THE RELATIONSHIP BETWEEN LEARNING THEORIES AND THE USE OF TECHNOLOGY IN TEACHING AND LEARNING

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ABSTRACT

Several educators developed theories describing the manner in which people can learn better so as to enhance understanding and to have good retentive memory. This leads to the discussion of the relationship between learning theories and the use of technologies in teaching and learning. Thus, this chapter discusses the relationship between the constructivism and behaviourism learning theories with technology in teaching and learning.

Keywords: behaviourism, constructivism, and technology

INTRODUCTION

The goal of teaching is to improve student learning by maximizing opportunities for learning in every lesson. Such improvement reduces wastage of university resources such as time, effort and money by producing students with the right skills and knowledge that delight the employers. The concepts of teaching and learning are most central to education. Mustapha (2017) defined teaching as the vocation of a teacher to impart knowledge and guidance. Thus, teaching is an attempt to help someone acquire, or change some skills, knowledge, ideal or appreciation. One of the cardinal objectives of teaching is to assist the learners to develop physically, intellectually, emotionally, morally and socially in a manner that he or she will be able to exploit his potentials maximally.

Learning can be regarded as any relatively permanent change in behaviour, through adequate self-activities, which occurs as a result of practice or experience. The change can be the acquisition of new ideas, skill and attitude. Learning is a change in behaviour due to experience. It is a process by which behaviour is initiated, modified or changed. It is the process by which we acquire and retain attitudes, knowledge, understanding,

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skills and capabilities that cannot be attributed to inherited behaviour patterns or physical growth. Ogwo and Oranu (2006) described learning as the process by some exercises facilitates the student to gain experience that leads to influence prospective behaviour; provided that the characteristics of the change in behaviour cannot be explained on the basis of negative response tendencies, maturation or temporary states of the learner. They further outlined some basic facts underlying how individual learn in technology programmes, it includes the followings:

a. We learn greatest when we are ready to learn.
b. The more often we use what we learned, the better we perform or understand it long disuse can result in decay.
c. Learning something new is made easier if the learning can be built upon something we already know.
d. Learning takes place by doing. Before learning can become complete, we must put into practice what we are attempting to learn.
e. Successful learning stimulates more learning. Failure to learn and understand discourages further learning.
f. Learning is best accomplished when the learning environment is well managed. The classroom environment has to be made conducive to learning to take place.
g. One learns best when the content being presented is appropriate, relevant and appealing to more than one of these senses – sight, hearing, smell, taste and touch. The utilization of more than one of these senses will aid memory and enhance interest in the content being presented.
h. Learning requires motivation since interest is necessary for effective learning.
i. Feeling and emotions are strong incentives for learning.

RELATIONSHIP BETWEEN LEARNING THEORIES AND THE USE OF TECHNOLOGY

The correlation connecting learning theories and technology is getting more and more intricate by incongruity over what forms learning. At some point, the transfer-of-learning theories such as behaviourism and constructivism were well-liked among classroom teachers in the first half of the twentieth century. These

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theories revealed that the prime duty of a teacher was to convey instructions to the students' psyche through regular evaluation (product, process and summative) to verify if the transfer instruction transpired. The chore of technology is to help in that transfer process through the compelling and factual arrangement of content. At some stage in the second half of the twentieth century, educators adopted the behaviourism and constructivism theory to prejudice the growth of technology for schools.

The learning process (direct or indirect) is one of the common significant processes that happened to human beings, whether in formal, informal and non-formal. Several educators developed theories so as to describe the manner in which people can learn better so as to enhance understanding and to have good retentive memory. These theories include among others constructivism and behaviourism.

THEORIES OF LEARNING

Theories of learning provide organized knowledge of the explanations on how behaviour develops in individuals, and they also attempt to explain the mechanism of behaviours involved in the learning process. There are important roles theories of learning can play in helping to understand the process of learning and how we can facilitate this process for the benefit of the learners. Learning theories are very important for instructional designers and implemented so as to develop an effective, efficient and appealing instruction. Hence the following broad theories were classified into three; Stimulus-response (S-R) theories, observation or imitation theories and cognitive theories.

Behaviorism: Pavlov's developed theory of classical conditioning this simply implies that learning or modification of behaviour as a result of the organism's interaction with the physical or social environment. The Pavlov's theory has educational implications, we can deduce that teachers impress on students that he or she is their friend and helper whom they could trust and that may develop confidence in students to approach teacher when they need understanding on particular problem or issue. Pavlov's Theory heavily influenced thoughts about learning with conditioning until B.F. Skinner proposed Operant Conditioning which is the foundation of behaviourism. He insisted that there was the sharp distinction between classical and instrumental conditioning. Skinner perceived that human learners could exercise mental control over their behaviour, and their responses

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to stimuli could be shaped by the type of reinforcement they received. He further insisted that the organism is much less at the mercy of the external situation. Teachers, in Skinner's view, were to arrange the contingencies of reinforcement in ways that promoted and supported student learning (Jensen, 2008). Skinner identified several situations that could shape learner behaviour: punishment, positive, and negative reinforcement. Punishment decreases the likelihood of an undesirable behaviour because it results in an undesirable consequence. An example might involve giving a student a failing score when he or she commits the offence. Positive reinforcement affirms the learner and increases the likelihood of the desired behaviour; often praise, rewards and encouragement are used in order to get learners to perform the desired behaviour (study harder, pay attention, and respond in class). Negative reinforcement also increases desired learner behaviour, but this occurs when a stimulus is avoided or removed. Usually, something a student dislikes (losing a privilege, going to detention, going to the principal's office) is removed or avoided when the student performs the desired behaviour. During Skinner's time, it was not possible to directly observe brain activity and study internal processes inherent in learning, so he focused on observable cause-and-effect relationships that shaped human behaviour. Behaviorism, also known as stimulus and response conditioning, relies on teacher-directed approaches, student receptiveness, curriculum sequencing from a prerequisite to advanced skills, mastery, systematic instructional design, and objective testing to assess competence.

These educationalists as well attempted to seek after splitting of complex units of knowledge into simpler units and ordering them in ways that would guide to mastering the more complex units. Accordingly, the focal point of teaching was modified from the presentation of content knowledge before a group of students to a centre of attention on the behaviour of individual students. The interest in this theory occurred almost the same time that the first computer-assisted programmes (CAI) were being developed. The initial CAI programmes were basically computer applications of printed and programmed learning books. Computers appeared to offer a good solution. Students could be assigned to a computer to work at their own pace, and the computer would keep track of students' work and provide a record of each student's progress for the teacher. Such programmes evolved into what was later called individualized learning systems (ILS). ILS software and hardware were installed in school computer laboratories; they provided drill and practice exercises that were judged valuable,

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especially for students with learning difficulties. The behavioural movement also had an impact on the educational technology profession. The belief that it was possible to design instruction so that all students could learn led to an interest in the design of learning materials and in a systems approach to instruction. Behaviorism emphasizes memorization and repetition in teacher-centered environments. The curriculum is structured hierarchically to allow students to gain prerequisite skills and advance to intermediate and advanced levels of knowledge. Predefined criteria and systematically constructed learning promote mastery. Technology is used to remedy identified weaknesses, promote fluency, and support practice through tutorials, drill and practice software, online worksheets, and other forms of computer-based learning (Roblyer, 2003).

S-R learning theory brought some principles which the teacher must adhere to for effective learning to take place;

i. Learning is built on the basis of one starting from simple learning and proceeding to more complex.
ii. Learning should proceed from the known to what is unknown.
iii. Learning is helped by reinforcement.
iv. Learning depends on the nearness of stimulus and response.

Constructivism: The constructivist learning theory or philosophy is based on the assumption that knowledge is constructed by learners as they attempt to make sense of their experience. Learners are not empty vessels waiting to be filled, but rather active organism seeking to mean.

During the last half of the twentieth century, cognitive theories of learning gained ascendancy over behaviourism among psychologists, and some of the views of cognitive psychologists, represented by the term “constructivism”, began to influence education. Constructivists argued that learners must construct their own understanding of whatever is being taught. According to this perspective, the teacher's task is not primarily one of promoting knowledge transfer, nor is it one of ensuring that students perform consistently according to a predetermined description of knowledge and skills. The teacher's role is to create an environment in which students are able to arrive at their own interpretations of knowledge while becoming ever more skilful in

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directing their own learning. Many constructivists were initially critical of the use of computers in schools because they equated the use of computers with behaviourist theories of learning. Other constructivists recognized the computer as a potential ally and designed programs that took advantage of constructivist beliefs. The result has been computer-based programs that promote higher-level thinking and encourage collaborative learning. There are very important points that explaining constructivism theory,learning.which are:

i. The learners working within their mind individually in order to build their own knowledge, which explains that, the knowledge is not transmitted to them in a way or another.
ii. The learners will use their own experience and prior knowledge to explain new knowledge.
iii. Learning is an active dynamic process, which the learners use their sensory receptors to build the meaning from it.
iv. Learning is social and related to the community that the learners live on it, which affect the individual construct information. In fact, the learners learn new things with learning a new way to learn better.
v. The important components for learning a new thing are to understand the content and having old knowledge our experience that the learners built their information from.
vi. In constructivism, the best learning will be learning from mistakes because when the learner made the mistake (he/she) try to move on from this mistake, which gives a good chance to built their knowledge on what they learn from that mistake.
vii. The learning experience happens, when the learner practices not from teaching or hearing the information.
viii. The learning is evidentiary and contextual because the human being does not learn secluded facts or theories, but the learners learn cause and consequence or relationships for what they want to learn.

TECHNOLOGY IN TEACHING AND LEARNING

Technology allows us to better serve the diverse learning styles of our students and educate them on a wider range of intelligence. Everybody has different learning styles for meaningful learning but teachers cannot represent all the styles in a traditional classroom environment. However, with the flexibility and help of the

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technologies, we can design learning environments in which students can manage and construct their own representations of knowledge in their minds. Technology is used as an instructional tool to enhance more effective teaching and learning in TVET. Kafka (2013) revealed that the teaching and learning are more effective when more of the sense organs are involved in the process. Analysis of the retention rate through the various senses indicates that ICTs can be used to create a variety of external conditions that are conducive to learning and retention.

Today, ICTs facilitate not only the delivery of instruction but also learning process. In addition, ICT promote international collaboration and networking in education and professional development. There's a range of ICT options – from video conferencing through multimedia delivery to websites which can be used to meet the challenges teachers face today. In fact, there has been increasing evidence that ICT may be able to provide more flexible and effective ways for lifelong professional development for today's teachers. Because of rapid development in ICT, especially the Internet, traditional initial teacher training as well as in-service continued training institutions worldwide are undergoing a rapid change in the structure and content of their training and delivery methods of their courses. However, combining new technologies with effective pedagogy has become a daunting task for both initial teacher training and in-service training institutions. ICT refers to the applications found on most thin client computers, internet and other electronic delivery systems such as radios, digital televisions, and projectors among others, which secondary school teachers can use as pedagogical tools. ICT as a pedagogical tool is regarded as the use of ICT facilities in teaching and learning process which involves the use of software application to solve problems, to provoke student capabilities, to create products or communicate and share their perspectives with each other.

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