Constructivist Learning Environments

Serafeim A. Triantafyllou

Computer Science Teacher in schools of Secondary Education of Greek Ministry of Education and Religious Affairs , Greece

Abstract

Constructivist theories aim to answer how individuals develop critical thinking by trying to understand situations. It is very difficult to find a clear and precise definition of what constructivism means. This paper aims to give a 'practical' definition of constructivism, to describe elements of constructivist learning environments and to explain the significance of constructivist learning environments by introducing various constructivist approaches and emphasize on the cognitive effects they can bring in order to improve educational process.

Keywords: constructivist learning environments, constructivism theory

1. Introduction

Constructivist theories aim to answer how individuals develop critical thinking by trying to understand situations. The meaning of constructivism varies, and it is very difficult to find a clear and precise definition of constructivism. Within educational contexts there are philosophical meanings of constructivism, as well as personal constructivism as described by Piaget (1967), social constructivism outlined by Vygotsky (1978) and radical constructivism outlined by von Glasersfeld (1995). In our paper we try to give a 'practical' definition of constructivism, to describe elements of constructivist learning environments and to explain the significance of constructivist learning environments by introducing various constructivist approaches and emphasize on the cognitive effects they can bring to improve educational process.

2. Conceptualizing Constructivism

Dewey (1916), Piaget (1973), Vygotsky (1978) and Bruner (1996) suggested that individuals could be active receivers of knowledge and "construct" the new forms of knowledge they take on earlier forms of knowledge. The main concern of constructivist theories is to explain the way people understand situations and create meaning. However, it is difficult to find a clear definition of the precise meaning of constructivism.

More recent views on constructivist perceptions of learning point out that learning outcomes should result from the knowledge construction process and that learning goals should be determined from authentic learning processes with clear objectives (Loyens, Rikers & Schmidt, 2007). von Glasersfeld (1995) states that:

"learning is not a stimulus-response phenomenon, but a process that requires self-regulation and the development of conceptual structures through reflection and abstraction."

The theory of constructivism is defined as the construction of new knowledge, which is based on the learner's previous experiences (Kintsch, 1994). By designing an educational process, the instructor must take into consideration the particular learning attributes of each learner. Woolfolk (1993, p. 485) states that:

"The basic idea is that students construct their knowledge actively: the learner's mind receives stimuli from the outside reality and chooses which of those that he learns is useful in his everyday life. Learning is a continuous energetic process and not a passive perception of teaching. "

Different perspectives of constructivism exist. Constructivist conceptions of learning are primarily based on the work of Giambattista Vico, the pioneer of constructivism at the beginning of the 18th century, Dewey (1960), Bruner (1961), Vygotsky (1962), and Piaget (1980). More recent views of constructivism came later from the work of constructivist von Glasersfeld (1995). From the constructivist perspective, as Piaget stressed, knowing is an adaptive activity (von Glasersfeld, 1992b, p. 380). Hardy and Tailor (1997) also state the following:

"It is essential to understand that von Glasersfeld's use of the term 'knowledge' sets it well apart from the conventional use of the term. Traditionally, knowledge has been taken to mean a representation of some aspect of the physical world around us, and its truth status has been taken as a measure of how well the said knowledge corresponds to, or represents, an observer-independent world. By contrast, von Glasersfeld uses knowledge in Piaget's 'adaptational' sense "to refer to those sensory-motor actions and conceptual operations that have proved viable in the knower's experience"."

There are many aspects of constructivism as a theory and a philosophical stream. The origin of the constructivism theory is also linked to Jean Piaget's theory of cognitive development. Piaget defined the cognitive development as the progressive reorganization of mental processes resulting from biological maturation and environmental experience (Huitt & Hummel, 2003). The assumption of Piaget's cognitive theory is that thoughts are the primary determinants of emotions and behavior. Information processing is a common description of this mental process.

Piaget's theory differs from other theories in several ways: (i) It is concerned with children, rather than all learners, (ii) It focuses on development, rather than learning, (iii) It proposes discrete stages of development.

There were many critics of Piaget's theory and especially important criticism was addressed to the assumption that Piaget was concerned only with cognitive development, and that he ignored social factors in development (Forrester, 1992). Piaget's theory is still greatly respected in the psychological and educational community. Despite numerous criticisms levelled at Piaget's theory, his theory is still greatly respected in the psychological and educational

community. Piaget's theory has stimulated other developmental psychologists into new domains of research and has heavily influenced research into education.

Vygotsky put more emphasis on the social content of learning. His theory focuses on the socio-cultural nature of learning, a learning that must be based on the particular social and cultural characteristics of the learner (Vygotsky, 1978). Since Vygotsky's theory emphasizes the interaction between the instructor and learners in terms of cognitive development, his theory was called "social constructivism".

Expanding upon Vygotsky's theory Jerome Bruner and other educational psychologists introduced and developed the important concept of instructional scaffolding, whereby the social or informational environment offers scaffolds for learning that are gradually withdrawn as they become internalized (Seifert & Sutton, 2009).

Dewey emphasized that the main role of education was to develop critical thinking. He pointed out that the aim of the instructor is to stimulate the learners' interest in the subject that is put to the learners to study. In other words, Dewey says knowledge must be dynamic and be the result of systematic and in-depth research (Dewey, 1986).

The numerous perspectives on constructivism could be grouped around a logical argument about learning: Knowledge is actively constructed by the learner (Birenbaum 2003). The principles of the philosophical stream of constructivism offer the ideological background that will help instructors to create learner-centered and collaborative learning environments that aim at the development of critical thinking from learners and learning through experience (Jonassen et al., 2003).

As mentioned above, the essence of constructivism is that knowledge is actively constructed by the learner (Cunningham, 1992; Birenbaum 2003). Learners explain new information based on their previous knowledge. They must activate their prior knowledge and try to construct new knowledge. Learners have to realize that the true knowledge results from active construction and transformation of information to real knowledge (Blumenfeld 1992).

The importance of cooperative learning is a second core concept put on the table by constructivists (Loyens et al. 2007). Social interactions with peers, instructors, and other individuals contribute to the construction of knowledge (Steffe and Gale 1995).

Self-regulation includes a set of various aspects such as goal setting, self-observation, self-assessment, and self-reinforcement, all of which are closely connected to learning. Effective self-regulation requires setting goals and the motivation to achieve them (Paris and Paris 2001; Loyens et al. 2007).

In addition, constructivist theory emphasizes that the learning process must be authentic. Learning has to be intertwined with the development of the individual, emphasizing his everyday experiences and generally taking into account that the individual experiences a complex reality every day.

3. Constructivist learning environments

New Learning Environments (NLEs), based on constructivist theory, propose the development of an educational setting to attain educational goals, where the learning is the most essential process and instruction is defined as enhancing learning (Lea et al., 2003; Loyens, Rikers & Schmidt, 2007).

Previous empirical studies regarding the effects of constructivist learning environments did not always bring the expected learning outcomes (Segers 1996). It has been proposed that studies should not be exclusively focused on curriculum, examining only if instructional goals have been achieved. Instead, research should also take into consideration other variables affecting the learning process (Loyens et al. 2006; Wijnia, Loyens & Derous, 2011). In other words, understanding and improving educational outcomes requires the adoption of a multi-directional approach (Goodyear and Hativa 2002).

According to Carlile & Jordan (2005), constructivism is a dynamic process. In teaching and learning, the primary duty of the instructor in the constructivist approach is to urge learners to construct their own knowledge through properly designed activities in order to make them come to their own conclusions (Martin, 2006, Triantafyllou, 2013). Constructivist teaching is taking place when the instructor invites learners to actively participate in the learning process. Learners should construct their own knowledge and take their own decisions about their learning.

Constructivists like Vygotsky and Dewey believed that learners cannot learn being isolated from other learners, and cognitive psychology gradually adopted the view that people normally learn and work cooperatively in their lives (Petraglia, 1998). Interactivity is a way of focusing students' interest. For social constructivists, education must enhance the interaction of learners with each other, but with the instructor as well.

Of course, the role of the instructor should be mediatory, not the one of authority. The instructor should be very interested in the interaction of the teaching content with the needs and abilities of every learner, and not just the completion of the curriculum (Triantafyllou, 2021).

4. Conclusion

The basic principle of constructivism in education is that learning is always a building process whereby new knowledge can only be acquired in terms of knowledge that already exists. Constructivist epistemology suggests constructivist pedagogy such as always checking and activating prior learning (Dennick, 2016).

Contrary to criticism by some conservative educators, constructivism does not cut out the active role of the instructor. Constructivism modifies the role of the instructor in order to let him help learners to construct knowledge rather than to reproduce simply information. The constructivist instructor can provide problem-solving and inquiry-based learning activities with which learners produce and test new ideas, draw conclusions and construct knowledge in a collaborative learning environment. Constructivism transforms the learner from a passive recipient of information to an active participant in the learning process. Guided by the instructor, learners construct actively their own knowledge rather than just mechanically ingesting knowledge from books.

The principles of the philosophical stream of constructivism offer the ideological background that will help instructors to create learner-centered and collaborative learning environments that aim at the development of critical thinking from learners and learning through experience.

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4.1.2 References

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