

# Constructivism and the Construction of Knowledge

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**Abstract:** This appraisal discusses the notion that constructivist learning methodology enhances learner's emotional, psychological and social performance. This paper also attempts to discuss the constructivist methodology as one of the most trusted paradigms of learning in our classrooms. This analysis further examines the most prominent and outspoken philosophers and thinkers of constructivist theory such as Bruner, Jean Piaget and Vygotsky and their flourishing contributions to the existing body of knowledge. This assessment also observes the perception that constructivist methodology of learning in the classroom noticeably enhances student's academic accomplishment. The evaluation further, converses the concept of learner-centered environment as a pre-condition of constructivist learning paradigm. This analysis additionally inspects the important principles of constructivist learning methodology.

*Index Terms:* Learning, Teaching methods, Constructivism, Instructional design

## 1. INTRODUCTION

Constructivism is a paradigm of learning that describes the process of knowledge formation. There are many faces of constructivism. The most prominent and outspoken philosophers of constructivism are Jean Piaget, Jerome Bruner and Vygotsky. They have one common goal about knowledge construction. [1]. Learning is a hunt for meaning. Learning is an individual development. [2] The purpose of learning is for the individual learner to build her/his own meanings. As such, a learner constructs his/her own observation of the world. Huang, (2006) outlines the constructivist methods of learning: *"Constructivist learning is about constructing knowledge, not receiving it. Constructivist learning is about understanding and applying, not recall. Constructivist learning is about thinking and analyzing, not accumulating and memorizing.*

*Constructivist learning is about being active, not passive".* In a constructivist classroom, learners are provided with dynamic learning and understanding. They are placed in the center of learning [3]. Constructivists argue that learners create their own understanding of things based on their existing knowledge [4]. Constructivist learners acquire knowledge by blending their present and the past experience to make new knowledge. To learn the constructivist's way, the learner should make sense of things and should not accept information by mimicking the wording of others. Instead, learners are advised to internalize and reshape information transformation through active observation [5].

## 11. HOW CONSTRUCTIVISTS VIEW LEARNING

Constructivist Psychologists maintain that information transformation must be meaningful. Learner should utilize an active cognitive processing system in order to learn meaningfully. The learner should organize his/her thoughts into a logical representation by bridging the newly learnt knowledge with that already acquired. According to constructivism, the learner has full autonomy and his/her ingenuities are encouraged. To constructivist, learning is all about mental construction. Learning takes place collectively. It is viewed as a set of cooperative learning in a socially packed environment [6]. Learning takes place with collaboration with one another. Learners learn cooperatively to find solutions to a common problem.

[7]. Learners in a constructivist style of learning are motivated and enjoy learning increasingly compared to that of traditional methodology. More importantly, learners show interest in learning. Piaget one of the most outspoken

constructivist thinker believed that learners have an internal cognitive organization and that's why they understand the world better. They learn because information is assimilated into their cognitive structures [8]. He claimed that children learn through their actions. To him knowledge is to invent [9]. (Piaget 1929). Piaget believed, "*that we "see" objects not only with our eyes but also with our minds. One-year-olds "see" objects at their level of development, and 3-year-olds "see" the same object with a higher-level of logico-mathematical knowledge*" [10].

#### 111. PIAGET AND THE CONSTRUCTION OF KNOWLEDGE

According to Piaget, there are four stages of development in a learning process: From the age 0-2 years, he calls it sensory motor development. In a sensory motor development period, intelligence takes shape in the form of motor actions. Children learn from their mistakes and they should be allowed to do so [11]. From age 3-7 years, he calls it a "*preoperational period*". In this interval the cognitive structure takes shape in the form of a concrete operational stage. Age 8-11 years, is a logical period but still requires some assistance from the concrete stage. Age of 12-15 years, is a stage of formal operation which involves critical thinking and the child reaches a stage of solving more conceptual problems [12]. (Piaget 1970). Piaget stressed that learners construct knowledge through a rational combination of internal challenges facilitated by the force of environment he/she lives. These internal challenges are caused by our environment and encourage us to gain knowledge and understand the surrounding phenomena [13].

Piaget a prominent constructivist Philosopher believed that human is always in constant evolution. We learn something by the help of our past knowledge. In the process we re-invent a new knowledge [14]. Piaget asserted that children with learning disorder need more attention of the instructor. These children require basic necessary skills to live in a multicultural society. This social interaction is very important for their

development [15]. The instructor should attempt to provide these special categories with adequate facilities and strive for their self-actualization. These types of learners require more attention to secure their respect in society [16]. He asserts that, when learners interact with the given environment, unquestionably, they encounter with issues which conflicts with their knowledge. As they process the newly acquired knowledge, if it is consistent, the gained knowledge will be integrated and when it is inconsistent, it will be accommodated and adopted accordingly [17]. According to this theory, we are living in a world which we will never be able to understand, although we struggle to understand. So constructing knowledge is an evolutionary process. According to Piaget, there is an "external reality" which we do not understand, but continue to evaluate them until we understand.

#### IV. JEROME BRUNNER AND THE CONSTRUCTION OF KNOWLEDGE

Jerome Bruner another constructivist philosopher stressed that in constructivist learning the role of the learner is clear. "*The main tenet of constructivist learning is that people construct their own understanding of the world and in turn, their own knowledge*" [18]. In constructivist environment learners are involved critically and solve the problems collectively. According to him, the learner is active, constructive, collective, goal oriented, investigative and thoughtful. As such according to him education is student-centered and learners construct knowledge through their own investigation [19]. The learner has to take initiative for self-testing and constantly check the progress to make sure that all the goals and objectives of the learning are met successfully. Learning in a constructivist environment is discovery based and meaningful [20]. "*Knowledge is not a self-sufficient entity; that knowledge is not directly transmittable from person to person, but rather is individually discovered*".

According to him, human's intellectuality does not progress automatically, but through a phase. It depends on how a person uses his/her mind. He has always argued that the learner should be placed at the center of the learning. Learners must

learn collectively and it will lead them towards a meaningful life. Bruner one of prominent constructive psychologist was not happy with the school arrangement of instruction. He was of the view that a learner can learn any subject at any phase of the education, if it is taught effectively. So according to him the most important issue is to make the learner ready to learn. Teachers should arouse the learner's analytical thinking about the subject we teach. Teachers also should arouse the learners' interest in the content material and must make the information relevant. [21]. According to Bruner, learning without mind is not measurable.

Bruner explains that learners remember things with the view of meaning in their minds not just facts. So education is a method of discovery. When learner retrieves information he/she makes a discovery. This discovery learning is very effective method of acquiring knowledge. [22].

In constructivism learning, when students are allowed to make their own investigations, they will gain better understanding [23]. The teachers' job is to engage the students in meaningful dialogue and guide them when it is necessary so much so that students can positively progress. Bruner emphasizes that children when in their early ages, try to roll over, sit down, sit up, walk and they fall, are in reality learning based on their own trial and error. So according to Bruner, instructors or parents should provide adequate content for the children based on their developmental age and capabilities [24].

According to constructivist, students learn by adapting an activity based framework and which is a two way transformation of knowledge. Children grow stage by stage while learning in a socially packed environment [25]. In a constructivist classroom, there is an appreciation between teachers and the students [26]. They learn from one another with full enjoyment. It is a community based learning. Constructivist epistemologies suggest that, students learn through their personal interest and understanding. "*Knowledge is not mechanically acquired, but actively constructed within*

*the constraint and offerings of the learning environment*". So they have an urge to continue to learn. In constructivist epistemology and pedagogy, learners are engaged in question and answer sessions to understand things better. These learners are interdependent on one another. They understand better when they do group work. Students are given the opportunity to decide in what kind of experiments they would like to be engaged.

#### V. VYGOTSKI AND THE CONSTRUCTION OF KNOWLEDGE

Vygotsky, another prominent figure of the constructivist paradigm asserts that social interaction has the most fundamental position in the development of cognition [27]. Vygotsky claims that every event in the child's social development appears two times: firstly it appears on the social stage i.e. (interpsychological). In this stage children develop as a result of social interactions. [28]. Secondly, it appears on the individual stage (intrapsychological). In this stage a child needs individualistic attention and support for the development [29]. For the cognition to develop there must be a "zone of proximal expansion" among the children. Learners in the beginning are not able to handle things all by themselves. As such the concept of scaffolding will assist them to bridge that gap and improve their understanding of the complex problem.

Instructors have to provide scaffolding opportunities to their learners in order to help them achieve a meaningful learning. [30]. Study indicates that scaffolding actually improves social and self-directed learning and enhances student's satisfaction. According to [31] Scaffolding helps a learner to realize that there are other possibilities to improve understanding [32]. Scaffolding is a "*loan of consciousness*" by learners which help each other to achieve meaningful results. "*The true direction of the development of thinking is not from the individual to the social, but from the social to the individual*" [31].

Vygotsky insists that there is a strong relationship between human beings and the environment we inhabit [33]. This is the

culture which mediates our mental actions. Vygotsky places culture at the center of any cognition. Without society there is no chance for the mind to develop. *“Culture can be seen as a way of being that is indexed to the environment. In this sense, an individual's culture can vary as his or her surroundings change.”* Vygotsky believed that natural devices i.e. (sign, concepts, languages) guide the behavior of a child. The child acquires that natural device with the help of an adult [34]. As such it is evident that, when a child reaches the age of two, he/she starts interaction with the society. He regarded the children as a social being. According to him, when a child is born the initial function of his/her speech is social interaction. So the child has a direct relationship with reality and that reality means socialization. [35].

Language acquisition takes place more when children interact with each other in the foreign language environment. This interaction is very important and takes the child's level one step ahead of his/her current stage. So interaction with other people indeed helps children to learn collectively and effectively [36]. Vygotsky had a different point of view about higher and lower brain function. To him the lower function of the brain is genetically gifted to a person. The higher brain function develops when we socially interact with the environment. He asserts that to gain knowledge, the learner has to be a responsible person. He should strive to perform well on a given task. The learner should remain motivated and understand the roles and regulations of the study. He should be a goal oriented learner and must have interaction with the environment [37]. Vygotski claims that as a result of our social interactions we are not the slave of a situation. Knowledge and meanings are historically, socially and culturally related through the social process and human achievement.

We use codes and symbols of the environment to communicate with each other in society and in the process we learn. [34]. In early childhood education, the instructor must consider the socio-cultural growth of a child. In providing learning materials, the teacher must include all facet of socio-cultural activity into the curriculum for effective childhood

education [38]. Socio-cultural signs and symbols facilitate us to think and solve more complex problems. Through the tools and signs of culture our psychology is mediated. So once the cultural artifacts become internalized, only then, a person acquires higher order assessment (thinking). As such, he was of the view that learning is a constructivist endeavor. Culture contributes to a child's intellectual development in two ways: Firstly, much of the content of children's learning come from the culture. Secondly, culture educates a child on how to reflect and what to reflect [39].

According to the constructivist assertion, learners are encouraged to dominate the classroom by learning together. Learners will not enjoy learning if it happens in isolation. Learners improve their critical thinking and intellectual skills by learning collectively [40]. There are five important value added principles of cooperative learning. Firstly: Interdependency among the learners. They learn together and learning is part and parcel of their life. They work in a small group and plan to finish a product together. This kind of learning bears great value for all learners [41]. In other words they benefit from each other's knowledge. Secondly: each member of the group is accountable for sharing his/her knowledge with the rest of the group. Thirdly: they use their collaborative skills to help each other to learn and encourage each other to participate in problem solving and cooperative learning. Fourthly: equal opportunities for all. As a team, each member is responsible in taking part in the group building activity and strives for its collective success. Fifthly: they all learn, interact and transfer knowledge together. In cooperative learning, students work together for a common goal and objective. All work to achieve one simple purpose: that is to benefit one another by sharing their personal knowledge and skills [42].

For a comprehensive cooperative learning among the students, study found that instructors are responsible for guiding learners to manage their groups accordingly. Teacher should teach learners the procedure of learning together and how to manage group activities [43].

## VI. CONCLUSION

In constructivist settings, students learn by piecing information together with what they are already acquainted with. Students in a constructivist environment are placed at the center of learning. The learner has the responsibility of her/his own learning. The learner is actively involved. The job of a teacher is to facilitate and pose a problem. So brain storming starts in the classroom and inquiry based learning and social interaction begins [44] In a constructivist classroom, the teacher makes learning plans for the students and not for himself/herself. Knowledge is constructed by the learners not by the teachers.

Teachers in the constructivist classroom assume that learners construct skills based on interaction with the environment. Students in constructivist settings, construct knowledge in person, symbolically, collectively and theoretically. Thus, the theory of constructivism is based on invention, investigation, rational, initiated inquest and critical thinking. The learner therefore, constructs his/her own conceptualization and finds elucidation to the given impediments. Study professes that when students spend more time being engaged in the process of learning, they in fact learn more [45] As such, undoubtedly, the constructivist theory of learning has the most striking psychological inspiration in our classrooms.

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