WCES-2011

Use of constructivist approach in architectural education

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Abstract

This research evaluates and discuses the possibilities of using contemporary progressive computer technologies combined with the constructivist learning theory in the architectural design processes. In this context, instructional design in architecture field is acknowledged by proposing student centered processes which encourage the students to be interactive, process oriented, open minded, initiative, self-controlling participant, and collaborative
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Keywords: Architectural education; design studio; constructivist instruction

1. Introduction

It is evident that there is a necessity to create new ways of learning in order to improve the standards and the quality of architectural education. For this reason, various attitudes are discussed in the field which considers the new strategies by the effect of the recent technological improvements. Hence, this paper evaluates and integrates the possibilities of using contemporary progressive computer technologies combined with the constructivist learning theory in the field of architectural design processes.

This research also acknowledges instructional design in architecture by proposing student centered processes which encourage the students to be interactive, process oriented, open minded, initiative, self-controlling participatory, and collaborative. This kind of design procedure requires the construction of the knowledge through both traditional way and virtual design environments. For this purpose the constructive instructional design in architecture,   design studio should incorporate computer added architectural design features with   the World Wide Web applications.

Constructivism is a philosophy of learning based on the idea that knowledge is constructed by the knower according to his/her experiences. Learners should be considered to be active individuals seeking meaning. According to Jonassen (1991; 10): "Constructivism, founded on Kantian beliefs, claims that reality is constructed by the knower based upon mental activity. Humans are perceivers and interpreters who construct their own reality through engaging in those mental activities...thinking is grounded in perception of physical and social experiences, which can only be comprehended by the mind. What the mind produces are mental models that explain to the knower what he or she has perceived.... We all conceive of the external reality somewhat differently, based on our unique set of experiences with the world and our beliefs about them."

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2. Constructivist Epistemology

Constructivism is a set of assumptions about the nature of human learning that guide constructivist learning theories and teaching methods. Constructivist learning theory tries to explain how learners learn by constructing understanding for themselves. The "constructivist stance maintains that learning is a process of constructing meaning; it is how people make sense of their experience" (Merriam and Caffarella, 1999, p. 260). Duffy & Jonassen (1992) discussed environment with meaning:

"Constructivism provides an alternative epistemological base to the objectivist tradition. Constructivism, like objectivism holds that there is a real world that we experience. However, the argument is that meaning is imposed on the world by us, rather than existing in the world independently of us. There are many ways to structure the world, and there are many meanings or perspectives for any event or concept. Thus there is not a correct meaning that we are striving for "(p. 3).

The constructivist epistemology emphasized that people generate their own "rules" and "mental models," which they use to make sense of their experiences. Learning, therefore, is accepted as the process of adjusting their mental models to accommodate new experiences.

Constructivist learning environments should have common characteristics so that raise the capability of the individuals to construct the knowledge. In architectural education, learning environment, which is mainly based on the structure of design studios, should

1. provide experience to students for construction of design knowledge,
2. facilitate students to find alternative solutions to their design problems through multiple perspectives,
3. present learning activities in a realistic and relevant context,
4. make learners feel themselves as the owner of the process and feel responsible for their learning,
5. create process oriented learning strategies,
6. practice the learning as a social activity,
7. promote the students to use various representation modes, and,
8. generate self awareness of the students
9. form self motivated and self reflective students,
10. encourage to use strategies,
11. make students to be respectful to multiple perspectives and world views.

2.1. Constructivist Learning Strategies

There are several guiding principles of constructivism. Constructivist Design Model "CDM" uses following seven strategies to design learning environment in architectural design studios. As seen in the figure 1, specific goals for developing learning environment are defined by considering the intensive use of digital elements within the framework of predefined principles, assumptions and the target of the model. These goals are selected to practice in instructional environments which is designed by student oriented learning philosophy in architectural education. These environments should include the applications of virtual reality and the intensive use of computer technology with participation and collaboration of the learners via internet. .

2.1.1. Generative Learning
Wittrock presents a model that focuses on learning as neural meaning-making, not memorization or recitation. According to this model the brain is not just an information processing unit but it generates knowledge by building. The brain operates through processes of generating meaningful relations "among concepts and between knowledge and experience" (Wittrock, 1992). And in view of that, teaching "becomes the process of leading learners to use their generative processes to construct meanings and plans of action" (531). Generative learning relates to the cognitive processes involved with building relationships between concepts and planning for action (Shedroff, 1999).