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Behaviorism vs Constructivism: A Paradigm Shift from Traditional to Alternative Assessment Techniques

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Abstract
Assessment is an integral part of teaching and learning, determine whether and to what extent goals of education have been achieved. The present article discusses the applications of different types of assessment and evaluation procedures in teaching. The main research objective was to strengthen the superiority of alternative forms of assessment methods over traditional assessments in the light of learning theories i.e. behaviorism, cognitivism, and constructivism. These learning theories define learning differently. A growing body of research suggests that assessment greatly influences classroom instruction and that it is closely linked to teaching and learning. Students learn the way they think they will be assessed rather than what is mentioned in the curriculum. The present study concludes the importance of alternative assessment techniques to highlights learner's misconceptions and gaps in their knowledge.
Keywords: behaviorism; cognitivism; constructivism; learning; alternative and traditional assessment methods

INTRODUCTION

Education is a lifelong process which intended to bring about positive changes in the attitudes of an individual. Assessment and evaluation as a procedure can be used to determine the educational needs and aspirations of students, to ensure that they have essential attitudes with them to improve behavior and the course of teaching and learning process.

In the background of education, the term assessment has been utilized "in deciding, collecting and making judgments about evidence relating to the goals of the learning being assessed" no matter how the information being collected and could be used (Harlen, 2006, p.103). In the existing literature, "summative assessment" has been identified as "assessment of learning" is extensively used in education and what has

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developed along with it is the new paradigm, "formative assessment", regarded as "assessment for learning". Harlen (2006), suggested the following four purposes to justify changes in assessment practices: diagnostic, summative, formative and evaluative.

One of the important roles played by the assessment and evaluation techniques is to contribute towards student's development, besides, to determine whether and to what extent the education system has achieved its goals or objectives (Chechen, 2011). Measurement and evaluation are an important process which offers feedback to learners by evaluating their learning (Buyukturan & Demirtasli, 2013). In teaching-learning processes, assessment and evaluation determine whether the instructional process remained successful or not, to what extent and for whom the instruction is successful or unsuccessful, who needs further support and what safety measures need to considered to enhance teaching (Turget, 1992). Some of the purposes of assessment and evaluation predominantly concerning learners, instructors and instructional implementation are as follows: to collect information on data of student's performance and to define its position in the educational process; to identify learner's difficulties, weaknesses, and mistakes in the process of education by highlighting students' levels of learning; to evaluate the overall usefulness of education; to guide students and to determine the level of individual performance (Bahar, Nartgun, Durmuş, & Bıcak, 2009; Ozdemir, 2010). Alternative assessment and evaluation emphasize the way students construct their knowledge rather than their present attainment of knowledge by highlighting their strengths and weaknesses (Oren & Sasmaz, 2014).

Constructivism in education revives the requirement of students constructing new information based on what they already know, it highlights that traditional assessment methods used for the evaluation of the education system may found inadequate against these innovations. Nowadays, we are concerning in evaluating the process rather than the product in an education system, the use of alternative assessment techniques is the ultimate solution. Pierce and O' Malley (1992), has advocated the importance of alternative assessment as an evaluation that points at what an individual knows and what he can do.

LITERATURE REVIEW

Behaviorism

By mean of learning theories advocated by behaviorism, learning can be defined as the mechanical process of relating stimulus with response, which further give rise to novel behavior. This new behavior is supported by reinforcement. Behaviorists like Watson, Thorndike, Skinner and Pavlov being the major proponents suggest that "learning is a change in observable behavior caused by external stimuli in environment" (Skinner, 1974). Skinner's early experiments on learning postulates instructional strategies that are influenced by traditional behaviorists theories of learning. On the basis of his experiments, he further investigates that learning was a change in behaviors as a result of stimulus and response activities to stimulate the achievement of some basic skill or intended learning outcome (Cooper, 1993). These basic skills, facts and various learning outcomes would become the part of an individual's present attainment of knowledge

through continuous process of reinforcements and feedbacks. According to behaviorists view point the learner being a passive person responds to the stimuli. They considered learner's mind as tabula rasa (a person's mind is like a clean slate) and the behavior is result of reinforcement. It is through the process of reinforcement (either positive or negative) that increase the chance of the repetition of behavior. Therefore, learning can be defined as a positive change in the behavior of an individual brought about by his own experiences. Behaviorists believes in observable behavior, rather than inner mental understandings and individual attempt to learn few things only through his environment. This theory is thus regarded in terms of association building.

According to Eun-Sook (2001), behaviorists believed to assign a role of transferring and transmitting of knowledge to the learners. Behaviorist theory of learning strengthen the use of traditional ways of teaching like lectures, skill worksheets and standardized assessment techniques in achieving isolated facts (Roblyer & Edward, 1997).

Atkins (1993) has suggested four different features necessary for designing instructions following the behaviorist school:

- Allotting learning material into small instructional stages.
- Defining various stages of the instructional process.
- Replication of instruction in the light of results obtained through diagnostic tests.
- Demonstration of suitable description the learners start copying the intended behavior.

Teaching techniques advocated by behaviorists school of thought chiefly emphases on low-level learning like rote memorization rather than high-level thinking skills like inquiry-based learning, problem-solving, etc. That is why, behaviorist school of thought, is sometimes criticized as being too passive.

Strengths

- It is convenient in articulating behavioral interactions both at home and in the school.
- It plays an important role in modifying someone's behavior based on reinforcement, punishment, and extinction.
- Encouraging responses regarding behavior permits the learner to respond predictably under certain situations.
- Success of consequences is easily quantifiable.
- It safeguards explicit learning.

Weaknesses

- According to some critics, it is an extrapolation of animal behavior to humans.
- Behaviorism provides less or no information about the development of human languages.

- Behaviorist does not take in to account the outcomes of the environment in shaping human behavior.

Use of Theory

The techniques of reinforcement and punishment have been used by working teachers during instruction to accelerate intended behavior and discourage the annoying behavior of the learners.

Constructivism

Constructivism is the study of a learner's construction of knowledge (Learning theories, 2011c). This knowledge constructed by an individual is based on his own experiences as well as his relations with the environment. The learner adopts new information by assigning meaning to it based on his/ her previous attitudes, beliefs and experiences (Stavredes, 2011). Here the role of the instructor is like a facilitator and leaner participating actively in constructing knowledge. In the late 1970, s two types of constructivism have been introduced.

Social constructivism, introduced by Lev Vygotsky, in which learners give meaning to information by interacting socially with others. Vygotsky mentioned a Zone of Proximal Development (ZPD), in which a learner tries to develop the level of meaning on their own but can produce even better results after interacting with classmates and instructors. In 1985, cognitive constructivism introduced by Jean Piaget, which focuses on the construction of knowledge either through assimilation or accommodation. Here assimilation is concerned with associating incoming information with a schema, and accommodation ignoring the match of incoming information and a schema. Therefore, the schema needs to be changed to accommodate this conflict (Stavredes, 2011).

Strengths

Constructivist involve students in such activities that are related to the student's real life. Learners construct knowledge and give meaning while relating the information to their own experiences, beliefs, and attitudes.

Weaknesses

Individual experiences and attitudes can vary. A specific, chosen result may not always be accomplished when different persons approach the problem.

Use of Theory

Constructivism advocating Problem-Based Learning (PBL) which guaranteed that learners must take control of the learning situation. And when learners involve themselves in conducting an activity, they develop to know the understanding of the importance of the problem, realize the implication of the topic, and organizing knowledge based on their own experiences. According to the constructivism theory of learning, it is more imperative to concentrate on the whole rather than the subsequent parts (Stavredes, 2011).

Concept of Learning in the light of Learning Theories

Learning theories in the present scenario relying heavenly on behaviorism, cognitivism, and constructivism to define how learning has occurred. These learning theories perceive learning differently. According to the behaviorist's viewpoint, learning is the acquisition of new behavior through conditioning. Behaviorists believe in the stimulus-response association and observable and measurable behavior. According to Saettler (1990), the main goal of behaviorists is to predict and control behaviors related to human beings.

Behaviorists argue that learning can be completely understood in terms of observable conditions both environmental and behavioral in nature. They also have given importance to both learner and environmental factors in the acquisition of new behavior. These environmental factors include reinforcement and punishment as the key features to increase or decrease the reveal of desired or undesired behavioral responses (Driscol, 2002).

According to Cognitivist's point of view, learning can be defined as, the acquisition of knowledge through perception and thought process. They claim that how information is grabbed, processed and store in human brain. Sensory input is the collection of the all kind of information concerning human senses. The information which is received and processed in the brain is stored in short-term and long-term memory of the brain. Information in chunks, attention, motivation, preparation and articulating the process of relating new information with the existing realm of knowledge enhance the retention level of that information (Ertmer & Neby, 1993; Driscol, 2002).

Constructivists describe learning as the process of constructing meaning from someone's own experiences. According to Duffy and Jonassen (1992), objects and events around us cannot be understood by assigning single meaning to them. Rather, different viewpoints and meanings can be created for interpreting these objects and events. Construction of the knowledge-based upon that idea. If there is a non-availability of the exact truth, then people prefer to construct different information regarding a particular object or event based on their own experiences.

According to Brooks and Brooks (1999), there are five principles related to constructivism:

- deal with problems that are appropriate to the needs and aspirations of students,
- constructing facts concerning key ideas,
- examining students' point of view,
- assuming coaching to deal with student ideas and
- assessing students inside the historical past of teaching.

Constructivism gives importance to learning rather than teaching. It reputes learning as a process. Student's self-sufficiency, inquiry, opinions, and attitudes are considered. It gives rise to good communication between the learners and the instructors. Moreover, it

is equally important to make sure the social co-operation among students with the help of the teacher (Moll & Tomasello, 2007).

Numerous research studies are advocating the effective use and potential gains of constructivists' principles in the existing literature. A growing body of such research studies is related to the effect of constructivism on student's achievement. Saygan, Atılboz, and Salman, (2006) conducted a study of the students of biology, the cell, and concluded that students taught using constructivist principles were more successful as compared to the students taught by using traditional principles. Further, Ozerbas (2007), conduct a research study on 7th grade students' mathematics achievement and retention of knowledge to compare traditional and constructivist instruction approaches. The results of the study showed that students in the constructivist learning environment are performing better comparatively students of traditional settings regarding achievement and retention of knowledge. Constructivist principles are also accompanying in improving student's conceptual learning and elimination of misunderstandings (Hancer, 2007; Cayci, Demir, Basaran & Demir, 2007). In addition to the effect of constructivism on achievement, it also paved ways for improving the social interaction of the students and their problem-solving approaches (Sasan, 2002). Both instructors and administrators have positive attitudes towards a constructivist learning approach (Cinar, Teyfur & Teyfur, 2006).

Importance of Assessment

Assessment can be defined as "a systematic process for gathering data about student achievement" is an important component of teaching (Dhindsa, Omar, & Waldrip, 2007, p. 1261). According to Struyven, Dochy, and Janssens (2005), the influence of assessment is knowingly apparent regarding student's performance. The way students approach learning is closely linked with the way they think about assignments and tests during class hours (Struyven et al., 2005).

As assessment meaningfully affects learners' approach to learning, so assessment paradigms have shifted from "testing learning of students to assessing for students learning" (Birenbaum & Feidman, 1998, p. 92). In the present scenario, approaches related to assessment and evaluation are striving for strengthening the relationship between what learners want to learn and what is expected from them to be known at the end of a particular instructional session (Gulikers et al., 2006). Now the questions arise whether learners are taught for the purpose they can surpass on a test or they taught to put some meaning that will sustain in the long term.

Research studies have been conducted in the recent past suggests that assessment significantly influences the instructional process and also it is an important component of day to day teaching and learning. Different authors have stated that assessment being an integral component of valuable instruction is also a compulsory part of effective teaching (Resnick & Resnick, 1992; Perrenoud, 1998; Villeneuve & Laliberte, 2002; Tardif, 2005). It is widely accepted that assessment methods are viewed as instruments responsible for the improvement in education. It has been proposed that teachers design their classroom practices following the methods and the outcomes of the different

assessment techniques that they select and that assessment further effects teaching of teacher and learning of students (Herman, 1997).

In general, assessment can be viewed as the way of collecting information to make decisions regarding students' knowledge and progress in a particular field. Different authors considered assessment as the process of evaluating performance, a product or a learning skill that reinforces students' learning that not only document their present attainment but also suggests guidelines for the improvement of their future performance. Assessment can be considered in varied forms, it can be either unidimensional, time bounds, or spread over time and aims to control the quality of the students' work. In simple words, the main purpose of the assessment is to check how an individual utilizes the information and knowledge presented to them (Elharrar, 2006).

There are different forms of methods and techniques that the teacher could use for assessing students' performance. Presently, the most appropriate types of assessment include formative and summative assessment (Lusignan & Goupil, 1997).

Generally speaking, summative assessment can be conceived as a "product oriented", planned to award certification on students' mastery of objectives and to determine the level of achievement of intended learning outcomes or goals related to curriculum. Summative assessment either used to make determination at one point in time (admission test, selection of subjects for various sections of particular grade etc.) or after a predetermined number of performances, about how much an individual knows and able to perform. It is mainly focused on assigning grades on the basis of what students know and understand. The growing body of such assessment, often regarded as "traditional testing techniques" usually comprises of paper-and-pencil assessment techniques in which data regarding student's performance is gathered through assignments in class time, homework, quizzes or tests (Scallon, 1996; Gattullo, 2000; Legendre, 2001).

Traditional Assessment Techniques

In the present setting, the most commonly used traditional assessment tools are multiple-choice tests, true/ false tests, short-answers, and essays.

a. Multiple-Choice Tests

There are a number of reasons for which multiple-choice test are widely used by teachers, schools and other assessment organizations,

1. They are easy to prepare, administer and score, in fact, they are machine scoreable.
2. They are free of subjectivity on the part of the test scorer and are considered more reliable.
3. They reduce the scope for guessing on the part of the test taker in comparison to true-false items (Bailey, 1998, p.130).

The advantages of multiple-choice items to be found in the literature (e.g. Epstein et al., 2002; Higgins & Tatham, 2003; Koechler & Simkin, 2003) include that they can:

- test knowledge of maximum students and in a quick way
- provide feedback right after administration of the test
- scored by an electronic machine
- analyzed about characteristics like difficulty and discrimination, and
- stored in an item bank and maybe re-used as required.

Apart from the above-mentioned advantages, multiple-choice items also involve some disadvantages.

Multiple-choice questions are more probably used in assessing learners' low-level thinking skills like recall of previously learned and memorized information and test item regarding students' higher-order thinking such as analysis and synthesis become harder to produce (Simonson, Smaldino, Albright & Zvacek, 2000).

According to Hughes (in Bailey, 1998) multiple-choice items are criticized due to following reasons: "1. the technique tests only recognition knowledge, 2. guessing may have a considerable but unknown effect on the test scores, 3.the technique severely restricts what can be tested, 4 it is very difficult to write successful items, 5. backwash may be harmful, 6. cheating may be facilitated "(p.131).

b. True-False Tests

True-false tests are also known as response type items in which the learner's response is tested against a statement either correct or incorrect. These are comparatively easier to mark and equally easy to administer. These are criticized on behalf of the guessing factor that might increase the chance of success almost by 50 %. Particularly, when a test item is incorrect, then it is very hard to assess whether the respondent knows the right response. One probable solution is to demand from the learner that he must explain the particular incorrect test item. This might affect the ease of scoring negatively (Simonson et al., 2000).

c. Short-answer tests

In short-answer tests "items are written either as a direct question requiring the learner fill in a word or phrase or as statements in which space has been left blank for a brief written answer" (Simonson et al., 2000, p. 270). They further added that the question's statements should be precise. Otherwise, the items that are open to clarifications permit pupils to fill in the blanks with any possible information (Simonson et al., 2000).

d. Essays

Essays are considered an effective assessment tool because the questions are flexible and assess student's higher-order thinking skills. However, they are not suitable because they do not cover the entire content selected for assessment and also demand more time to score the essays. Furthermore, subjective type test items might be a problem while scoring. This can be lessened by creating scoring rubrics for essay type tests (Simonson et al., 2000).

Alternative Assessment Techniques

There has been a paradigm shift from traditional form assessment practices to alternative assessment. Alternative assessment originates as a means for educational enhancements due to growing awareness of the effect of testing on curriculum and instruction (Dietel, Herman, & Knuth, 1991). In other words, Reeves described that traditional assessment techniques, which is generally called as testing, is challenged by alternative assessment techniques (2000, P.103). The most commonly used alternative assessment techniques are as follow:

a. Structural Communication Grids

The structural communication grid (SCG) is a powerful alternative assessment technique (Johnstone, 2003; Bahar and Hansell, 2000). The earliest work was done by Egan (1972). It has been used for various aspects in different disciplines as well as by researchers in research (e.g. Chen, 2004; Hassan, 2003; Johnstone, Bahar, & Hansell, 2000; Bahar, 1999; Scottish Exam Board, 1997; Johnstone and Mughal, 1979; Duncan, 1974). They all consider structural communication grids as a diagnostic and summative testing tool.

b. Concept Maps

Concept mapping is a teaching-learning strategy based on constructivism and originates from David Ausubel's Assimilation theory of cognitive learning (1968). It represents the structure of information, concepts, and linkages within a concept. Researchers recommended it as a useful tool for meaningful learning, assessment and diagnosing learner's misconceptions at all levels in the field of science education (Enger, 1998; Nesbit & Adesope, 2006; Novak & Canas, 2006a, 2006b; Novak, 1980).

c. Mind Maps

Novak (1998) suggests procedures for structuring concept maps. Both the concept map and mind map are sometimes used interchangeably. However, there are differences and similarities between concept maps and mind maps. Mind mapping is a visual approach allowing students to demonstrate their thoughts and share their knowledge easily. In the case of concept maps students have to provide information on the unfilled map and in case of mind maps they need to represent information, what they have about any concept in their minds, on a blank paper.

d. The predict-observe-explain

The prediction-observe-explain technique was developed by White and Gunstone (1992). This technique comprised of three different steps and it is initiated by taking in to account the views of each learner and evolving reasons. In the existing literature, it is also mentioned as POE (prediction- Observation-Explanation). There is a growing body of research studies that carried the idea that this particular technique was used to study learner's conceptual understanding towards science (White & Gunstone, 1992; Liew & Treagust, 1995).

e. Word association Test

Word association test is considered as the most common and the oldest approach used for the investigation of cognitive structure and has been used by different researches in their research studies (Kempa & Nicholls, 1983). In this method, a collection of key terms, say ten in number, is selected from a particular topic. These terms are provided to the subjects and asked them to write related terms against each term choosing one at time. Time suggested for the writing-related term is one minute for each stimulus word.

f. Diagnostic Tree Testing

This technique is considered an alternative to traditional true-false tests. In the diagnostic tree, students are requested to make the best option by choosing among true or false expressions in a way that is from the most general to the most detailed one.

CONCLUSION

Traditional assessment has been criticized by numerous authors as an inadequate tool for measuring and assessing student's competencies and skills with the optimum level of accuracy. In the recent past, it is criticized by Dilki (2003). According to Dilki (2003), traditional assessments are standardized, indirect and inauthentic, which reason they are norm-referenced, testing the speed of the students, and measure what learners can do at a particular time. Here, scores generated on student's performance does not provide any information about the progression of the child. Traditional assessment techniques provide no feedback to the learners because they tell nothing about the difficulties the learners may have had during the test. Most of the standardized tests are concerned with the lower-order thinking skills of the students because assessment only focusing on learner's ability to memorize and recall facts that are related to the lower level of cognition skills.

There is hardly any form of assessment technique that lacks limitations either on the part of marking staff or the students. There are so many forms of learning as the form of learner would be, in any way, it subject to assessment. It is obligatory that not to support assessment-led instead of learning-led students. An ingenious assessment may activate student learning (Cowen, 2005).

Generally speaking, there are numerous forms of assessment techniques. Even for working on identical learning objectives there are a number of convincing reasons to evaluate learner's performance in more than one way to establish a healthy measurement and to sustain the development of sound understandings (Mazzeo, Schmitt, & Bleistein, 1993).

We should also consider that effective assessment has an eye on an individual's weaknesses and strengths to ascertains that they have mastered the essential skills and knowledge. To achieve such goals, teachers must bear in mind the different types of assessment tools and not trust too much on a single method of assessment.

Alternative assessments provide instructors with a broader, more genuine picture of student learning. They allow one to assess students' ability to reason and analyze, apply

their knowledge to novel situations, demonstrate their understanding of the connections between concepts, and communicate their understanding in multiple ways.

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