



Teaching Toolkit

How Students Learn 4

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Constructivism & Social Constructivism

“As long as there were people asking each other questions, we have had constructivist classrooms. Constructivism, the study of learning, is about how we all make sense of our world, and that really hasn’t changed.”

(Brooks, 1999)

Constructivism is an umbrella term that includes a number of learning theories. Despite minor variations, each shares a set of core assumptions. Jonassen (1999) proposed the following eight characteristics. Constructivist learning environments:

1. Provide multiple representations of reality.
2. Emphasize knowledge construction instead of knowledge reproduction.
3. Emphasize authentic tasks in a meaningful context rather than abstract instruction out of context.
4. Provide learning environments such as real-world settings or case-based learning instead of predetermined sequences of instruction.
5. Encourage thoughtful reflection on experience.
6. Enable context- and content- dependent knowledge construction.
7. Support collaborative construction of knowledge through social negotiation, not competition among learners for recognition.
8. Avoid oversimplification and represent the complexity of the real world.

Constructivist theories are based around the idea that students construct their own meaning by building on their previous knowledge and experience. New ideas and experiences are matched against existing knowledge, and the learner incorporates these to make sense of the world. In such an environment the teacher cannot be in charge of the students’ learning, since everyone’s view of reality will be so different and students will come to learning already possessing their own constructs of the world.

Teaching styles based on this approach mark a conscious effort to move from these ‘traditional, objectivist models didactic, memory-oriented transmission models’ (Cannella & Reiff, 1994) to a more student-centred approach.

Constructivist Models

Piaget is one of the most famous founders of the type of constructivism often referred to as trivial constructivism. This refers to the fact that it is 'obvious' that knowledge is acquired through people actively trying to make sense of the work, not that it is insignificant or unimportant (Jordan, Carlile, & Stack (2008).

Furthering his earlier cognitive development theory (Piaget, 1970), he later (1985) attempted to explain how new information is shaped to fit with the learner's existing knowledge. The major concepts in this are outlined in Figure 1.

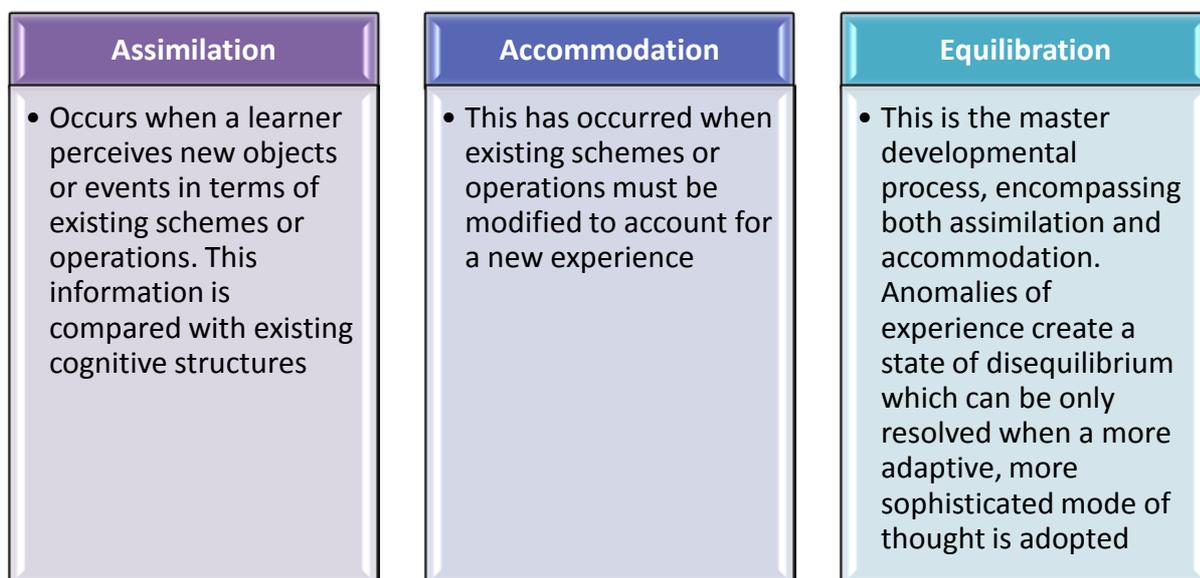


Figure 1: Key Components of Piaget's Conception of Calibration

Trivial Constructivism and Teaching

In a constructivist learning environment students are actively involved in student-centred learning activities (Gray, 2002). Classes tend to be less rigid in their structure and engage students in achieving the learning outcomes (Jonassen, 1999). Group work and discussion are integral parts of a constructivist classroom, and students are encouraged to seek information for themselves and from their peers.

Research of constructivist teaching in primary education suggested that children learn left to discover their own methods of addition performed as effectively as those who had been taught by an adult (Littleton & Wood, 2006)

A comparison of instruction in a traditional and a constructivist learning environment is presented in Figure 2 (Brooks & Brooks, 1999).

Traditional Instruction	Constructivist Instruction
Curriculum is presented part to whole, with emphasis on basic skills.	Curriculum is presented whole to part with emphasis on big concepts.
Strict adherence to fixed curriculum is highly valued.	Pursuit of student questions is highly valued.
Curricular activities rely heavily on textbooks and workbooks.	Curricular activities rely heavily on primary sources of data and manipulative materials.
Students are viewed as "blank slates" onto which information is etched by the teacher.	Students are viewed as thinkers with emerging theories about the world.
Teachers generally behave in a didactic manner, disseminating information to students.	Teachers generally behave in an interactive manner, mediating the environment for students.
Teachers seek the correct answer to validate student learning.	Teachers seek the students' points of view in order to understand students' present conceptions for use in subsequent lessons.
Assessment of student learning is viewed as separate from teaching and occurs almost entirely through testing.	Assessment of student learning is interwoven with teaching and occurs through teacher observations of students at work and through student exhibitions and portfolios.
Students primarily work alone.	Students primarily work in groups.

Figure 2: Comparison of Traditional and Constructivist Instruction

In a constructivist learning environment the teacher's role changes from that of dispenser of information to facilitator of information. They design classes that promote discussion, active learning, and reflection, and provide modeling, coaching, and scaffolding to students when required. Learning activities require full student engagement in practical, real world tasks and allow opportunities for students to reflect on their learning experiences.

Brooks & Brooks (1999) suggest 10 principles for the aspiring constructivist lessons. Constructivist teachers:

1 Encourage and accept student autonomy and initiative	2 Use raw data, primary sources, interactive, and physical materials	3 Use cognitive terminology (e.g., evaluate, explain) when framing tasks	4 Allow student responses to influence the shape & content of the class	5 Establish prior knowledge before developing a concept
6 Promote discussion with staff and other students	7 Encourage student inquiry & peer learning through open-ended questions	8 Seek elaboration of students' initial responses	9 Challenge students to evaluate their initial views and beliefs	10 Allow wait time after posing questions

Social Constructivism

Social constructivism shares many of the tenets of constructivism, but places greater emphasis on social interactions, context, and socio-cultural factors. Learning is not an individual process but involves a large social network, with the learner's culture providing the cognitive tools needed for development.

The theorist most commonly associated with social constructivism is Vygotsky, and in particular, his 'Zone of Proximal Development' (Vygotsky, 1978). This stated that the ability level a student can attain on their own can be exceeded with support and guidance from more advanced peers or adults. The distance between their actual level of independent achievement and their potential is the Zone of Proximal Development, and it is in this zone that most effective learning occurs.

To ensure development in the ZDP, the assistance/guidance received must have the features displayed in Figure 3.

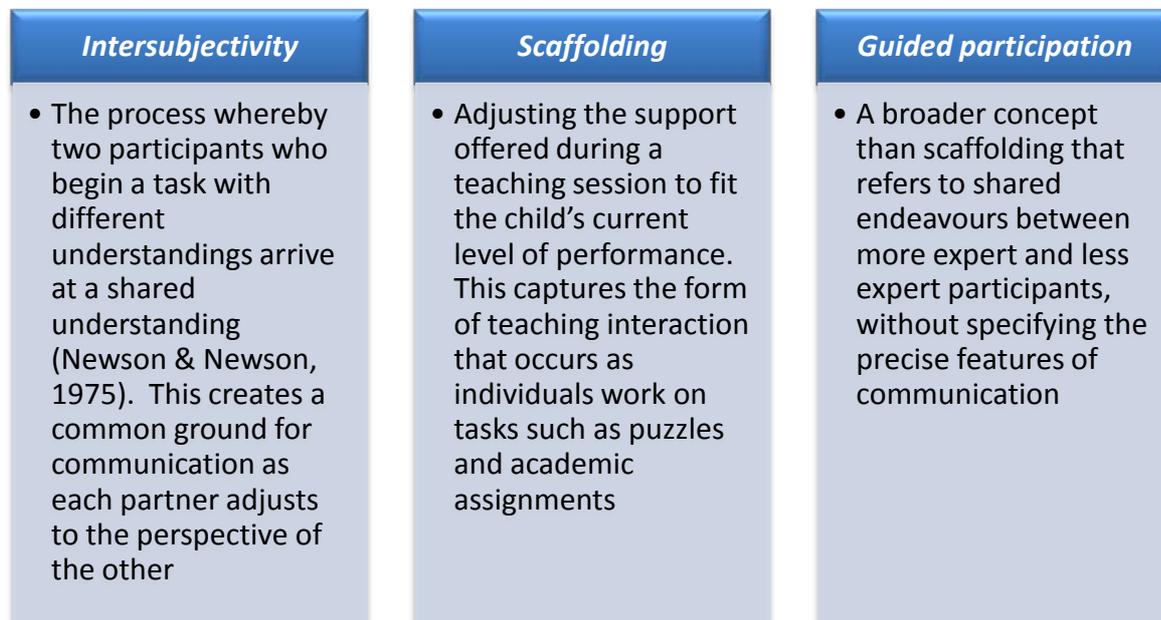


Figure 3: Feature Essential for Development in the Zone of Proximal development

Social Constructivism & Teaching

There is a great deal of overlap between a constructivist and social constructivist classroom, with the exception of the greater emphasis placed on learning through social interaction, and the value placed on cultural background. In social constructivist classrooms collaborative learning is a process of peer interaction that is mediated and structured by the teacher. Discussion can be promoted by the presentation of specific concepts, problems or scenarios, and is guided by means of effectively directed questions, the introduction and clarification of concepts and information, and references to previously learned material.

Methods used in a social constructivist learning environment include:

Scaffolding

Effective scaffolding requires the teacher to

- Inquire into the student's understanding of concepts, exploring misconceptions and untrue ideas
- Encourage dialogue between students and teachers to develop understanding
- Provide opportunities to learn through questions and through peer exchange
- Seek elaboration of students responses and justification for opinions

- Allow sufficient time for students to think about and respond to questions before moving on or proving the correct answer
- Guide students from basic to deeper levels of understanding through questions and encouragement

Reciprocal Teaching

Where a teacher and 2 to 4 students form a collaborative group and take turns leading dialogues on a topic. Within the dialogues, group members apply four cognitive strategies:

- i. Questioning
- ii. Summarizing
- iii. Clarifying
- iv. Predicting

This creates a ZPD in which students gradually assume more responsibility for the material and through collaboration, forge group expectations for high-level thinking, and acquire skills vital for learning and success in everyday life.

Cooperative Learning

More expert peers can also spur children's development along as long as they adjust the help they provide to fit the less mature child's ZPD.

Situated Learning

As early as 1929 concern was raised (Whitehead) that the way students learned in school resulted in a limited, 'inert' form of knowledge, useful only for passing examinations. More recently several theorists have argued that for knowledge to be active it should be learned:

- In a meaningful context
- Through active learning

The general term for this type of learning activity is situated learning. Situated learning proponents argue that knowledge cannot be taught in an abstract manner, and that to be useful, it must be situated in a relevant or "authentic" context (Maddux, Johnson, & Willis, 1997).

Anchored Instruction

The anchored instruction approach is an attempt to help students become more actively engaged in learning by situating or anchoring instruction around an interesting topic. The learning environments are designed to provoke the kinds of thoughtful engagement that helps students develop effective thinking skills and attitudes that contribute to effective problem solving and critical thinking.

Anchored instruction emphasizes the need to provide students with opportunities to think about and work on problems and emphasizes group or collaborative problem solving.

Other suggestions:

- Encourage team working and collaboration
- Promote discussion or debates
- Set up study groups for peer learning
- Allocate a small proportion of grades for peer assessment and train students in the process and criteria
- Show students models of good practice in essay writing and project work
- Be aware of your own role as a model of 'the way things are done...' be explicit about your professional values and the ethical dimensions of your subject