

PLANNING TEACHING FROM CONSTRUCTIVIST

PERSPECTIVE

Constructivism Learning Theory

Constructivism is relatively a new approach in the field of psychology and education stressing more upon the cognitive abilities of perception, learning, attention, and thinking and reflection, etc. of the child, his past experiences and his cognitive style of coordinating and integrating his own thoughts and conditions in learning and acquiring knowledge. In psychology, it is referred to as a theory of knowledge, which is called epistemology, which means that human beings generate knowledge and its meaning from their own experiences of the world around. Constructivism is a new approach to learning which has been developed by *Seymour Papert and his colleagues* at Massachusetts Institute of Technology, USA, and who had worked with Jean Piaget. In education, constructivism presents a radical shift from behaviouristic approach in teaching and learning to education based on cognitivism. It is based upon the philosophy that accepts the active role of learner in learning and believes in his inherent capabilities. It is assumed that learner plays an active role in constructing knowledge by searching and selecting things and events while interacting with the environment. Learner's cognitive abilities and his past experiences play a significant role in the construction of knowledge. Constructivism learning theory is a philosophy which enhances students' logical and conceptual growth. The underlying concept within the constructivism learning theory is the role which experiences-or connections with the adjoining atmosphere-play in student education.

The constructivism learning theory argues that people produce knowledge and form meaning based upon their experiences. Two of the key concepts within the constructivism learning theory which create the construction of an individual's new knowledge are accommodation and assimilation. Assimilating causes an individual to incorporate new experiences into the old experiences. This causes the individual to develop new outlooks, rethink what were once misunderstandings, and evaluate what is important, ultimately altering their perceptions. Accommodation, on the other hand, is reframing the world and new experiences into the mental

capacity already present. Individuals conceive a particular fashion in which the world operates. When things do not operate within that context, they must accommodate and reframing the expectations with the outcomes.

Constructivist teaching strategies

The role of teachers is very important within the constructivism learning theory. Instead of giving a lecture the teachers in this theory function as facilitators whose role is to aid the student when it comes to their own understanding. This takes away focus from the teacher and lecture and puts it upon the student and their learning. The resources and lesson plans that must be initiated for this learning theory take a very different approach toward traditional learning as well. Instead of telling, the teacher must begin asking. Instead of answering questions that only align with their curriculum, the facilitator in this case must make it so that the student comes to the conclusions on their own instead of being told. Also, teachers are continually in conversation with the students, creating the learning experience that is open to new directions depending upon the needs of the student as the learning progresses. Teachers following Piaget's theory of constructivism must challenge the student by making them effective critical thinkers and not being merely a "teacher" but also a mentor, a consultant, and a coach.

Characteristics of Constructivist Teaching

One of the primary goals of using constructivist teaching is that students learn how to learn by giving them the training to take initiative for their own learning experiences.

The characteristics of a constructivist classroom are as follows:

- the learners are actively involved
- the environment is democratic
- the activities are interactive and student-centered
- the teacher facilitates a process of learning in which students are encouraged to be responsible and autonomous

Key Principles

There can be five key principles of constructivist learning theory. These can be used for curriculum structure and lesson planning.

Five Guiding Principles of Constructivism:

1. Pose problems of emerging relevance to students.
2. Structure learning around primary concepts.
3. Seek and value students' points of view.
4. Adapt instruction to address student suppositions.
5. Assess student learning in the context of teaching.

These are applicable at all levels and stages of learning.

Traditional classroom versus constructivist classroom

A contrast between the traditional classroom and the constructivist classroom is illustrated below:

Aspects	The Traditional Classroom	The constructivist Classroom
1.Focus	Begins with parts of the whole– Emphasizes basic skills	Begin with the whole – expanding to parts
2.Curriculum	Strict adherence to fixed curriculum	Pursuit of student questions / interests
3.Study Material	Textbooks and workbooks	Primary Sources / manipulative materials
4.Teacher Learner Relationship	Instructor gives/students receive	Learning is interaction – building on what students already know
5.Role of Teacher	Instructor assumes directive, authoritative role	Instructor interacts / negotiates with students
6.Evaluation	Assessment via testing / correct answers	Assessment via student works, observations, points of view, tests. Process is as important as product
7.Knowledge	Knowledge is inert	Knowledge is dynamic / change with experiences
8.Students’ interaction	Students work individually	Students work in groups

Role of Teachers

In the constructivist classroom, the teacher's role is to prompt and facilitate discussion. Thus, the teacher's main focus should be on guiding students by asking questions that will lead them to develop their own conclusions on the subject. Parker J. Palmer (1997) suggests that good teachers 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.

Models of teaching from constructivist perspective

I. David Jonassen identified three major roles for facilitators to support students in constructivist learning environments:

- Modeling
- Coaching
- Scaffolding

A brief description of the Jonassen major roles are:

Modeling – Jonassen describes Modeling as the most commonly used instructional strategy in Constructivist Learning Environments. Two types of modeling exist: behavioural modeling of the overt performance and cognitive modeling of the covert cognitive processes. Behavioural modeling in Constructivist Learning Environments demonstrates how to perform the activities identified in the activity structure. Cognitive modeling articulates the reasoning (reflection-in-action) that learners should use while engaged in the activities.

Coaching – For Jonassen the role of coach is complex and inexact. She acknowledges that a good coach motivates learners, analyzes their performance, provides feedback and advice on the performance and how to learn about how to perform, and provokes reflection and articulation of what was learned. Moreover, she posits that coaching may be solicited by the learner. Students seeking help might press a "How am I Doing?" button. Or coaching may be unsolicited, when the coach observes the performance and provides encouragement, diagnosis, directions, and

feedback. Coaching naturally and necessarily involves responses that are situated in the learner's task performance.

Scaffolding - Scaffolding is a more systemic approach to supporting the learner, focusing on the task, the environment, the teacher, and the learner. Scaffolding provides temporary frameworks to support learning and student performance beyond their capacities. The concept of scaffolding represents any kind of support for cognitive activity that is provided by an adult when the child and adult are performing the task together .

II. Another constructivist learning design was developed by George W. Gagnon. Jr., and Michelle Collay.

In this model, teachers implement a number of steps in their teaching structure. The steps to be followed are as follows:

1. Development of a situation: the teacher develops a situation for students to explain. In constructivist approach there is one basic assumption that "There is no one set of generalized learning laws with each law applying to all domains" of learning. Therefore, here the teacher takes care that the learning process in which learners carry out activities should have direct relationship with the learning and the culture in which the process is to be carried out.

2. Grouping: the teacher selects a process for grouping of materials and students. On many occasions individualistic learning takes place in learners. But under the purview of this approach learners for achieving some difficult and (may be) higher objectives may undertake collaborate efforts, share experiences, discuss the diverse phenomena, and have productive dialogue with peers on different concepts or different aspects of events or situations present in the environment.

3. Bridging: Build a bridge between what students already know and what the teachers want them to learn Constructivism upholds the conviction that learner creates his 'reality' through his own efforts by exploring and discovering the contents of his present environment. The "real world" is not as it seems to him, but rather it is what he as a learner perceives and discovers it. It is his psychological world which determines the meaning and context of the things, events and

situations for the learner. Learner's "real world" from where he derives meaning and construct knowledge is created by him not by some other individuals.

4. Anticipate questions to ask and answer without giving away an explanation Constructivist theory is based on the belief that real learning occurs when the learner constructs his personal knowledge and understanding being an active participant of the learning process. Good learning can take place when learners engage in dialogue and discuss about different concepts, things and events with others-may be the students or the teachers.

5. Freedom of expression: Encourage students to exhibit a record of their thinking by sharing it with others.

6. Assessment: Solicit students' reflections about their learning. In constructivist approach it is not the output (like the traditional pattern of assessment) which is stressed upon but rather it is essentially the true potential of the learners which is given importance. In constructivism, the assessment is a two-way process involving interaction between the learner and the teacher. The evaluator sets a stage of dialogue with the learner (whose performance is being assessed) to find out his current status of performance on some specific task or activity. Feedback from the concerned learner is also considered quite worthwhile. Learner and the teacher also find out the ways and means to improve upon the performance on subsequent occasions. Thus, learning and evaluation are highly mutually interlinked concepts and are not the two separate processes. In this approach the instructor (teacher) accepts the assessment as a continuous and interactive process that measures achievement of the learner, the quality of teaching experiences and the contents of the course work.

III. The Information Construction (ICON) model. Robert O. McClintock and John B. Black of Columbia University Teachers College derived yet another design model from several computer technology-supported learning environments at the Dalton School in New York.

The Information Construction (ICON) model contains seven stages:

1. **Observation:** Students make observations of primary source materials embedded in their natural context or simulations thereof.

2. **Interpretation Construction:** Students interpret their observations and explain their reasoning.
3. **Contextualization:** Students construct contexts for their explanations.
4. **Cognitive Apprenticeship:** Teachers help student apprentices, master observation, interpretation, and contextualization.
5. **Collaboration:** Students collaborate in observation, interpretation, and contextualization.
6. **Interpretations:** Students gain cognitive flexibility by being exposed to multiple interpretations from other students and from expert examples.
7. **Multiple Manifestations:** Students gain transferability by seeing multiple manifestations of the same interpretations.

Examples of constructivist activities

In the constructivist classroom, students work primarily in groups and learning and knowledge are interactive and dynamic. There is a great focus and emphasis on social and communication skills, as well as collaboration and exchange of ideas. This is contrary to the traditional classroom in which students work primarily alone, learning is achieved through repetition, and the subjects are strictly adhered to and are guided by a textbook. Some activities encouraged in constructivist classrooms are:

- Experimentation: students individually perform an experiment and then come together as a class to discuss the results.
- Research projects: students research a topic and can present their findings to the class.
- Field trips. This allows students to put the concepts and ideas discussed in class in a real-world context. Field trips would often be followed by class discussions.
- Films. These provide visual context and thus bring another sense into the learning experience.
- Class discussions. This technique is used in all of the methods described above. It is one of the most important distinctions of constructivist teaching methods.

Constructivist approaches can also be used in online learning. For example, tools such as discussion forums, wikis and blogs can enable learners to actively construct knowledge.

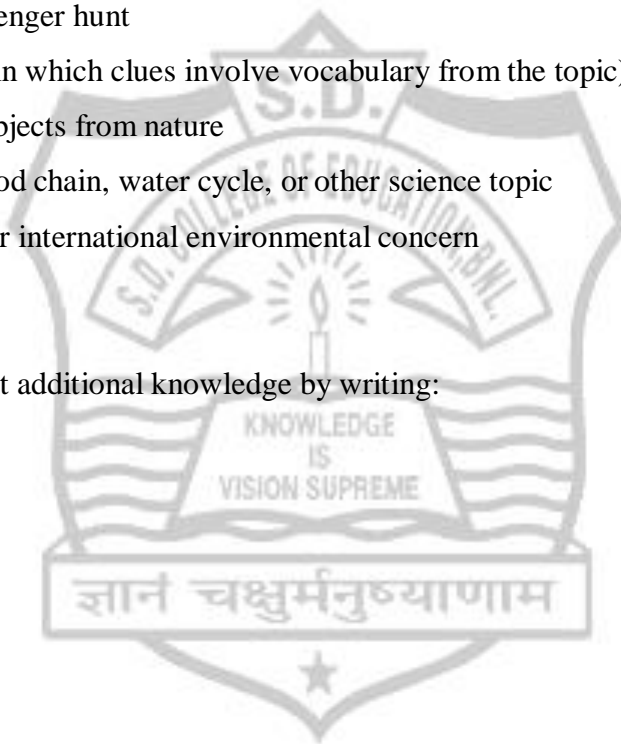
The following list of exhibit, presentation, and demonstration methods will provide some useful starting points to the students.

1. Students can construct additional knowledge by figuring out/analyzing:

- solutions to problems in the school or community
- mathematics formulas to explain a problem, or pose a solution
- categorization method for some plants or animals in your area based on careful observation (perhaps a small collection, or homemade "museum")
- a plan for a scavenger hunt
- a treasure hunt (in which clues involve vocabulary from the topic)
- a collection of objects from nature
- the night sky, food chain, water cycle, or other science topic
- local, national, or international environmental concern

2. Students can construct additional knowledge by writing:

- poems
- short plays
- screen plays
- legal briefs
- song lyrics
- journals
- diaries
- memoirs
- travelogues
- interviews
- letters (or e-mail) to experts
- original advertisements
- new endings for stories or songs



- "what if..." thought experiments

3. Students can construct additional knowledge by making/inventing/designing/drawing:

- posters
- cartoons
- timelines
- models
- charts
- maps
- graphs
- board games
- concept maps
- multimedia presentations

4. Students can construct additional knowledge by performing/presenting:

- a play
- a concert
- role-play lecture (such as a well-known person from history)
- a dance based on literature or historical event
- collected songs about a topic from another era

As students work through the problem, help them plan appropriate ways to construct and demonstrate their solutions.

Constructivist assessment

Traditionally, assessment in the classrooms is based on testing. In this style, it is important for the student to produce the correct answers. However, in constructivist teaching, the process of gaining knowledge is viewed as being just as important as the product. Thus, assessment is based not only on tests, but also on observation of the student, the student's work, and the student's points of view. Some assessment strategies include:

1. **Oral discussions:** The teacher presents students with a "focus" question and allows an open discussion on the topic.
2. **KWL(H) Chart:** (What we **K**now, What we **W**ant to know, What we have **L**earned, **H**ow we know it). This technique can be used throughout the course of study for a particular topic, but is also a good assessment technique as it shows the teacher the progress of the student throughout the course of study.
3. **Mind Mapping:** In this activity, students list and categorize the concepts and ideas relating to a topic.
4. **Hands-on activities:** These encourage students to manipulate their environments or a particular learning tool. Teachers can use a checklist and observation to assess student success with the particular material.
5. **Pre-testing:** This allows a teacher to determine what knowledge students bring to a new topic and thus will be helpful in directing the course of study.

An example of a lesson taught with a Constructivist background

A good example of a lesson being taught in a constructivist way, with the teacher mediating learning rather than directly teaching the class is shown by the example of Faraday's candle. This is a lesson, on the functioning of candles. In open constructivist lessons using these lectures as a basis, students are encouraged to discover for themselves how candles work. They do this first by making simple observations, from which they later build ideas and hypotheses which they then go on to test. The teacher acts to encourage this learning. If successful, students can use this lesson to understand the components of combustion, an important chemistry topic.