CHETANA
INTERNATIONAL JOURNAL OF EDUCATION (CIJE)
Peer Reviewed/Refereed Journal
(ISSN: 2455-8729 (E) / 2231-3613 (P))
Impact Factor
SJIF 2023 - 7.286

Prof. A.P. Sharma
Founder Editor, CIJE
(25.12.1932 - 09.01.2019)

Constructivist Approaches to Teaching and Learning

Dr. Vanita (Officiating Principal)
Dasmesh Girls' College of Education, Badal
Email-vanitagupta1971@gmail.com, Mob.-09815929560

First draft received: 12.10.2023, Reviewed: 18.10.2023, Accepted: 26.11.2023, Final proof received: 30.12.2023

Abstract

It is constructivism that initiated learner centred approach in education. It emphasizes on the construction of knowledge by the learner in the social and cultural environment in which they are embedded. It helps teachers to apply Piaget's and Vygotsky's work to classroom learning and development. Teachers provide experiences, guide discussion and play a supportive role in assisting students' attempts at developing understanding. Teaching based on constructivist principles is challenging and requires a great deal of expertise.

Keywords: *Constructivism, Teacher, Learner etc.*

Introduction

Past few decades have witnessed a paradigm shift in the field of education. The traditional methods of teaching are based on objectivist view of knowledge while the constructivism paradigm is based on the assumption that knowledge is subjective and learners construct knowledge in the social and cultural environment in which they are embedded. This paper attempts to highlight the role of constructivist approach in constructing knowledge by the learner.

Constructivism as a general philosophy has a long history and it can be traced to eighteenth century with the idea that humans can understand what they have themselves constructed. In 1978, Driver and Easley remarked that interventions provided in the classroom can help children to construct their own concepts.

What is Constructivism?

History of learning theories reveals that primarily there are four philosophical frameworks viz behaviourism, cognitivism, constructivism and humanism under which all the theories of learning falls. Constructivism is a philosophy of learning founded on the premise that, reflecting on our experiences, we construct our own understanding of the world we live in. Each of us generates our own "rules" and "mental models," which we use to make sense of our experiences. Learning, therefore, is simply the process of adjusting our mental models to accommodate new experiences

Constructivist Views of Learning

Constructivists like Piaget, Vygotsky, Novak and Posner agree on following characteristics of learning:

- Learning is an active meaning making process required to solve meaningful problems.
- Learning is facilitated by Social interaction
- Meaningful learning occurs within authentic learning tasks
- Learning implies the reorganization of prior conceptual schemes

Constructivist Curriculum

In construction of curriculum, a top- down' approach is generally followed. In this traditional approach, an 'expert' is believed to have the best knowledge and therefore, the expert determines what should be taught. This 'authoritarian' model of curriculum poses many problems. In contrast to objectivist view, the constructivist perspective places emphasis on providing students with opportunities to develop skills and knowledge, which they can relate to their prior knowledge and future utility. In the constructivist curriculum, the individual learner has an important role in determining what will be learned. The teacher decides with others as to what learning is relevant, useful and important to the learner.

Students also explore the means to learn. Students work in groups and discuss their problems and solutions.

Curriculum Transaction in Constructivist Paradigm

Constructivism provides a 'new theory of learning' and also a 'new theory of teaching. This theory calls for a major shift from teacher-cantered direct instruction towards student-centred understanding-based teaching. The traditional methods of teaching consider teaching as transmission of facts to students who are considered passive receptors. In such classrooms, lecture method predominates and teachers stress on completing the voluminous syllabus. Teacher-student relationships are characterized as distant, where teacher is the authority figure. Teacher is also seen as authority of subject content, who has the right knowledge.

Role of Teacher

In the constructivist classroom, the role of teacher changes from 'transmitter' of knowledge to 'facilitator' of knowledge construction. Teacher must know the pre-concepts and mis-concepts of children. Teacher's activities may be such that help the children in clarifying ideas, providing children rational explanations, challenging misconceptions, guiding experimentation, predicting results and drawing inferences. Teachers should ask questions which test students' ideas and provide feedback to them. They should be encouraged to debate ideas and also comment on answers and explanations provided by other students.

Role of students

Student's role in the constructivist classroom changes from 'knowledge acquisition' to 'knowledge construction'. Student questions teachers and others student's ideas, gives predictions about phenomenon, designs experiments to test his/her own ideas, formulates and tests hypothesis and discusses results. She/he compares the findings and results with those of others and draws independent conclusions, applies the new concepts to familiar situations and familiar concepts to new situations. Constructivism allows academic freedom to students, encourages cooperative learning and sharing of thought among peers. Students can also work on independent projects.

Constructivist Approaches

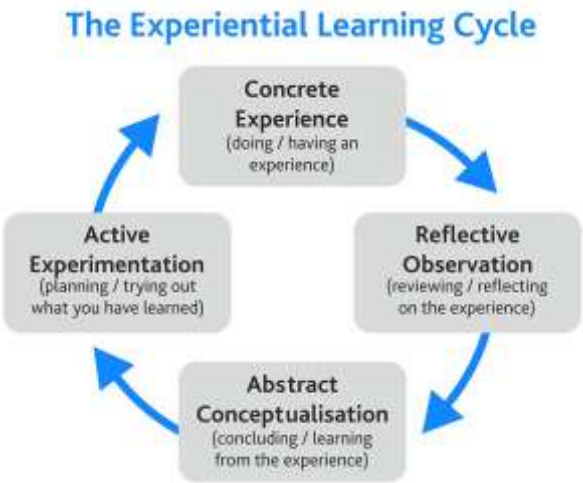
In the constructivist philosophy knowledge is always the result of a constructivist activity and students construct knowledge in the particular context in which the cognizing is operating. Some popular methods that help cognitive processing are presented below:

Experiential Learning

Experiential learning is not just field work' or 'praxis' which means connecting of learning to real life situation. On the contrary, it is a theory that defines the cognitive processes of learning and it asserts the importance of critical reflection in learning. The teaching learning method based on this theory helps in developing four kinds of abilities, namely, concrete experiences, reflective observations, abstract conceptualization and active experimentation. Experiential learning allows scope for diverse individual learning styles.

As observed by Stephen Brookfield (1983), the term 'Experiential learning' is used with two connotations. On the one hand it is used to describe the learning where a student acquires and applies knowledge, skills and feelings in an immediate and relevant setting. It thus involves a direct encounter with the phenomena being studied rather than merely thinking about the encounter or only considering the possibility of doing something about it. The second connotation of experiential learning is 'education that occurs as a direct participation in the events of life'. Unlike in the first connotation, learning here is not sponsored by some formal educational institution but is undertaken by people themselves. It is learning that is achieved through reflection upon everyday experiences and is the way that most of us do our learning

Experiential learning asserts the importance of critical reflection in learning. Kolb, one of the proponents of experiential learning developed a cyclic model called experiential learning cycle as shown in figure consists of four elements, namely, concrete experience, observation and reflection, forming abstract concepts and testing in new situation.

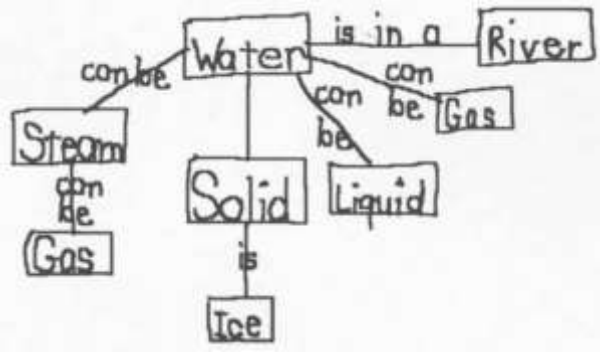


Based on the four elements of his model, Kolb argues that effective learning entails the possession of four different abilities. They are concrete experience abilities, reflective observation abilities, abstract conceptualization abilities and active experimentation abilities. These four abilities manifest 4 basic learning styles involving learning characteristics on two different continua of learning viz, concrete experience to abstract conceptualization and active experimentation to reflective observation.

Concept Mapping Approach

The use of concept maps as a teaching strategy was first developed by J.D.Novak of Cornell University in the early 1980s. It was derived from Ausubel's Learning theory which places central emphasis on the influence of students' prior knowledge on subsequent meaningful learning. Concept map is a device for representing the conceptual structure of a subject/discipline in a two-dimensional form which is analogous to a road map. A concept, as defined by Novak, is regularity in objects or events designated by a specific label. Concept maps are diagrammatic representations which show meaningful relationships between concepts in the form of propositions. Propositions are two or more concept labels linked by words which provide information on relationships or describe connections between concepts. Concept mapping is particularly useful in learning about the structure of knowledge and understanding the process of knowledge construction. It involves Meta learning i.e. learning about learning. Concept mapping uses three types of knowledge facts, concepts and generalizations. The steps involved in concept mapping are selecting the key concepts and sub concepts through prepositions and making meaning out of horizontal and vertical linkages.

Denny, a six year old, is asked to draw a map that shows his understanding of 8 common concepts



Social Inquiry Approach

Social inquiry is helpful in identifying the social issues and dealing effectively with these. The method of field survey and research is based on social enquiry approach. Massialas and Cox stress three main aspects of social enquiry.

- open climate
- hypothetical solution and
- facts as evidence

This philosophy emphasizes research or evidence based construction of social reality. It is based on the belief that the promotion of a reflective and inquiry frame of reference to the social issues and problems will improve the quality of personal and social existence. The Social Inquiry approach will be commonly used by students in social studies to develop conceptual understandings as they examine issues, ideas and themes. Processes in this approach may be used by themselves, but are best integrated with other processes. There may be different starting points for an inquiry, and the steps may not necessarily be linear.

Herbert Thelen suggests an experience based learning situation easily transferable to later life situations and characterized by a vigorous level of enquiry. The concepts of inquiry, knowledge and dynamics of group learning are central in this strategy. The teaching learning can be organized in following six phases.

Phase I: Encounters conflicting or puzzling situation

Phase II: Explores reactions to the situation

Phase III: Formulate hypothesis, plan and organize activities (data gathering)

Phase IV: Independent and group study

Phase V: Analysing the process and data

Phase VI: Drawing feedback and recycle activity

Problem Solving Approach

Problem solving can be used to develop conceptual understanding and the ability to transfer and apply this understanding to new situations. It gives students opportunities to think rationally and to see relationship and disciplinary structures. Through this method students develop intellectual skills of thinking and learn how to learn. Thinking is the basic skill required in problem solving by which students make sense out of experiences. Thinking skills and steps in problem solving can be taught by providing students with problem situations and opportunities to solve these situations.

Steps in Problem solving Approach

- Identifying the Problem
- Planning the process to solve the problem
- Executing the plan
- Evaluating the solution

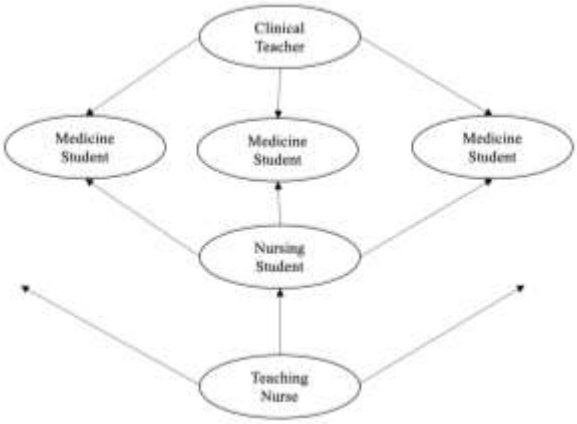
Team Teaching

Team teaching is suitable whenever there is a need to pool resources, interests and expertise in order to devise and implement a scheme of work suitable to the needs' of the pupils and the facilities of the school.

"Team Teaching: An alternative to lecture fatigue"

Team teaching is an approach which involves true team work between two qualified instructors who, together, make presentations to an audience. The instructional advantages of team teaching include:

1. Lecture-style instruction is eliminated in favour of a dynamic interaction
2. Teaching staff act as role models for discussion and disagreement.
3. Team teaching makes effective use of existing human resources.
4. Team teaching has the potential for revitalizing instructional capabilities through a process of dialogue.
5. Interest in traditional courses can be stimulated



Team teaching requires essentially an integrated studies approach to curriculum organization for example understanding a topic in ecology which deals with the entire biosphere requires interplay of knowledge from subject fields such as botany which deals with plant life, zoology which deals with animal life, chemistry which gives chemical laws and sociology which takes human living into its fold. Even mathematics and technology are correlated fields

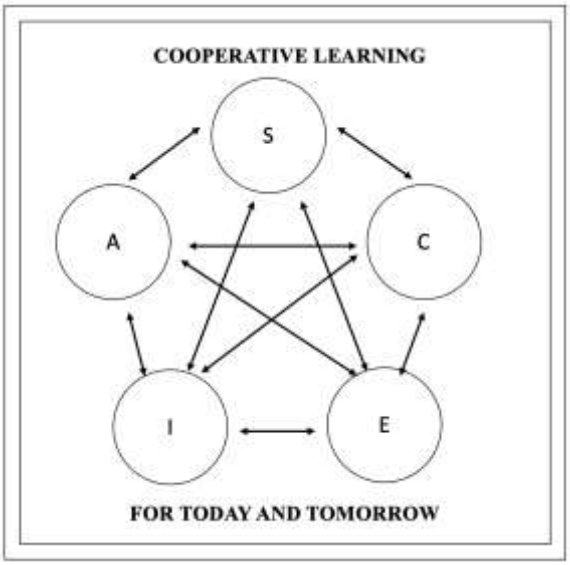
Making special teaching skills available, matching size and composition of the group to the task at hand, flexible timetable, sharing the teaching of larger groups of children having a non-graded teaching structure, better utilization of instructional materials and audio-visual facilities, permitting the older and younger children to mix cooperatively in learning are seen as the inherent advantages of the team teaching approach. As teaching methods, time and process in team teaching are flexible it helps the learners with varying degrees to construct their own knowledge.

Cooperative learning

Cooperative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it.

Cooperative efforts result in participants striving for mutual benefit so that all group members.

- Gain from each other's efforts. (Your success benefits me and my success benefits you.)
- Recognize that all group members share a common fate. (We all sink or swim together here.)
- Know that one's performance is mutually caused by oneself and one's team members. (We cannot do it without you.)
- Feel proud and jointly celebrate when a group member is recognized for achievement. (We all congratulate you on your accomplishment!).



Learning can be enhanced in cooperative groups through rehearsal and elaboration, creation and resolution of disequilibrium, or scaffolding of higher mental processes. Different forms of cooperative learning fit different purposes, need different structures, and have their own potential problems and possible solution.

David Johnson and Roger Johnson list five elements that define true cooperative learning groups:

- Positive interdependence
- Face to face interaction
- Individual accountability
- Collaborative skills
- Group processing

Cognitive Apprenticeships

Cognitive apprenticeship is a relationship in which a less experienced learners acquires knowledge and skills under the guidance of an expert. Both the newcomers to learning and the old timers contribute to the community of practice by maturing and re-mastering skills and sometimes improving these skills in the process. It has following characteristics:-

- Students observe an expert model the performance.
- Students get external support through coaching or tutoring.
- Students receive conceptual scaffolding which is then gradually faded as the students becomes more competent.
- Students articulate their knowledge i.e. pitting into words their understanding of processes.
- Students reflect on their progress by comparing with their earlier performances.
- Students are required to explore new ways to apply their learning.

Investigatory Approach

The Investigatory approach was developed in early twentieth century through questioning of personal and social queries in the traditional classrooms where learning took place through recitation and rote methods within narrowly constrained curriculum. The psychological developments in the area of child development and the educational progressivisms' stress on the experiences of learner in the learning process gave a new dimension to this method.

Investigatory approach was viewed as a scientific method of finding answers to the questions.

The method gained popularity among scientists and was useful in laboratory investigation. Investigatory approach is useful not only in understanding scientific phenomena but also in finding answers to social phenomena.

Investigatory approach involves:-

- Stating the question to be investigated.
- Formulating the Hypothesis.
- Suggesting the experiment
- Identifying the dependent and independent variables
- Conducting the experiment
- Recording the observations
- Analysing the data
- Generalising and drawing conclusions.

Conclusion

Constructivist views of learning focus on 'how individuals construct their own cognitive structures as they interpret their experiences in particular learning situations'. Constructivist approaches emphasize making students aware of their own role in constructing knowledge (Cunningham, 1992). In the constructive classroom, student designs experiments, test hypothesis, draws conclusions, compare his findings and results with those of others. In the constructivist classroom, teacher is the manager and organiser of the class whereas in the objectivist classroom teacher is the controller of the class Constructivist paradigm calls for a change in the classroom culture, attitudes, beliefs and practices. Role of teacher in this paradigm shifts from the ‘transmitter’ of knowledge to ‘investigator’ and ‘explorer’ of knowledge. Role of student changes from ‘knowledge acquisition' to ‘knowledge construction'. Constructivist paradigm is a new culture, a new environment in the class

References

- Johnson, D.W. & Johnson, R.(1999). Learning together and alone, competition and individualisation, (5th Ed.), Boston: Allyn and Bacon.
- John, S. (2007). Constructivism and learner cantered approach in Education. Edutracks, 6(5), 13-15.
- Kolb, D.A. & Fry, R. (1975). Toward an applied theory of experiential learning, in C. Cooper (ed.) Theories of group process, John Wiley, London.
- Mallikarjuna, S.(2023). Constructivism–based approach: Paradigm shift in teaching & learning of mathematics in classroom. Edutracks, 22(8), 11-13.
- Novak, J. (1993). Human Constructivism: A unification of psychology and epistemological phenomena in meaning making, International Journal of personal Construct Psychology.
- Sharma, S.(2006). Constructivist Approaches to Teaching and learning. New Delhi: National Council of Educational Research and Training.
- Sharma, S.(2018). Concept mapping as a tool for teaching. Edutracks, 18(4), 8-9.
- Vishwanth, H. N. (2022). Constructivist pedagogy for Nexgen students to empower them to think beyond their reach. Edutracks, 21(12), 25-33.
- Von, Glaserfeld, E. (1991). Knowing about Meta physics: Aspect of the radical constructivist position, In F. Steirer (ed.) Research and reflexivity, CA: Sage, Newbury Park.