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Constructivism in Learning

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ABSTRACT

Constructivism is an approach of teaching-learning to possess higher order thinking among learners. The main characteristic of constructivist learning is learners have their own choice to represent their thought and experiences to acquire new knowledge. It is a philosophy of construction of knowledge. Constructive learning provide a direction to both teacher and learners to reconstruct knowledge through active engagement in school activities. Constructivism is a theory which constructs learner's new knowledge and understanding. It assimilates the existing knowledge to new one. Jean Piaget's theory of cognitive development supports the constructivist theory. In constructive learning teacher acts as a facilitator and provide learning opportunities to construct knowledge based on learner's prior experiences. Teacher develops skills to strengthen students' potency and make them competent to learn new thing. 5Es model of constructive learning helps learners to learn collaboratively, actively and provide direction to solve problems in group.

Keywords: Constructivism, method of learning

Constructivism is a branch of philosophy which is based on the principle of creating knowledge through experience. In general, it means construction of Knowledge. Constructivism is a scientific theory of observation and experiences. It provides a direction to learners to learn through their prior experiences influenced by their social and cultural environment.

The term constructivism came first in Russia in 1913, it was used by Vladimir Tattlin. Tattlin used it as an art of innovation in digital technology and graphics. Tattlin's idea of constructivism was criticized. Later on, the term constructivism is used in education as a branch of epistemology. In education constructivism brings a movement of change in which traditional method of teaching-learning process shifted to learner centered. It is totally opposite to traditional method of teaching approach. In traditional method learners mainly dependent of teachers and they follow their teacher, but in constructive learning, they got an opportunity to explore themselves and learn this in their own way. It provides a platform to create knowledge and evaluate them. They construct their knowledge on the basis of their experience and observation. Learners try to reflect their experiences. "It usually means encouraging students to use active techniques (experiments, real-world problem solving) to create more knowledge and then to reflect on and talk about what they are doing and own their understanding is changing" (Olusegan, 2015). Constructive learning favors the holistic development of a child. It encourages learners to use real life situation as experience which tends to problem solving. Students get more opportunity to create knowledge and reflect too, it influences their understanding. It shapes their understanding and help to generate new knowledge. As in NCF, 2005 it is mentioned "the need to recognize the child as a natural learner and knowledge as the

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outcome of the child's own activity" (NCF, 2005, p-12) , constructivism is a theory which construct learner's new knowledge and understanding. It assimilates the existing knowledge to new one. Jean Piaget's theory of cognitive development supports the constructivist theory. In his theory assimilation and accommodation determines the development of new schema and assimilation it with the existing schema. For example if a child saw a bird flying in sky he/she learned that the thing fly in sky called bird, then she/he saw a kite flying in sky ,she/he relates it with bird. Piaget theory of construction of knowledge reflects how child rationalized the things around him and creates their knowledge based on their observation and experiences. Piaget focuses in his theory that human being learns through the interactive of their thoughts and experiences. Thus, constructivism laid stress on personal construction of knowledge of learners through experiences and resulted with that knowledge influenced by the interaction of his views and previous knowledge.

Definitions of constructivism

1. **"**Learners are given the freedom to think, to question, to reflect and to interact with ideas, objects and others". – Brooks and Brooks.
2. According to Brader - Araje and Jones (2002) Constructivism can be defined as "the idea that development of understanding requires the learner to actively engage in meaning-making" (Masanta,2020).
3. "Constructivism is a function of how individual creates meaning from his or her own experience"(Learning and Teaching, e-content, IGNOU).

According to above mentioned definitions, it can be said that Constructivism is a method of learning in which people are encouraged to construct their knowledge which is determined by their experience and prior knowledge.

Major proponents of constructivism

Jean Piaget, John Dewey, Lev Vygotsky and Jerome S. Bruner

Principle of constructivism

Construction of knowledge by prior experiences: Constructivist follows the principle of observation and experiences. Knowledge is based on the previous learning. In making an effort to make sense of information, students must make connections between old knowledge and new information (Cooperstien and Weidinger, 2004).

Principle of active learning: In constructivism, learning is an active process. Learners learn through active participation in any experiment or real life experience. According to Naylor and Keogh (1999), the central principles of Constructivist Approach are that learners can only make sense of new situations in terms of their existing understanding and it involves an active process, in which learners construct meaning by linking new ideas with their existing (Dhiman, 2020).

Knowledge is socially constructed: Learners construct their own knowledge through interaction with their personal and social group. They express their thoughts and ideas and shape it in a new direction with help of others. Vygostky (1978), states cognitive development stems from social interaction from guided learning within the zone of proximal development as children and their patience co – construct knowledge. "Our learning is intimately associated with our connection with other human beings as well as casual acquaintances, including the people before us or next to us at the exhibit" (Hein, 1991).

Learning is personal: In constructivism learners learn through their own experiences and thoughts, so learning becomes personal. Each person constructs their knowledge on their own observation their learning capacity can be differ to other one. "In order to make knowledge useful in a new situation, students must make a deliberate effort to make sense of the information that comes to them, they must own it, they must manipulate, discover, and create knowledge to fit their belief systems" (Cooperstien and Weidinger, 2004).

Principle of motivation to learn: motivation is an essential requirement for learning. Learners cannot learn anything properly if they are unmotivated. "Motivation are described here as it broadly conceived to include an understanding of ways in which the knowledge can be used unless we know "the reasons why", we may not be very involved in using the knowledge that may be instilled in us, even by the most severe and direct teaching" (Hein,

1991). Teachers try to engage their students in such activity where they keep motivating and develop curiosity to learn new things, explore themselves for real world problems.

Characteristics of Constructivism

1. It motivates learners to represent their concept and perspectives.
2. Student centered approach.
3. Teacher role is as facilitator, guide, and mentor.
4. Active engagement with real life situation.
5. Problem solving approach.
6. Knowledge construction is based on prior knowledge
7. Knowledge is individualized determined from social collaboration.
8. Develop higher order thinking
9. Learners are independent to gain knowledge
10. Learners are unique and they have their own thinking capacity.
11. Knowledge is an active meaning construction process.

Theories of Constructivism

Cognitive constructivism theory of Jean Piaget: According to Piaget learning is influence by the stages of development, it is a process of construction. He focused how human make meaning in relation to the interaction between their prior knowledge and ideas. He said that learners should be active and they should learn through observation, experience, activities and self-creation, so they construct their own knowledge. Piaget theory of learning has a wide impact on teaching learning process and it brought a reform movement in education.

John Dewey's theory of constructivism: In the era of Dewey the term Constructivism is not in existence but he is known as the profounder of constructivist approach. He told that learning should be given in real world as practical not in any fix climate. Learners should find their own way to learn where they can reflect own thoughts and construct knowledge. He focuses on learning through experiences; discovery should be included in learning, so student got opportunity to think logically and to create their own knowledge.

Lev Vygotsky's Social Constructivism-Vygotsky's sociocultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture. Vygotsky theory of learning is based on social interaction. Two main principle in his theory is zone of proximal development and more knowledgeable others. ZPD is the area where he can learn and cannot learn, even with any support. When he is in ZPD, the MKO provides scaffolding to acquire new knowledge. Then he moves to higher order learning. According to Vygotsky learning is an active process which is developed through social experiences, sharing multiple perspectives and changing thoughts in collaborative learning environment.

Jerome S. Bruner's theory of Constructivism- : Bruner is constructivist of 20th century. His book 'The Process of Education' reflect his thoughts about constructivism. He is influenced by the works of Vygostky. According to him, child construct new knowledge based on the present knowledge and learning is process done which making and listing hypotheses and makes a sense in its observation. Learner constructed new things or concepts based upon their past experiences. The learners select and transform information, constructs hypothesis and make decisions, relying on a cognitive structure to do so. Cognition provides direction to organize experiences and allows learners to go beyond the information given. It encourages students for discovery, both teacher and students are engaged in learning activity.

According to Bruner four major aspects should be in focus:

(i) Predisposition towards learning

(ii) Knowledge content should be organized as learners can be ready to grasp the new things

(iii) Learning material should be sequenced while presentation

(iv) Reward and punishment should be included

Types of constructivism

1. Cognitive constructivism: Cognitive constructivist views learning as construction of knowledge. Each stage of human life is influenced by its observations and experiences. Human accommodate their knowledge to relate it with existing schema. It is a process of mental representation of acquired

behavior. Cognition provides direction to create new knowledge based on prior experiences. Teacher motivates learners by providing guidance and useful resources to discover new information. Teachers must take into account the knowledge that the learner currently possesses. Their stage of cognitive development, their cultural background, and their personal history when deciding how to construct the curriculum and how to present, sequence, and structure new material (Paradigms of education.com).

2. Social constructivism: The key feature of social constructivism is learners construct new thing while working in group. Learning occurs through social collaboration. Knowledge of the world is constructed out of shared experiences either from the society and culture and/or from the physical world (Belbase, 2014, p. 4). Each behavior of an individual is influenced by their social and cultural environment. Leaners' social interaction provides a language to communicate and learn new things collaboratively.

3. Radical constructivism: Radical constructivism puts the individual's interactions, interpretations, and equilibrations with all externalities at the center of knowledge construction. This theory of learning has implications for the nature of reality (Mark, 2015). It focuses on construction of learning should be problem solving oriented; there is no place of learning driven by textbooks. According to Von Glasersfeld, (1996), "Knowledge is not passively received either through the senses or by way of communication, but it is actively built up by the cognizing subject" and the function of cognition is adaptive and serves the subject's organization of the experiential world, not the discovery of an objective ontological reality (Belbase, 2014).

Steps of Constructivist Approach: The 5E Model, developed in 1987 by the Biological Sciences Curriculum Study, which promotes collaborative and active learning in which students work together to solve problems and investigate new concepts by asking questions, observing, analyzing, and drawing conclusions (Lesley.edu.org). According to Llewellyn (2007), the 5E instructional model can help students move from understanding concrete experiences to the application of principles (Omotayo & Adeleke, 2017).

Engage- engage is the first step to start constructive learning, students are mentally engaged in such activities to learn the concept or skills. Firstly teacher make the task interesting to gain attention learners towards the situation, they are prompt to recall their prior knowledge and use it in finding ways to solve the problem, then they generate the new idea.

Explore- this step provides learners a common base of experiences. They actively explore their environment and develop concepts. It helps learners to discover new skills, inquire and question experiences, they try to examine their thinking and develop new understanding.

Explain- in this phase students try to explain the concept they have explored previously. They are able to verbalize their understanding or to explain the skills or concepts they learnt. They connect their previous knowledge with current situation and share their ideas with the class.

Elaborate- at this step students are able to apply new learning into similar situation, they develop deeper understanding of major concepts, learn more information and refine their skills and elaborate it in formal language.

Evaluate- this is the final stage of learning where learners' understanding and abilities are assessed by teacher, peers and learners himself. Teacher observes students behaviors, ask questions and encourage them for self-evaluation.

Constructivism in teaching learning: The activities that are initiated within the classroom begin with the description of the constructivist pedagogy (Bhattacharjee, 2015) . It is addressed within the activities, teaching methods. Learning strategies, evaluation methods, operational steps to guide students learning and set a reflective practice (what classroom activities reflect construction?)

In Constructivist classroom, learning is done through the process of—

- **Construction**: constructing new knowledge based on previous knowledge. Teacher creates situation that students recollect their prior experience and try to create new understanding. This step helps to bridge the gap between students' experiences and understanding new things. For example student were gone

to a educational field trip, they observed and learned about the natural resources. After that, in classroom situation teacher asked questions related to the usefulness of natural resources, then students share their ideas and observations with whole class and draw a conclusion based on the whole class views and constructed new things.

- **Activity**: By asking questions, settling goals for students' experimentation. Teacher encourages students to share their experience with class by asking some question like how to preserve natural resources or how natural resources are beneficial for us? Teacher gave some activities or projects on types of natural resources and it's uses.
- **Reflection**: Students discuss their learning experiences and reflect on their understanding. Whatever students have learned in that educational trip, they share their views with the class and try to reflect their new thoughts which develop their understanding.
- **Collaboration**: Students work in group, share their ideas and learns together. Teacher assigned a group project to his students. Students collect their ideas individually and put together to complete the project.
- **Inquiry based learning**: Students explore their perceptions and concepts by asking questions. Teacher divided his class into small group and gave a topic for discussion. Students present their thoughts and construct knowledge by cross questioning
- **Problem solving**: Ideas are change throughout the learning process and leads to problem solving.

Role of teacher in Constructivist class: A good teacher join self, subject and students in the fabric of life because they teach from an integral and undivided self, they manifest in their own lives, and evoke in their students, "a capacity for connectedness" (Parker, 1997). According to Kompf, "constructivist teachers allow student responses to drive lessons, shift instructional strategies, and alter content" (Alzahrani and Woollard, 2012). Main role of teacher is guide and facilitator. Teacher develops skills to strengthen students' potency and make them competent to learn new thing. Teacher create environment to prompt discussion and students can use their experiences creatively to learn new things. Teacher leads student to construct their own knowledge. He helps learners to visualize their knowledge and information systematically. Teacher raises questions and encourages students to respond. He also prompts students to ask their own questions and explore knowledge in group. Teacher builds confidence among students to develop potency that they will able to construct knowledge independently. He observes students and listens when they share their thoughts.

Role of students in Constructivist learning: Students are usually encouraged to construct upon their own knowledge, advancing their cognitive structures by reviewing and forming new understanding out of the existing ones (Kapur, 2019). Learners are active while classroom activities. They start and reflect ideas with one another. They relate classroom activities with their prior experiences. Constructivists argued that learner is not a blank slate (*Tabula rasa*) but brings past experiences and cultural factors to a construct new knowledge in given situation (Shah, 2019). Students learnt from current events and develop their thinking skills.

Techniques and methods in Constructivist classroom

- Discussion
- Small group work
- Student presentation
- Debate
- Simulation
- Brain storming
- Individual studies

Implications of constructivism on Education

1. Teacher's role is as a facilitator, supporter, and guide,
2. Teacher monitors the learning process,
3. Learning occurs in real life situation,
4. Learning brings the transformational change in learners' thought process,
5. Learners can relate their informal experiences to formal learning,

6. Teaching strategies should be based on problem solving approach,
7. Personal experiences of the learner should be in center,
8. Rote learning is shifted to experiment,
9. Teacher should provide direction to learners for self-evaluation.
10. Teacher prompt questions to learners to bridge the gap between previous knowledge and present information.

Merits of constructivism

- ❒ Student centered approach in which students are active.
- ❒ It develops higher order thinking of child.
- ❒ It supports individual differences.
- ❒ Students are engaged in activities.
- ❒ Make learning intensity and enjoyable.
- ❒ Students' autonomy is encouraged.

Demerits of Constructivism

- ❒ Learning takes time while teaching through constructivist approach.
- ❒ Require more resources based on individual differences.
- ❒ Teachers need training for Constructivist classroom.
- ❒ It may need high cost.
- ❒ Lack of trained teachers misleads the learners' cognitive skill.
- ❒ Standardized test cannot be done in constructivist learning.

CONCLUSION

Constructivism is an approach of teaching-learning to possess higher order thinking among learners. The main characteristic of constructivist learning is learners have their own choice to represent their thought and experiences to acquire new knowledge. Teacher act as a guide and motivate students that they recall their past experiences and represent it in order to learn adequate knowledge and information. Learners are independent to learn, to put their ideas to solve the real world problems, their learning is influence by their social and cultural context so that they have to collaborate in group with their peers to construct new knowledge. As in traditional learning, "individuals may work on an individual basis, but in constructivist learning, they have to work in groups and understand the concepts and other information is normally acquired through participating in various tasks and activities" (kapur, 2019). Hence, collaboration should be an important part of constructivist learning. Thus, it can be said that constructive learning approach is very helpful for learners to enhance their learning independently and develop collaboration with their teachers and peers.

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