical education (Barelli & Scapigliatti, 2010).

Humanism, the tradition that binds them all

Humanism is not so much a theory but rather an emphasis in education. Its emphasis has been visible in the educational curriculum for many years. 'Renaissance humanism', associated with luminaries such as Erasmus, placed humanity at the core of ideas and beliefs about life and human nature. However, much of humanist theory in education derives from the 20th century humanist psychology. The prevailing metaphor for learning is that of self-determined growth, whereas significant emphasis is given to autonomy, development of the individual, active search for meaning and the social setting in which students operate (Lemon, 2003). Humanism in education can be seen as a reaction to the industrial metaphor, which dominated educational thinking in the first half of the 20th century. We see in behaviourism, for example, the introduction of an input-output model of education, which wrongly, according to humanists, prized efficiency over personal, social and creative aspects of education.

Taking humanistic principles seriously, education moved from the view of human relations to the more personal actualization. So the humanist tradition, changed from determinism to self-determination, manipulation to self-responsibility, analysis to synthesis and prediction and from control to empathy, liberation and understanding (Bridges, 2004; Wilber, 1995). One of the landmarks of humanist psychology was Maslow's book (1970). Maslow essentially suggested a view of education, which stressed humans achieving their potential and aspirations. It required educators to take account of the psychology of the whole person, recognize people's higher nature and dignity as well as their basic needs in learning and teaching. He famously set out a hierarchy of needs that teachers should try to nurture in order to motivate learners. It had a huge impact on how teacher's viewed education and educational problems. Maslow presented a view of learning and learners that seemed to provide the key to good teaching.

Critics of humanism in education argue that, despite its plausibility, it lacks an evidence-base and has ideological pretensions (liberal-left). Humanist concepts give a warm glow, but tend to be fuzzy and ill-defined. Humanism generally assumes an optimistic view of human nature, yet teachers fail to motivate some learners and others abuse the freedom to learn. However, despite the criticism it has received, humanism changed the educational perceptions and moved them to a more human and less stimulus based frame.

The different perspectives of cognitivism

In 1959, Noam Chomsky provided a critical review of Skinner's work and challenged the behaviourist approaches to studies of behaviour and language that were prevailing at the time. His influential works contributed to the cognitive revolution occurring in psychology and education, and coincided with the development of work around artificial intelligence. Ormrod (1999) identified that cognitivism is closely related to other theories such as constructivism and contextual views; however, the main focus of the theory has been the Information Processing Theory. Cognitive psychology has developed gradually through the work of a number of theorists and is now the predominant perspective within which human learning is described. The mind is constantly seeking to interpret and make sense of everyday life and every day experiences; as a result we constantly make up all sorts of interpretations based on our perceptions of activities, accounts and experiences.

Gestalt theorists disagreed with the reductionist approach that behaviourism brings to learning. For the Gestalt school, the whole is more than the sum of its parts. So for example a well-known melody can still be recognised if it is played in a different key, at a different tempo or on a different instrument. Much of the Gestalt work is discounted now, but some has been taken forward and used to inform

group dynamics and Gestalt therapy (Woolfolk, 2004). Vygotsky added a social perspective on cognition suggesting that learning is not an individual, isolated activity, but it is rather a social process, a view that was also adopted by constructivism. Interaction with other learners, or support from those who are peers, or those who have themselves only recently mastered some knowledge, is beneficial to all learning experiences (Nicolopoulou, 1993).

Thinking skills follow a strict hierarchy for the cognitivists. At the lowest level learners are able to discriminate and identify item differences. Concrete intellect allows learners to identify and classify objects, for example by size and colour. Defined concepts require learners to define more abstract concepts such as justice. The higher order thinking allows the learner to appreciate a variety of rules and the regularity, or otherwise of their use in various settings (Gagne & Driscoll, 1988). Cognitivism has gained acceptance in the educational community in designing lesson plans and managing the learning environment efficiently (Regehr & Norman, 1996). That careful planning of the educational episode aids perception, rehearsal, semantic encoding and retrieval (Bigge & Shermis, 2004).

Implications of Constructivism

Constructivism overturns the view that education is about transmission of knowledge, skills and attitudes from those who possess them to those who do not. As the metaphor implies, education must actively involve learners themselves in the construction of knowledge. Constructivism is not only concerned about knowing, it has a fundamental influence on concepts of learning and teaching that will be worth exploring in more detail (Fenwick, 2000). Construction of knowledge is functional and reflects multiple perspectives. Learning occurs in meaningful contexts and is mediated by tools and signs. Constructivism is not barren from the social

element. Social/dialogical context influences what is learned and what will be learned and as a consequence the learner is perceived not in legitimate peripheral participation, but as a full member of a learning community (Swanwick, 2005). For constructivists learning is reflexive and cannot be perceived without self-awareness of the learner's own learning (Woolfolk, 2004).

The learner can only rely on his/her senses for the acquisition of knowledge. Construction of the world through the senses appears to be unique for each individual (Pugsley, 2011; Colliver, 2002). The instructor is given a more peripheral role in constructivism, as she/he is there to facilitate, while his/her students construct their own knowledge. In order to achieve successful facilitation, the teacher should anchor learning to authentic problems and tasks, designing the tasks that reflect complexity of context (Twomey Fosnot, 1989). For the constructivist instructor, the learner is given control of processes used to develop any solution to the given task. A pivotal role of the teacher in this setting is to provide challenges to learners' thinking, enabling the learner to develop his/her critical thinking skills. As a result, nothing should be taken for granted, as all concepts are subject to critique and scrutiny (Mathews, 2002). In this concept, knowing is no longer a product, it becomes a process for each individual learner.

Teaching is not only concerned with experience creation and creation of contexts that help the learner acquire knowledge, but it is also structured so that it can be easily understood by the learner and facilitate extrapolation or filling in the gaps (Colliver, 2002). Consequently, people are more likely to remember what they have discovered, as knowledge is seen as both invention and construction for this theory (Zemelman, 1993).

Personal implications: reflections of the social burden of theories

Each of the 3 educational theories has its applications and it may be too premature to dismiss any of these theories as obsolete (Ertmer, 1993). There are several experienced educators who advocate that sensible use of the behaviourist tools can result in effective learning. The epistemology that lies hidden in all of these theories and in the social implications of cognitivism and constructivism should not be overlooked in our attempt to incorporate the theories into practice.

All instructors, no matter what the level of education they instruct and possibly no matter which discipline they instruct, should be able to understand and sensibly use these theories as tools to facilitate knowledge. In reality, all theories have tried just that, to understand how people learn and even if all of these theories have received criticism, one should bear in mind that they were constructed as theories; their assumptions are left to the individual teacher and should be used in the given sociocultural setting, the educational episode occurs.

Given that the theories reflect the sociological milieu in which they were created, educators need to understand that no theory can be perceived deprived of its "capital culture" (Bourdieu, 1977). It might be interesting to compare the social implications of social reproduction and social transformation to the formation of the learning theories. Each theory is a constellation of beliefs and ideas that represent a given trend in scholars who in turn reflect the transformation of the society from one system of beliefs to another. There appears to be a certain degree of determinacy and causality in the construction of these theories. As society changes, so does our system of values and as a result, scholars reproduce the current notions of the dominant capital culture to theories. From a positivism point of view, theories are not truly scientific unless they are falsifiable since it is not possible to prove something is right in every circumstance; a theory, as a result, is held to be true only until it can

be shown to be false. Reality is a personal experience and is created socially through interaction and self-interpretation; the same applies for the different learning theories.

In conclusion, for the author of the present manuscript, it is essential for all educators to know and practice all educational theories, they are comfortable with. Each theory is an instrument that has specific assumptions and they should be perceived as such. The reality of knowledge acquisition may well be in the combination of these theories and several learning environments have used this combination with remarkable results. I tend to agree with this notion, even if I define myself as a constructivist, I am willing to employ behaviourist assumptions, such as positive reinforcement to my educational activities. If learning theories as seen as instruments and not as the absolute truth, then each educator can use some of their assumptions to achieve the maximum learning outcome for his/her students.

Figure 1. Concept map of learning theories
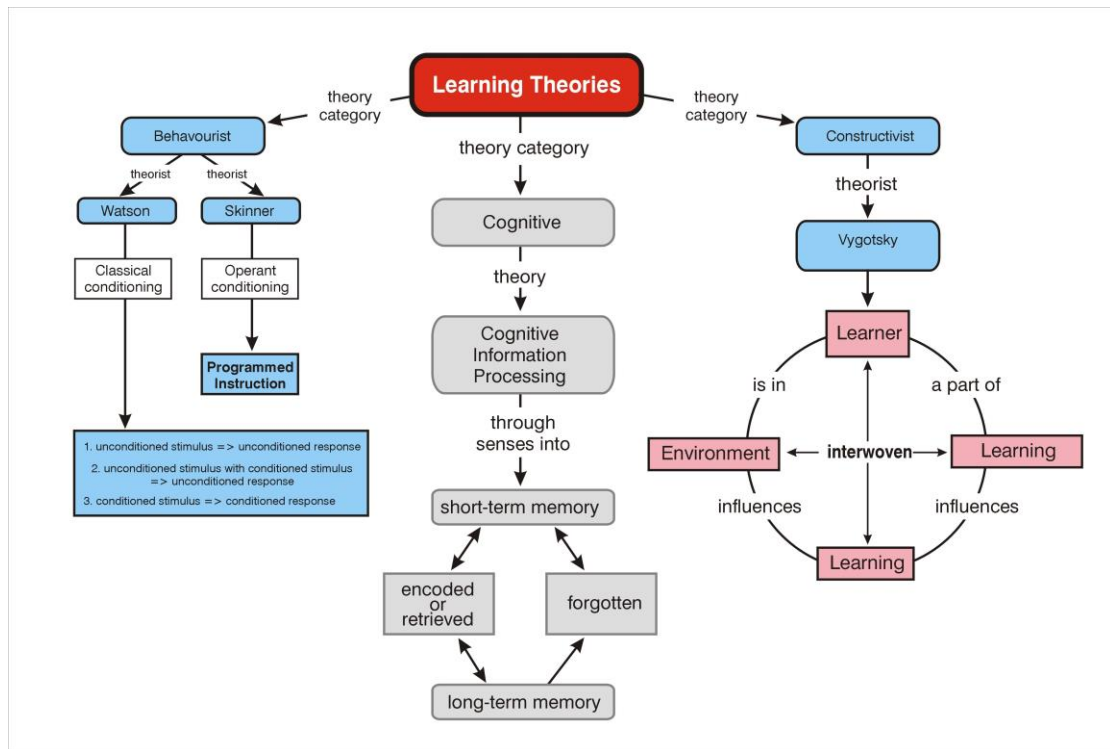
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