

Constructivist Education Theory: an Examination

Omar Albukbak, PhD.

Department of English, Misurata University, Libya

***Abstract:** This article examines Constructivism as an education theory, which, though has been in the public domain for over one-and-a half decades, has not been studied as extensively as it should have been. It points out that the core of the theory is that the learners understand the things better when they carry out activities. The article then presents the characteristics of the theory and contrasts them with those of the traditional methods. The middle part of the article examines the assessment criteria of the learning outcomes of both the constructivist and traditional methods. It also examines what the critics of the theory say. The second part of the article focuses on the importance of motivation in social constructivism and the role of the mentors as facilitators. It concludes arguing that the constructivists usually encourage instructors to use mixed teaching methods.*

Key Words: Constructivism theory, teaching activities, learning process

Introduction

Constructivism is a theory that is based on scientific and observational studies. The theory claims that people construct their own knowledge and understanding of the world through the experience they have of things and their reflection on those experiences (Capon & Kuhn, p. 69). When one encounters something new, he or she immediately connects it with previous experiences and ideas. He or she might disregard the new information as irrelevant or even change what one believes in. Human beings are active creators of their own knowledge. To achieve this, one must ask questions to assess and explore what he or she already knows (Hake, 1998, p. 68). In a classroom environment, constructivism theory points towards different types of teaching practices. Generally, it encourages the students to use active techniques such as experiments so as to create more knowledge and to reflect on what they are doing. Teachers ensure that they fully understand the pre-existing concept of learners and guide those activities that address them. Constructivist teachers encourage learners to assess how the activity helps them gain and enhances understanding (Capon & Kuhn, p. 70).

Contrary to some criticisms from conservative educators, the active role of teachers has not been dismissed by constructivism. Rather, the role of teachers has been modified by constructivism. In this case, students are helped by teachers to construct knowledge rather than reproducing a series of facts (Kuhn, 2007, p. 109). Constructivist teachers provide learners with tools such as inquiry-based and problem-solving learning activities. These are used by learners to formulate and test ideas, draw inferences and conclusions, and convey and pool their knowledge

in the corroborative learning environments (Wise & O'Neil, 2009, p. 77). On the other hand, constructivist theory transforms learners from passive recipients of information to active participants in the learning process. Students are always guided by teachers and, as a result, they actively construct their own knowledge rather than mechanically ingesting it from textbooks and teachers. In most cases, constructivism is taken to be a theory which compels learners to "reinvent the wheel". Indeed, constructivism triggers and taps into the learners' innate curiosity about the world on how things work (Mayer, 2004, p. 83). In this case, the wheel is not reinvented by learners but, rather, the learners try to understand how it functions. According to the constructivist theory, learners tend to apply their existing real-world experience and knowledge, learn to hypothesize, test their theories and then attempt to draw their conclusion from the findings (Kuhn, 2007, p. 110).

1. Characteristics of Constructivist Teaching

One of the main characteristics of constructivist theory is that students learn how to learn by taking into account their own initiatives from their learning experiences (Mayer, 2004, p. 18). The main characteristics of a constructivist class include:

- Active involvement of learners
- A democratic environment
- Student centred activities that are interactive
- Teachers facilitate the learning process while learners are encouraged to be autonomous and responsible (Mayer, 2004, p. 17).

Examples of activities in a constructivist classroom are where learners work in groups and, consequently, knowledge and learning becomes dynamic and interactive. In this case, there is great emphasis and focus on communication and social skills as well as the exchange and collaboration of ideas (Mayer, 2009, p. 187). This approach is in contrast to the traditional classrooms where learners primarily work alone with minimal assistance from other learners or teachers. Traditionally, the learning process is achieved by repetition and subjects are strictly guided by textbooks. Some of the activities which are encouraged in a constructivist classroom include:

- Experimentation: learners perform experiments individually and then come together to discuss the results as a class.
- Research projects: learners research on their own topics and then present their findings to the class.
- Field trips: field trips allow learners to put the ideas and concepts that are discussed in a classroom environment to a real life context. In most cases, they will be followed by discussions in a classroom.

- Films: films help in providing a visual context, hence, bringing comprehension to the learning experience.
- Classroom discussion: classroom discussion is a technique used in all the methods discussed above. It is, therefore, a major distinction in constructivist teaching methods.

1.1 Constructivist Assessment

According to the traditional approach, assessment in a classroom environment was based on testing. In this case, it was important for students to come up with the right answers. On the contrary, the constructivist approach views the process of learning as being just as important as the product (Clark, 2009, p. 189). As a result, therefore, assessments are not only based on tests but also on observations by the learners, the work of the students and their point of view. Some of the strategic assessments include:

- An oral discussion: in this case, teachers present learners with “focus” questions and then encourage open discussions on the given topic (Mayer, 2009, p. 188).
- KWLH Chart: this entails what the learners know, what they would like to learn or know, what they have learned, and how they knew it. This technique is a valuable form of assessment as it shows teachers the progress that learners have made throughout the course.
- Mind Mapping: in this case, a learner categorises and lists the ideas and concepts which are related to the topic.
- Hands on activities: teachers use observation and a checklist to assess the success of learners with particular materials (Mayer, 2009, p. 188).

1.2 An Example of a Lesson Taught from a Constructivist Perspective

An example of a constructivist lesson is whereby a teacher mediates the learning process rather than teaching the class directly. This is well portrayed by Faraday’s candle (Clark, 2009, p. 190). In this case, learners were encouraged to discover how candles work, and they did this by making a simple observation. From their observations they then built a hypothesis and ideas which can be tested. If the test proves the hypothesis or idea, learners can then use the lesson to understand the components of, for example, combustion, which is an important topic in chemistry (Clark, 2009, p. 190).

2. Arguments against Constructivist Theory

Critics have raised several arguments against this theory, and they include:

- Cognitive scientists have questioned the central ideas of constructivism by saying that the known findings are either contradictory or misleading.
- Another possible error of this teaching method is that due to its emphasis on group work, there is a possibility that ideas from active students could dominate the conclusions of the group (Clark, 2009, p. 191).

While those in support of the constructivist theory assert that constructivist learners perform better as opposed to their peers when tested on higher-order reasoning (Clark, 2009, p. 189), those who oppose constructivism claim that this learning technique forces learners to “reinvent the wheel”. Proponents counter this assertion by claiming that “students do not reinvent the wheel but, rather, attempt to understand how it turns, how it functions” (Mayer, 2004, p. 84). Those in favour of this theory allege that learners, especially those in elementary school are, by nature, curious of the world. Consequently, giving them the necessary tools to explore the world in a guided manner will enable them to understand the world around them in a better manner. Mayer (2004, p. 80) carried out a literature review that spans fifty years and concluded that “the research in this review shows that the formula, constructivism = hands-on activities, is a formula for educational disaster” (Mayer, 2004, p. 82). In this case, active learning is suggested by those in favour of higher philosophy. While developing these instructions, educators came up with materials which demanded that learning be an active behaviour and not “cognitively active”. This means that although learners may be engaged in a learning activity, they might not necessarily learn new concepts. Mayer recommended the use of a guided discovery that consists of a mix of a hands-on activity and direct instructions rather than the use of pure discovery. Mayer claims that “in many ways, guided discovery appears to offer the best method for promoting constructivist teaching” (Mayer, 2004, p.79). Kirchner et al. (2006) agrees with the major argument of constructivism that knowledge is constructed but learners tend to be more concerned with the recommendations of the instructional design of the theoretical framework.

“The constructivist description of learning is accurate, but the instructional consequences suggested by constructivists do not necessarily follow” (Kirscher et al., 2006, p. 78). These authors specifically allege that instructors design unguided instructions which rely on the learners to “discover or construct essential information for themselves” (Kirchner et al., 2006, p. 75). Accordingly, they point out that the recommendations of Mayer should be taken on board that we “move educational reform efforts from the fuzzy and non-productive world of ideology -- which sometimes hides under the various banners of constructivism -- to the sharp and productive world of theory-based research on how people learn” (Mayer, 2004. p. 18).

Another important aspect in evaluating the limitations and benefits of the constructivist theory is by considering plethora of personal characteristics and learning problems among children (Rosenshine, 2009, p. 204). For instance, if a constructivist approach was solely

employed in a classroom of children, then a good number of learners who might, for example, have Hyperactive Disorder/Attention Deficit, may not be able to focus on the experiences of learning perception long enough to build on the knowledge base of the learning event (Rosenshine, 2009,p. 204). This means that the constructivist theory is biased for learners who have a desire to learn more independently by focusing their attention on the learning process. It is, therefore, evident that a mixed approach which incorporates the components of the constructivist theory, along with other approaches that includes the strategies of guided teaching, will effectively meet the learning needs of most learners. This would be achieved by taking into account the differences between learning capacities and styles.

A common misunderstanding about the constructivist theory is that instructors allow students to construct meaning solely from their own knowledge rather than teaching them new information. The constructivist theory, in this case, assumes that learners construct knowledge from their previous knowledge regardless how that knowledge is acquired (Cobb, 1988, p. 85). In this case, even listening to lectures is an active attempt of constructing new knowledge.

The general view that meanings reside in actions, words and objects, has been challenged by constructivism. Arguably, instructional media may cause an overload for novices, yet nonetheless, this could be beneficial for experienced learners (Clark, 2009, p. 159).

According to constructivism, students and teachers, regarded as active meaning makers, are believed to continually give meaning to actions and words as they interact (Kirscher et al., 2006, p. 16). When learning a language, emphasis is made on language fluency rather than accuracy and this can be enhanced through activities such as discussions, role playing, problem-solving tasks, projects and simulations. In the recent past, communicative reforms have been centred on radical renewals of linguistic content. This has been done without the accompaniment of a systematic psychological concept of learning as this is a major dilemma in language teaching. Most schools put more emphasis on deliberate and conscious attempts by learners to solve problems (Clark, 2009, p. 159). The theory of constructivism describes how the learning process happens regardless of whether or not learners use their experiences in understanding lectures. According to this theory, learners acquire knowledge from their experiences. The constructivist theory is associated with the pedagogic approach that believes in learning by doing or, rather, active learning. Active learning is a technique whereby learners do more than just listen to lectures. In this case, learners tend to be involved in discovering and applying the information (Mayer, 2009, p. 185).

3. Direct Instruction

Studies indicate that successful teachers use “direct instruction” patterns in the learning process. This is a systematic way of teaching which puts into use explicit sequences of

instructions. Guidance to direct instruction is superior, in effect, to “minimal guidance during instruction” (Rosenshine, 2009, p. 203). Kirschner et al. (2006, p., 32), however, gave limited examples to Direct Instructional Guidance. They pointed out that modelling values of teaching in self-checking procedures include the use of process worksheets and the use of working examples. Nonetheless, a more broad research on instructions, which comprises direct instructional guidance, indicates that the procedures fit in the cognitive theory. As described by Kirschner et al. (2006, p., 24), these procedures arise from two fields of research: the cognitive strategies; and, the process-product studies, which is a result of classroom studies (Wise & Kevin, 2009, p. 84).

Process-Product Studies in Classroom Instructions

Process-product studies are the different observational studies conducted within the classroom instructions. In this case, observations are carried out to ascertain the correlation between the achievement of learners and the teachers’ behaviour in classroom instructions (Rosenshine, 2009, p. 203). The importance of these observations is to identify instructional procedures used by the teachers whose students achieve the highest gains.

Guidance to Learning

Learning is an active endeavour and people have different ways of learning. Learners should evaluate the type and extent of guidance that is optimal for the learning process to take place (Clark, 2009, p. 159). The learning process is enhanced when learners are engaged in active learning. According to the views of social constructivism, every individual is unique with his or her own unique backgrounds and needs (Clark, 2009, p. 159). Each and every learner is also regarded as multidimensional and complex. In this case, therefore, social constructivism acknowledges the complexity and uniqueness of every learner. Accordingly, social constructivism enables learners to come up with their own versions of the truth, as influenced by their own culture, background and the embedded world view. In this case, symbol systems such as the mathematical system, logic and language, are inherited by learners as members of a certain culture and, consequently, learned throughout their life (Featherstone, 1992, p. 7). There is also a need for learners to socially interact with knowledgeable members of their society. It will be difficult for learners to acquire social meanings from the symbol systems if they cannot interact with knowledgeable individuals.

The Role of Motivation in Social Constructivism

Another important aspect in the learning process concerns the source and level of motivation during the learning process. Self-awareness is important in this process as, sometimes, teachers and trainers could provide the wrong information (Clark, 2009, p. 165). It is

alleged that the sustained motivation for the learning process strongly depends on the confidence of the learners and their learning potential. According to the social constructivism approach, instructors should play their roles as facilitators and not as teachers.

Teachers give didactic lectures covering the subject matter, whereas, facilitators help learners to get their own in-depth understanding of the content (Clark, 2009, p. 165). In this case, learners play a passive role in the former scenario, whereas, they play an active role in the learning process in the latter scenario (Clark, 2009, p. 165). As a result, therefore, the emphasis is turned away from the content and the instructor towards the learner. This change of roles implies that facilitators ought to display different skills other than those of a teacher. The role of a facilitator is to ask while a teacher just lectures. Teachers teach using from the front of a class while facilitators support learners from the back. Teachers give answers using a given curriculum while facilitators provide learners with guidelines from which can help them arrive at their own conclusions. Teachers mainly use a monologue approach while facilitators tend to be in a continuous dialogue with the learners (Grenfell, 1994, p. 85). For an effective learning process to take place, the learning environment should be designed in such a way that it supports the challenges of the learner's thinking. The main aim here is to support learners to be effective thinkers (Kuhn & Dean, 2005, p. 236).

Learners make meanings of language through their interactions with one another and with the surrounding environment (Kuhn & Dean, 2005, p. 236). Language learning can, therefore, be termed to be a product of human beings, which is culturally and socially constructed. As noted, language learning is a social process which does not only occur in the minds of the learners but also in their social surroundings (Hake, 1998, p. 59).

Mentoring and Social Constructivism

The notion of mentoring in the learning process is essential among learners. The theory of social constructivism emphasises the relationship between the instructor and the learner in the language learning process (Fotos, 1994, p. 31). Some of the approaches to language learning, which can enhance this interactive learning process, include peer collaboration, reciprocal teaching, problem-based instructions, cognitive apprenticeship, anchored instructions, and web quests.

Collaboration is an important aspect in the learning process (Foster, 1998, p. 55). This is a social process that promotes the learner's developmental abilities and enables one to learn doing things from the assistance they get. Learners require the assistance provided by peers and teachers who are, themselves, experts in language teaching. Learners with different backgrounds and skills need to collaborate in discussions and tasks, so as to arrive at a common understanding of the truth in a particular field. Most scholars also argue that there should be collaboration

among various language learners and this is in contradiction to the traditional competitive approach (Lave, 1996, p. 150).

The Vygotskian concept has major implications in peer collaborations in what is termed as the 'Zone of Proximal Development'. This is the gap or the difference between what learners have mastered and what they are capable of achieving if given educational support (Kuhn & Dean, 2005, p. 235). Scaffolding is mostly used by teachers as an instructional technique. It is mainly associated with the Zone of Proximal Development, whereby, teachers provide learners with individualised support. This is done by improving the ability of learners to build on their prior knowledge. Scaffolding is used in various content areas and across grade and age levels (Clark, 2009 p. 159).

Teachers play a key role in language learning processes. They have great influence over learners in terms of confidence, motivation, beliefs related to learning, attitudes about learning, and social learning. Good teachers produce good results even from poor learners. A teacher transmits knowledge, controls learning, facilitates learning, and acts as a language resource and a mentor in the learning processes (Kuhn & Dean, 2005. p. 45).

Guided Student Approach

There is a need for learners to take their time in elaborating, rephrasing and summarising new information (Rosenshine, 2009, p. 201). This enables any information gained to be stored in the long term memory. In this case, learners need to make connections of new knowledge through long-term memories by using tasks like summarising and rephrasing, which are important aspects in retrieving information. Effective teachers use these criteria of using new materials by providing supervised and guided practice (Rosenshine, 2009, p. 201). While using guided practices, teachers supervise the learners' initial practices on skills, correct errors, and provide the necessary elaboration that can promote long-term memories (Capon & Kuhn, 2004, p. 76). The majority of correlation studies also indicate that those teachers who are more effective tend to ask more questions than those less effective. For instance, effective teachers tend to ask an average of 25 questions within a period of 50 minutes of a learning session (Cobb, 1988, p. 90).

The Need for Strategies

Communication strategies refer to the various ways through which people clarify, check and modify problems of utterances (Klahrd & Nigan, 2004, p. 35). Communicative strategies indicate that a genuine communication process is taking place, and this plays an important role in the language acquisition processes. As noted by Foster, learners are sometimes inclined to "adopt

the strategy of ‘pretend and hope’, rather than the strategy of ‘check and clarify’” (Klahrd & Nigan, 2004, p. 35).

Despite the fact that most learners could be competent in their first language, there is a need to encourage them to use both the learning and communicative strategies while learning a second language. Self-discovery in a new language increases one’s retention and comprehension (Klahrd & Nigan, 2004, p. 34). Indeed, what is learned consciously may not necessarily be incorporated in one’s spontaneous production of language. For a communicative process to succeed, it has to integrate both the reflective and experiential levels of language learning, and should as also be more intellectual. One of the most significant challenges facing teachers today is the ability to empower learners. This does not necessarily mean giving lessons to learners on a daily basis, but encouraging them to recognise and internalise the strategies and options available to them (Grenfell, 1994, p. 43).

Conclusion

The constructivist theory has encouraged instructors to use mixed teaching methods. This implies that modern society has a renewed focus on the role played by both learners and teachers as decision makers in the classroom environment. Despite the fact that communicative principles are major signposts, there is a need for broader guiding principles that teachers should use in their work. Notably, the nature of these guiding principles is still unclear, hence, the teachers’ own language skills should be a guide to decision making in the language learning process. As noted, teachers play an important role in the constructivist theory. Arguably, they facilitate the communication processes among all learners in a class, and between learners and the various texts and activities. Equally, they act as independent participants within the teaching-learning group. These roles imply that teachers have a secondary role to play in the learning process. For instance, they organise resources for learners and they are, as well, a resource in their own capacity. On the other hand, they guide learners within the classroom activities and procedures while they also contribute greatly in terms of research. This is a major contribution towards appropriate knowledge and ability in the learning process.

References

- Capon N. & Kuhn D. (2004). What’s so good about problem-based learning? *Cognition and Instruction*, 22 (1), 61-79.
- Clark, R. (2009). How much and what type of guidance is optimal for learning from instructions? In S. Tobias and T. Duffy (Eds.) *Constructivist Instruction: Success or failure?* New York: Routledge.

- Cobb, P. (1988). The tension between theories of learning and instructions in mathematics education. *Educational Psychologist*, 232 (2), 87-103.
- Featherstone, H. (1992). *Learning from the first years of classroom teaching: The journey in, the journey out*. East Lansing, ML: Michigan State University.
- Foster, P. (1998). A classroom perspective on the negotiation of meaning. *Applied Linguistics*, 19 (1), 1-23.
- Fotos, S. (1994). Integrating grammar instruction and communicative language use through grammar consciousness-raising tasks. *TESOL Quarterly*, 28 (2), 323-346.
- Grenfell, M. (1994). Communication: Sense and nonsense. In A. Swarbrick (Ed.), *Educational Psychologist*, 12 (3), 34-35.
- Hake, R. (1998). *Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses*. *American Journal of Physics*, 66 (1).
- Kirschner, P.A., Sweller, J., & Clark, R.E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41(2), 75-86.
- Klahr, D. & Nigam, M., (2004). The equivalence of learning paths in early science instruction: Effects of direct instruction and discovery learning. *Psychological Science*, 15 (10), 662-667.
- Kuhn, D. (2007). Is direct instruction an answer to the right questions? *Educational Psychologist*, 42 (2), 109-113.
- Kuhn, D. & Dean, D. (2005). Is developing scientific thinking all about learning to control variables? *Psychological Science*, 16, 235-244.
- Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture, and Activity*, 3 (3), 149-164.
- Mayer, R. (2004). Should there be a three strike rule against pure discovery learners? *American Psychologist*, 59 (1), 14-19.
- Mayer, R. (2009). Constructivism as a theory of learning versus constructivism as a prescription for instruction. In M.D. Thomas & T. Duffy (Eds.), *Constructivist instruction: Success or failure*. New York: Routledge.
- Rosenshine, B. (2009). The empirical support for direct instruction. In S. Thomas & T. Duffy (Eds.), *Constructivist Instruction: Success or failure*. New York: Routledge.

Wise, A. & O'Neil, K. (2009). Beyond more versus less: a reframing of the debate on instructional guidance. In S. Tobias and T. Duffy (Ed.), *Constructivist instruction: Success or failure*. New York: Routledge.