

Learning can be
defined as a relatively
permanent change



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According to various learning theories, there are many different ways in which students learn, communicate and retain information. Some may be visual learners, who prefer visual aids and research, while others may be auditory learners who retain information better by communicating and listening. Similarly, different students may have different learning styles, such as preferring to learn through previous experience, watching from afar or immediate and direct attempting. It is not possible to deliver a standard teaching method to ensure all students effectively comprehend what is being taught. Due to this, it is utmost important to identify and work with the individual learning style of a student. This enables the teacher to interact better with them and to enhance their unique talents.

There are at least a dozen such classification schemes by which educational theorists have attempted to define and categorize students. Educational researchers who subscribe to this notion of learning argue that instructors need to adopt teaching styles that are compatible with the ways their students prefer to learn. This way of looking at learning reminds us that our students are not a single mass, and that teaching is an interactive process that must take into account the characteristics and needs of those on the other side of the podium, it is a good thing. To the extent that that understanding leads us to develop and use a variety of techniques in the classroom—lectures with visual aids, small-group discussions, demonstrations, hands-on activities—the idea of learning styles also makes a valuable contribution to our teaching.

Lev Semyonovich Vygotsky, a famous psychologist and the founder of cultural-historical psychology had proposed a theory of learning. The major <https://assignbuster.com/learning-can-be-defined-as-a-relatively-permanent-change/>

theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky (1978) states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals." (Vygotsky 1978). A second aspect of Vygotsky's theory is the idea that the potential for cognitive development depends upon the "zone of proximal development" (ZPD): a level of development attained when children engage in social behavior. Full development of the ZPD depends upon full social interaction. The range of skill that can be developed with adult guidance or peer collaboration exceeds what can be attained alone.

Because Vygotsky's focus was on cognitive development, emphasizing on how meanings and understanding comes from social encounters (social constructivism). It is interesting to compare his views with Bruner (cognitive constructivism). Jerome Seymour Bruner is another famous psychologist in the learning world. He has contributed greatly to cognitive psychology and cognitive learning theory in the general philosophy of education.

Bruner's theory is based on categorization. He describes how individual learners understand things in terms of development stages and learning styles interpreting experiences (Bruner & Haste, 1987). There are four major principles of Bruner's theory on constructivism. The first, encompass a predilection toward learning Bruner, J. (1960). *The Process of Education*. <https://assignbuster.com/learning-can-be-defined-as-a-relatively-permanent-change/>

Cambridge, MA: Harvard University Press Harley, 1995. In this principle, experiences encourage the learner toward a love of learning in general, or of learning something in particular. The second, how a grouping of knowledge is able to be constructed to best be understood by the learner. In this principle, understanding the fundamental structure of a subject makes it more comprehensible. Information is better absorbed when placed within the context of an ordered and structured pattern. To generate knowledge which is transferable to other contexts, fundamental principles or patterns are best suited. Therefore, the theory must be in a simple form for the learner to grasp it and it must be in a form connection to the student's experience. The third is effective manners for the teacher to present said material to the learner. In this principle, it is said that visual and symbols are the best mode of learning for learners as pictures are said to last longer in the head rather than words. The final principle would be effective sequencing. In this principle, it is important for the teacher to use an appropriate sequence that would make learning easier to the general population of learners.

Social constructivist focusing on Vygotsky strengths

Scaffolding assists students to accomplish tasks that they could not complete alone. This enables children to accomplish tasks that they ordinarily could not perform independently. Scaffolding optimizes learning via promoting content and material, tasks using a systematic approach. (Dickson, Chard, & Simmons, 1993). This gives children adequate support until they can apply new skills and strategies independently (Rosenshine & Meister, 1992). When students are learning new or difficult tasks, they are

given more assistance. Over time students assume more responsibility for their learning, while the teacher provides less support.

Social constructivist focusing on Vygotsky limitations

Although scaffolding can be used to optimize learning for all students, it is a very demanding form of instruction (Pressley, Hogan, Wharton-Mc Donald, Mistretta & Ettenberger, 1996). The following are some challenges and cautions for scaffolding instruction. A key note to remember is that all students may not need scaffolding for all tasks and materials, thus scaffolding can only be provided to those students who need it. Another point is to be knowledgeable of the curriculum as it will enable you to determine the difficulty level of particular materials and tasks as well as the time and supports necessary to benefit students. You would have to generate prompts to help students. The first prompt you give to a student may fail, so you may have to give another prompt or think of a different wording to help the student give an appropriate response. In order to use scaffolding, you would have to be positive, patient and caring. You may become discouraged of students for not respond or are not successful as a result of your initial scaffolding efforts. You must continue to convey a positive tone of voice in a caring manner along with continued scaffolding to notice any success.

Cognitive constructivist focusing on Bruner strengths

Bruner's theory creates an active process in which learners construct new ideas or concepts based upon their current/past. This theory encourages

active engagement of students, letting them participate in learning

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processes. Doing so, it promotes motivates student to grasp more knowledge, expanding their capabilities. It also promotes autonomy, responsibility and independence within students to aid their maturation of thought process. It allows students to develop their creativity skills by allowing them to think out of the box, at the same time instilling problem solving skills in them. Another important strength using this theory is that it creates a tailored experience for children when they go through different stages of maturity.

Cognitive constructivist focusing on Bruner limitations

Although there are many advantages using Bruner's theory, it also has its limitations. There is a possibility to create cognitive overload. When this occurs, learners get confused and stop taking in any new information, sometimes forgetting what they have learnt as well. When learners construct new ideas, there is a possibility of potential misconceptions. When such a situation arises, teachers may fail to detect problems and misconceptions.

In social constructivism (Vygotsky) believed in the " zone of proximal development', which is to do with the difference in between what a child could learn on its own and what it can learn through adults. Vygotsky believed that the teaching from adults provides a structure for the child to use as a safe context. This theory develops the learner's knowledge, by linking it with other information.

Cognitive constructivism (Bruner) was more concerned with the scaffolding, than the social aspect which Vygotsky was interested in. Bruner understood the teaching and guidance that older children and adults provide as being a <https://assignbuster.com/learning-can-be-defined-as-a-relatively-permanent-change/>

framework or reference that the child could use to guide its behaviour in confidence, by using it as a safe context to develop its knowledge, linking it with other knowledge

The difference between the two theories is that Vygotsky was more interested in the social aspect of learning that Bruner; who was more interested in the framework.

Human biology a very content dependent topic have always been taught involving considerable amounts of theory posed to the students. The approach does not lead to linking a new idea with existing concepts. An approach based on cognitive constructivism, would be to begin the lesson by probing the student prior understanding. This could be done by providing a picture of human body and asking students to draw out the different organs situated at different parts of the body.

This activity could be done in groups and would tap on social constructive approach of students gaining knowledge through peer collaboration.

It has been suggested that an approach to science teaching to be constructivism as learners have to construct the meaning of the subject taught. Students usually lose their interest when they are unable to find meaning to the theory presented to them. Science is not only based on theoretical explanation and experiments but a large portion is an understanding of the textbook. However, many of times science lessons do not use the textbooks.

The textbook is mainly used to outline the scope that has to be learnt, and the teacher shows the way or scaffolds the way to do so with the help of Information Communication Technology (ICT), pictures, charts, videos or diagrams. For example, explaining how forensic scientist work. As an alternative to starting off the lesson a situation can be introduced to the students, in the form of a video and some of the scientific steps that a forensic scientist would take could be brought forth to the students. These scientific steps introduced also serve as a purpose of introducing to them the common scientific experiments carried out by scientist. These introductions compliment Vygotsky's theory of scaffolding. For example, if we pose questions such as, what steps would a forensic scientist take when he/she finds an ink stain at the scene of crime? This would be an opportunity to introduce chromatography. The students would be able to create a linkage between the experiment and to a real scenario of a forensic scientist. In science teachings, the experiments reproduced in the classroom provides the element of uncertainty that all real experiments possess, this creates a link Bruner's concept of creating new ideas and concept based on current knowledge. The special quality of classroom experiments confronts students and engages them.

In order to demonstrate the function of a mercury barometer and explain how it is related to air pressure; a rather dry approach would be to calculate the magnitude and to show the students with not much students understanding or paying attention. However, if the approach of the lesson is started off with the historical background of the instrument and the functions are explained and the motivation and effort taken to create the instrument

barometer was elaborated, students are keener to share the excitement of the discovery and would help arouse interest. Through these stories (historical background), students are able to produce something like a movie imagine in their heads which includes the technical aspects of the instrument through the context of historical development.

By integrating scientific results and theories into context of everyday experience, it makes it easier for students to connect and remember their theories. This is a learner centered approach, where learners construct linkages but with limitations controlled by the teacher.

As a role as a science teacher, I truly support the constructivist perspective of learning science by interacting and interpreting through conceptualizations of events, such as physical and social experiences. As teachers, it is important to scaffold the students to question their experience which encourages development. These experiences have to be properly planned with consideration of existing ideas and understandings. It is important to take into consideration students' ways of thinking and teaching methods that provoke ideas. It is also important to be able to create links through application of concepts through the lessons. I truly believe that students should be allowed to explore their ideas and that would keep them engaged intellectually. From constructivist point, a proper lesson planning would consist of a careful analysis of possible routes from a student's point to the intended learning goal. Activities that support these routes and making links between their existing conceptions and scientific views must be taken into consideration. Learning science involves combining new concept structure as well as development for new rationality of knowledge. It is also important to <https://assignbuster.com/learning-can-be-defined-as-a-relatively-permanent-change/>

get students' feedback on a regular basis in order for teaching activities to be adjusted accordingly for effective learning.