AN EXPLORATORY STUDY TO IDENTIFY TEACHING STYLES IN SAUDI ARABIA BASED ON THREE LEARNING THEORIES

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Abstract

The purpose of this quantitative study was to investigate Saudi teachers' philosophy in teaching based on three major learning theories (behaviorism, cognitivism, and constructivism). Also, it showed the different between gender (male, female), and teachers' experiences in teaching (1-5, 6-10, 11-15, 16-20, more than 20 years), and level of teaching (Elementary, Middle, and High) school in the preferred teaching philosophy. The result showed that Saudis' teacher proffered using cognitivism philosophy more than constructivism philosophy and behaviorism philosophy. Although the male teacher had preferred behaviorism school more than female teachers, the female teachers had preferred cognitivism and constructivism schools more than male teachers. Also, the teachers who had more experience preferred cognitivism and constructivism schools more than behaviorism school.

Keywords

Teacher, Learning Theories, Behaviorism, Cognitivism, Constructivism

1. Introduction

The purpose of teaching is to simplify learning and to encourage student to learn. The learning and teaching are very important terms, so we need to know what is learning? And how do people learn? And when do we learn? Although every learning theory has its own version of the term "learning," some general definitions of it are presented. Researchers and theorists have defined the term "learning" in many different ways. In literature, the term *learning* tends to be used to refer to "the activity or process of gaining knowledge or skill by studying, practicing, being taught, or experiencing something: the activity of someone who learns." Learning is also defined as a change in behavior or the ability to behave in a certain way; this change is a result of individual practice and experience (Shuell, 1986, p. 412). For Oblinger (2004), learning is a constructed, "active process" (para. 1); the main factors of knowledge are facts, experience, and practice. According to a definition provided by De Houwer, Barnes-Holmes, and Moors (2013), learning is "functional" changes in the learner's behavior as a result of experience. Scholars have developed many theories about the way we learn. There are three general learning theories: behaviorism, cognitivism, and constructivism (Reiser & Dempsey, 2006). Learning can be achieved when learners move from one situation to a new situation by using new knowledge to solve problems (Oblinger, 2004). This changing in a learner's situation can be achieved with any of the previous theories (Boyer, Akcaoğlu, & Pernsteiner, 2015).

2. Literature Review

There are many learning theories. As found in the literature review, the three major learning theories are behaviorism, cognitivism, and constructivism (Reiser & Dempsey, 2006).

2.1 Behaviorism Schools

Behaviorism is a learning theory that concentrates on observable behaviors and ignores mental activities (Schunk, 1991). Behaviorism is a theory of human and animal learning. Behaviorism theorists consider learning as gaining new behavior (Burton et al., 1996). They see the mind as a "black box" as they disregard the effect of thought processes happening in the mind (Alzaghoul, 2012, p. 27). The behaviorist school proposes that learning is only the observable, quantitative behavioral response to an external stimulus in the environment. They see observable behavior as the measure of learning a new thing and do not consider what occurs in the learner's brain (Alzaghoul, 2012; Burton et al., 1996; Schunk, 1991).

According to behaviorism theory, the role of learners is mainly passive; their role is just to respond to stimuli (Driscoll, 2005). Students learn by following the teacher's instructions and the writing materials. Regarding the role of teachers, their responsibility is to design and control the learning context and supervise the learning process. Thus, teachers mainly lead the learning process independently from the student. The main concept of teaching in behaviorism theory is teachers basically present (transmit) the information and students have to show they understand what they listened to and complete tasks. Finally, students are evaluated mainly through individual and written tests (Burton et al., 1996; Schunk, 1991).

The teacher's role, according to behaviorism theory, is to form the learner's behavior by positive or negative reinforcement. Reinforcement is used to increase the probability of eliciting a specific behavior by delivering a stimulus immediately after a response/behavior. On the other hand, negative reinforcement increases the probability of the desired response by removing an undesirable stimulus as a result of completing the desired response. Finally, punishment is used to eliminate undesirable behaviors by presenting an undesirable stimulus when the behavior occurs (Driscoll, 2005; Schunk, 1991).

The development of instructional objectives is the main implication of behaviorism theory; it can be used when there is a need to meet specific goals. It allows the learner to focus on achieving those goals since there is a cue to lead the learner's behavior. Instructional cues allow one to predict a learner's behaviors/responses (Austin, Orcutt, & Rosso, 2001; Ertmer & Newby, 2013). Behaviorism theory is dependent on stimulus-response and instructional design is dependent on the workplace or classroom containing the appropriate stimuli to get the desired behavior. Therefore, if a certain stimulant is not available, then the desired behavior may not occur (Altuna & Lareki, 2015). Also, Skinner (cited in Altuna & Lareki, 2015) found some behaviors do not have a reinforcement mechanism and, thus, it will be difficult for instructors to maintain reinforcement (Ertmer & Newby, 2013; Reiser & Dempsey, 2006).

In terms of e-learning, instructors must explicitly provide learners with the desired outcomes of the online course so they will be able to set expectations for themselves to achieve those outcomes. Learners will be assessed for achieving the learning outcomes (Altuna & Lareki, 2015; Alzaghoul, 2012). Although, teachers can use different technological resources with the behaviorist approach, many of these resources are one-directional; the only way the students can engage in the learning process is through answering questions or performing the

directed activities. It is merely "a transmitter–consumer relationship" (Altuna & Lareki, 2015, p. 219), i.e., using technology from the behaviorist perspective is for the presentation purpose only. Thus, the student's role is still passive without involvement in the learning process.

With respect to educational gaming, behaviorism-learning theory is compatible with first generation educational games (Egenfeldt-Nielsen, 2005). This generation started in the 1980s when the edutainment games were designed. This generation of educational games focused on the direct learning such as repeated drill and practice (Egenfeldt-Nielsen, 2005).

2.2 Cognitivism School

In contrast to behaviorism, cognitivism concentrates on the human mind. In cognitive theory, learning is based on changes between states of knowledge and not on changes in the probability of behavior as in behaviorism (Shuell, 1986). Cognitivism theory stresses internal mental (cognitive) processes that include thinking, language, memory, and problem solving (Schunk, 1991). The cognitivism theorist studies the mechanism of how the human mind receives information, stores, and retrieves it in the learning process (Altuna & Lareki, 2015). Therefore, in cognitivist theory, learning is reached when information is stored in the memory in a meaningful way. Since cognitive theory focuses on mental processes, it is a proper approach for explaining complex shapes of learning that include mental structures such as reasoning and problem-solving (Driscoll, 2005; Schunk, 1991; Shuell, 1986).

In contrast to behaviorism, cognitivist theory states that if we consider the mind as a "black box," we must open and understand it (Alzaghoul, 2012, p. 27). As stated previously, in this theory, the learner's role is to process information, similar to a computer processor, storing it, and later retrieving it (Alzaghoul, 2012). The learner is dependent on the depth of his/her information processing capacity as well as the amount of effort put into this process to fully understand and transfer new knowledge. The main focus of the cognitive approach is to encourage the learner to use suitable learning strategies (Driscoll, 2005; Shuell, 1986).

A main concept of cognitivist theory is the model of information processing. This model goes through three stages (Shuell, 1986). The first stage is sensory register--where information is received as an input from the senses. Following that is short-term memory (STM)--where important sensory input is transferred from the sensory register to short-term memory. After that stage, the stored information in the STM is transferred to be stored for long term use in the unlimited capacity memory stage called long-term memory and storage (LTM). Information is

stored in LTM through rote memorization and deeper levels of processing where the learner generates links between old and new knowledge (Driscoll, 2005; Reiser & Dempsey, 2006; Shuell, 1986; Winn & Snyder, 1996).

According to cognitivist theory, the role of teachers is to manage problem solving. Teachers should help learners organize acquired knowledge in some way by using techniques such as analogies, hierarchical relationships, and matrices. Teachers have to provide students with opportunities to relate and compare new knowledge to an existing schema (Alzaghoul, 2012).

With regard to the instructional design process, learners' thinking, attitudes, beliefs, and values are all important in the learning process in cognitivist theory. Relying on the cognitivist model, instructional designers must consider the learner when determining how to design instruction to be easily assimilated. The instructional designer specifies the goals by developing the learning objectives, i.e., the designer determines the important information to be learned by the students and finds the proper way to transfer that knowledge to the students. Since learners' thoughts are the focus of the learning process, the designer should consider learners' thinking as well as experience levels during the instructional design process. Consequently, this type of design may require additional cost and time (Driscoll, 2005; Ertmer & Newby, 2013; Reiser & Dempsey, 2006).

Following cognitivism theory, the instructional designer necessarily must specify a fixed set of goals and expectations. However, having predetermined goals may be problematic because it may restrict learning potentials. Moreover, in cognitivism, the instructor also specifies the cues to do the tasks and the learner knows the way to do tasks based on those cues. This may be an efficient way to do tasks in some specific environments or scenarios but may not be effective in others (Ertmer & Newby, 2013).

With respect to e-learning, cognitivism theory is useful if the goal is to teach principles and processes. Different learning and cognitive forms should be considered when designing these learning materials. To improve the learning process, teachers need to attract learners' attention by concentrating on critical information. Also, teachers should rationalize the instruction and show learners how to connect new to existing knowledge in long-term memory by using advanced organizers. The information has to be presented in an organized, collective

manner such as lists, hierarchical structures, spider-shaped information maps, or charts. This method of representing knowledge decreases the issue of cognitive overload (Alzaghoul, 2012).

With respect to educational gaming, cognitivism learning theory was the center of the second generation of educational games in the 1990s (Egenfeldt-Nielsen, 2005). The second generation of educational games focused on the learner rather than focusing on behavior (Egenfeldt-Nielsen, 2005).

2.3 Constructivism Schools

Constructivism theory sees learners as the center of the learning process. The learning process is seen as a meaningful creation formed from experience (Bednar, Cunningham, Duffy, & Perry, 1991). It is a constructive method where learners construct information based on their prior experience as well as culture to aid their learning (Driscoll, 2005). In constructivism theory, learners connect new information to their prior knowledge. Constructivists consider all learners to have the ability to build upon information in their own minds by discovery and using problem-solving skills (Ertmer & Newby, 2013).

Constructivism is known as a branch of cognitivism in that both theories view the learning process as a mental activity. However, they are different in some ways. Cognitivists see the human mind as a reference for knowledge while constructivists see the human mind as a filter of the real world to generate its own reality (Ertmer & Newby, 2013). Also, although both cognitivism and constructivism involve the learner in the learning process, constructivism sees the role of the learner as more than just an active processor of information. The learner's role in constructivism theory is to construct new ideas from current/past knowledge. Constructivists involve the learner in the interpretation process of given information, social interaction, and motivation that affect the construction process (Ertmer & Newby, 2013). The constructivism approach gives learners the responsibility of deriving goals while still being able to discuss those goals with teachers. The constructivism theory approach gives learners instruction in how to construct knowledge to encourage them to collaborate with others and exchange their perspectives to solve a particular problem (Driscoll, 2005; Ertmer & Newby, 2013).

The role of instructors is modified when compared to behaviorism and cognitivism. Rather than simply presenting the facts in the content, teachers should assist and show the learners how to construct the information (Driscoll, 2005). They should connect their teaching

strategies to students' responses and encourage students to analyze and interpret the information (Ertmer & Newby, 2013).

In the constructivist approach, instructional designers consider hypertext and hypermedia that allow for a branched design rather than a linear format of instruction. However, learners need to be guided in hypermedia or hypertext environments, which equals a combination of objective (behaviorist and cognitivist) and constructive instructional designs (Altuna & Lareki, 2015; Reiser & Dempsey, 2006).

In the current learning context, constructivism theory presents many possibilities for learning activities and varied implications such as collaborative learning to expose learners to alternative viewpoints, problem-based learning, higher-order thinking skills and deeper understanding, object-based learning, modeling, and coaching (Driscoll, 2005).

Regarding educational technology, Altuna and Lareki (2015) found significant research asserting that we should change traditional teaching approaches and strategies when working with information and communication technology. Also, scholars emphasize that constructivism is the most appropriate approach for teaching and learning when technology is used (Altuna & Lareki, 2015). In support of this assertion, a number of studies have verified the success of using technological resources in constructivist contexts (Altuna & Lareki, 2015). Moreover, it has been found that instructors who have a constructivism perspective are more likely to use technology in their teaching (Obafemi & Eyono Obono, 2014). Since constructivism learning theory focuses on knowledge construction based on learners' previous experience and knowledge, which in turn determines learning achievement, this theory is very appropriate for an e-learning approach. More specifically, constructivism theory focuses on each learner individually with his/her unique needs and experience and is a very effective component of e-learning courses (Alzaghoul, 2012). Moreover, using technology to communicate with others enables students to be in an active role to construct and present their knowledge (Means & Olson, 1997). Using some computer-based activities in learning would also increase problem-solving skills of students since most of these activities require collaboration with others. These types of learning clearly represent constructivist perspectives. Thus, a constructivist learning approach works properly with technology-based learning activities (Means & Olson, 1997; Obafemi & Eyono Obono, 2014).

With respect to educational gaming, the third generation of educational games was based on constructivism learning theory (Egenfeldt-Nielsen, 2005). This generation represents the last generation of educational digital games compatible with constructivism-learning theory (Egenfeldt-Nielsen, 2005).

3. Methodology

The population involved in this study consisted of teachers of public and private schools in Saudi Arabia. The teacher population consisted of the total population of teachers, those who are currently teaching in (elementary, middle, and high schools). In Saudi Arabia, there are 441,529 teachers, 45.6% of them male and 54.4% female. (Ministry of Education in Saudi Arabia, 2014).

The questionnaire consisted of two parts: The first part asking about teacher's background such as gender, level of teaching, years of experience in teaching. The second part is about the teacher's philosophy. It contains three questions; each question relates to a specific learning theory (behaviorism, cognitivism, or constructivism).

The reliability of the instrument was calculated with study data. The overall internal consistency of the Instrument was 0.92. The results showed a high level of internal consistency for the scales (Creswell, 2012).

4. Research Questions

This study has four research questions guided this study. The first question was descriptive question. Next, there are three comparison questions to determine how two or more groups on an independent variable differed in one dependent variables (Creswell, 2012).

Q1. What is the school of learning (behaviorism, cognitivism, constructivism) the Saudi teachers prefer and use in their teaching?

Q2. Is there a significant difference between teachers' gender in their school of learning (behaviorism, cognitivism, constructivism) that preferred?

Q3. Is there a significant mean difference among teachers' grade level (elementary school, middle school, and high school) in their school of learning (behaviorism, cognitivism, constructivism) that preferred?

Q4. Is there a significant mean difference among teachers' years of experience (1-5, 6-10, 11-15, 16-20, more than 20 years) in their school of learning (behaviorism, cognitivism, constructivism) that preferred?

5. The Results

The Sample size of this study was 1004 teachers (see Table 1). Male teachers were 448 and represented 44.6% of the participants while female teachers were 556 and represented 55.8% of the participants.

Table 1: *Frequencies and Percentages of Variables*

Variables		Frequency	Percent
Gender	Male	448	44.6
	Female	556	55.4
Level of teaching	Elementary school	424	42.2
	Middle school	258	25.7
	High school	322	32.1
Teachers' experience in teaching	1-5	228	22.7
	6-10	239	23.8
	11-15	147	14.7
	16-20	175	17.4
	More than 20 years	215	21.4

To answer the first question, descriptive methods such as mean and standard deviation were calculated for three teaching philosophies: behaviorism, cognitivism, and constructivism. As can clearly be seen in Table 2, cognitivism philosophy had a slightly higher mean ($M = 3.9$, $SD = 0.78$) than constructivism philosophy ($M = 3.8$, $SD = 0.94$) and behaviorism philosophy ($M = 3.3$, $SD = 1.11$).

Table 2: *Means and Standard Deviations for Teaching Philosophy*

Teaching Philosophy	N	Mean	SD
Behaviorism	1004	3.3	1.11
Cognitivism	1004	3.9	0.78
Constructivism	1004	3.8	0.94

To answer the rest questions, each school theory was tested separately. In behaviorism school, for the question two, the results of the T-Test showed there was a statistically significant difference between male and female teachers in their preferred and using behaviorism school, *t-*

test (1002) = 4.713; (*p* < 0.0001). An inspection of the mean scores indicated male teachers had preferred behaviorism school (*M* = 3.5, *SD* = 1.01) more than female teachers (*M* = 3.1, *SD* = 1.16).

For the question three, the results of the ANOVA showed there was no a statistically significant difference between level of teaching (elementary, middle, and high) in their preferred and using behaviorism school, *F*(2,1001) = 0.29; (*p* < 0.75).

For the last question, the results of the ANOVA showed there was no a statistically significant difference between teachers' years of experience (1-5, 6-10, 11-15, 16-20, more than 20 years) in their preferred and using behaviorism school, *F*(4,1000) = 2.6; (*p* < 0.064).

In cognitivism school, for the question two, the results of the T-Test showed there was a statistically significant difference between male and female teachers in their preferred and using cognitivism school, *t-test* (1002) = -5.9; (*p* < 0.0001). An inspection of the mean scores indicated female teachers had preferred cognitivism school (*M* = 4.1, *SD* = 0.68) more than male teachers (*M* = 3.7, *SD* = 0.85).

For the question three, the results of the ANOVA showed there was no a statistically significant difference between level of teaching (elementary, middle, and high) in their preferred and using cognitivism school, *F*(2,1001) = 0.74; (*p* < 0.48).

For the last question, the results of the ANOVA showed there was a statistically significant difference between teachers' years of experience (1-5, 6-10, 11-15, 16-20, more than 20 years) in their preferred and using cognitivism school, *F*(4,1000) = 3.41; (*p* < 0.009). The significant difference appeared between teachers who had 1-5 years of experience (*M* = 3.7, *SD* = 0.78) and teachers who had 20 years of experience (*M* = 4.1, *SD* = 0.67), (*p* < 0.012). Also, the difference appeared between teachers who had 1-5 years of experience (*M* = 3.7, *SD* = 0.78) and teachers who had more than 20 years of experience (*M* = 3.98, *SD* = 0.79), (*p* < 0.03).

In constructivism school, for the question two, the results of the T-Test showed there was a statistically significant difference between male and female teachers in their preferred and using constructivism school, *t-test* (1002) = -5.7; (*p* < 0.0001). An inspection of the mean scores indicated female teachers had preferred constructivism school (*M* = 3.93, *SD* = 0.68) more than male teachers (*M* = 3.5, *SD* = 1.001).

For the question three, the results of the ANOVA showed there was no a statistically significant difference between level of teaching (elementary, middle, and high) in their preferred and using constructivism school, $F(2,1001) = 0.11$; ($p < 0.89$).

For the last question, the results of the ANOVA showed there was a statistically significant difference between teachers' years of experience (1-5, 6-10, 11-15, 16-20, more than 20 years) in their preferred and using constructivism school, $F(4,1000) = 3.37$; ($p < 0.009$). The significant difference appeared between teachers who had 1-5 years of experience ($M = 3.6$, $SD = 0.98$) and teachers who had 20 years of experience ($M = 3.92$, $SD = 0.82$), ($p < 0.014$). Also, the difference appeared between teachers who had 1-5 years of experience ($M = 3.6$, $SD = 0.98$) and teachers who had more than 20 years of experience ($M = 3.9$, $SD = 0.88$), ($p < 0.03$).

6. Discussion And Conclusion

In general, our result showed that Saudis' teacher proffered using cognitivism philosophy more than constructivism philosophy and behaviorism philosophy. Although the male teacher had preferred behaviorism school more than female teachers, the female teachers had preferred cognitivism and constructivism schools more than male teachers. That means the female Saudi teachers are more ready to use any technology tools more than male teachers. So, male teachers need to adopt cognitivism and constructivism theories in their teaching, which will help them when applying any new technology tools in their classroom.

On the other hand, there was no difference in teachers' teaching philosophy among levels of teaching (elementary school, middle school, and high school). However, for teachers' years of experience (1-5, 6-10, 11-15, 16-20, more than 20 years), the teachers who had more experience preferred cognitivism and constructivism schools more than behaviorism school.

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