Crystallizing in Architectural Education:

(Offering a new Educational Model based on the composition of Blending Learning Theory and Interactive Thinking Model)

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Abstract

The theoreticians and teaching specialist in the recent two decades became interested in teaching methodology of architecture and taking the best educational method in order to achieve the maximum efficiency. The way of designer's thinking has a direct effect on answering the question and the result is evident in the final design. Therefore in order to achieve the desired results, it is necessary to consider the planners of architecture educational systems, the designer's dealing, student's way of thinking and the design of educational methodology. The Interactive thinking model as a kind of thinking that provides the opportunity for considering a problem critically and creatively at the same time has a high capability of conforming to the designing process in architecture. on the other hand, the use of interactive methodology in teaching architecture and especially the use of the Blending Learning as the second wave of E-learning removes the deficiencies of pure traditional educational systems or pure E-learning. This essay attempts, via presenting a new educational method which is a composition of Blending Learning and Interactive Thinking, to take a step in crystallizing the designing process and reaching the arenas of creative ideas in designing and to present the new method in architecture teaching.

Keywords: Interactive Learning, Blended Learning, Architectural Education, Design Thinking, Crystallizing

1. Introduction

Process of answering in the raised questions in architecture designing has faced many changes and developments through history. In the past two decades, designers and architects experienced three basic methods. The first generation of these methods is Analysis–synthesis method required visual and outer factors. The second method, entitled Participatory method, was based on cooperation and considered the designers decision as a collective matter. And the third method, the one we know as Concept-Test, depended on the mental structure of the designer. But the important thing is that nowadays in the most of architecture schools and projects and even in the final plans, results of the elementary studies have the least connection with the decision making, its final presentation and the last formation (Nadimi, 1999). And it is mostly its analysis which is given much importance. Therefore it seems a necessity that the designers of architectural education think about educational systems which must be based on the thinking models of students in order to have the appropriate results. Interactive thinking model of the architecture students provides them with an opportunity of looking the problem from a critical and creative point of view in the form of a flexible and more efficient educational model in comparison to either pure traditional or virtual learning (Haghpanahi, 2003). Their blending with each other can pave the ground for having a new educational method which is a synthesis of Blending learning and Interactive thinking model. Therefore we can take further steps in crystallizing the designing process and achieving the creative ideas in the architecture and presenting a new educational model.

2. Interactive Thinking

The background for the designer's thinking and his ability to think during the process of designing are influenced by the cognitive psychology (Mahmoodi, 2004). Various ways of thinking and the different

methods on the part of the designer have a direct effect on how to answer the question. We can see its effect on the final plan. We have three different thinking models in a process of decision making (Mahmoodi, 2004):

1. Directed Thinking (such as solving a mathematical problem).
2. Indirected Thinking (aimless thinking).
3. Creative Thinking (mostly used in designing).

These can be used by the designers in two ways of either logical or spatial methods (Edwards, 1992; Mahmoodi, 1999). In the logical way, designer begins mostly with studying the intended site. In the spatial method, the designer begins his planning with creating an idea and expressing his feelings about the space. What is clear is that we must use a proper educational model in the designing so that no one is given priority over the other.

As it was mentioned above, the designers mostly use the creative thinking model. We have the following steps in solving a problem by this route (Lang, 1987):

1. *Preparation*: by preparation, we mean gathering the data and transforming it to the information.
2. *Incubation*: in this phase, the designer searches to find a solution with the use of his thinking processes. In this phase, the designer thinks that he is disabled and feels that he cannot design more while this slowness is a part of the thinking process that takes time and repose.
3. *Illumination*: in this phase, the designer via creating an idea (such as writing a scenario) can find a concept which is very effective for thinking.
4. *Verification*: the designer considers the designing options and the possibility of performing his ideas.

Then, with the use of evaluation techniques, he pays attention to ideas and at last finds the final design. Though we know the general steps in the process of solving a problem, we must admit that there is a difference between architects and non-architects concerning this matter. The fact is that architect pays more attention to solving the problem rather than the problem itself. It means that architects and designers have already a solution in their minds when they begin to solve a problem because sometimes we need a solution in order to understand the designing problem itself. (Lawson, 1997).

In the process of the architecture designing and reaching the final goal, we have to pay attention to various factors. Sometimes it seems impossible to answer all of these needs and make some sort of a balance among them. On the other hand, the studies and analyses of the design consider and analyze the affecting factors indifferently. We must know that we have to pay attention to what factors and to what extent. Besides considering the affecting factors including the environmental and economic matters, the design must have unity and integrity of a final design.

The architecture like a human being is a consistent and meaningful entity. According to the Gestalt psychology, *the total is more than its constituting parts*. As the result a good architect must regard the elements of unity and consistence in his work, the one that the Gestalt psychology alludes to. This factor of unity was not considered in the first generation of processes of answering (the Analysis – Synthesis model) (Nadimi, 1999).

Various studies have shown that the architects and designers did not pay attention to the influential factors and elements in the design separately. On the contrary, they begin designing according to their mental model of architecture which results from a clear source in the mind of the designer (Nadimi, 1999).

The designers unconsciously use these strategies about the issues such as the design and creation of ideas which can be divided into four types (Mahmoodi, 2004):

1. Divergent or Convergent.
2. Impulsive or Reflective.

3. Field Independent or Field Dependent.
4. Holistic or Serialistic.

Blending thinking model is the use of all of these methods in order to have a more efficient use of them provides us with the opportunity to look at all simultaneously: the content thinking is under the influence of the accepted knowledge, the critical thinking is under the effect of recognized knowledge and the creative thinking is under the influence of the created knowledge. This model is provided by Iowa University (See figure 1).

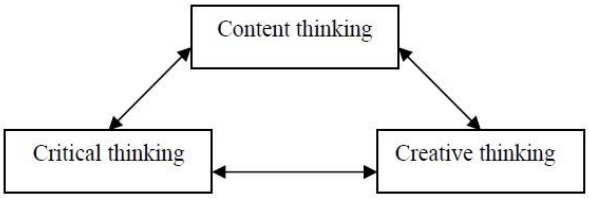

Figure 1: Model of Interactive Thinking by Iowa University
(Caldwell, 2004)

If we divide the process of answering the question in architecture designing from the beginning to the final step into three phases of Understanding, Idealizing and Presentation, we would notice that there is a structural connection between these three phases in the architecture designing process and the blending thinking model. (See figure 2).

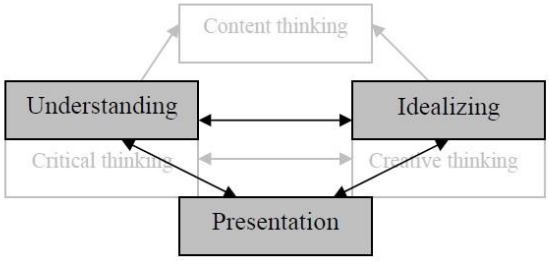

Figure 2: Model of Interactive Thinking and design process
(Mahmoodi, 2004)

In this diagram, the relation among these three phases are shown, the phase of Understanding consists of gathering the data, categorization of them in order to get some information in the design, the phase of Idealizing applies to gathering ideas and determining the Concept of design and the Presentation phase presents good guidelines and their evaluations (Mahmoodi, 2004).

3. Blending Learning

Reaching the final design and the intended one by the students of the architecture faculties, besides needing a proper thinking model in designing which helps in illuminating the designing process and crystallizing the activity process, needs an appropriate educational system to reach the aims. Covering all of the influential aspects on the formation of a design depends on the educational system besides mind and ability to solving the problems. The Blending Learning, as the second wave of virtual educations, with the use of the modern technology and potentiality of solving defects of the pure traditional or virtual ones, also has the potentiality to provide a suitable ground for illuminating the design process and reaching the appropriate plan (Haghpanahi, 2003).

a. Blending Learning system

Blending Learning interchangeably describe an approach to education that combines face to face and distance approaches to education in that an instructor or tutor meets with students (either in face to face mood or through a technological means) and a resource-base of content materials and learning activities is made available to students (Nicholas, 2003). The architecture ateliers which are governed by the use of teleconference by a teacher or the online seminars, where sometimes the participants take part in person, are some examples for it. This educational system has the capacity of compatibility with the theories in the past.

In this educational model, the time and the place are flexible. In addition to it, the technology and teaching materials can be used traditionally and with the help of the computer and information technology. The educational models can also include a mixture of Cognitivism, Constructivism or Performance support Learning methods and techniques, such as giving lectures, ateliers, group works, Internet and Virtual Reality (Helmer, 2003).

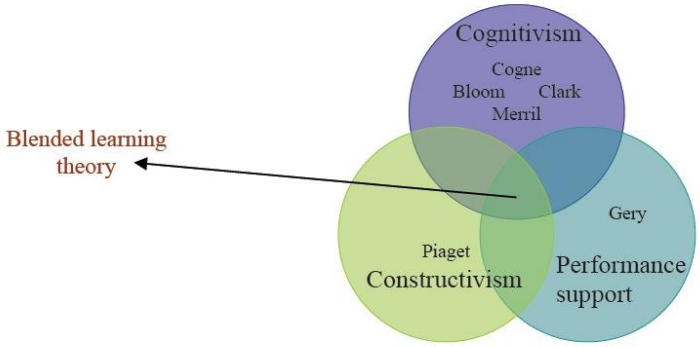

Figure 3: A Blended of Learning Theories

By applying these three learning theories (See figure 3) five key ingredients emerge as important elements of e blended learning process (Carmen, 2002):

1. *Live Events***:** synchronous, instructor-led learning events in which all learners participate at the same time, such as in a live "virtual classroom".
2. *Self-Paced Learning***:** learning experiences that learners complete individually, at his own speed and on his own time.
3. *Collaboration*: environment in which learners communicate with others for example, e-mail, threaded discussion or online chat.
4. *Assessment*: A measure of learners' knowledge.
5. *Performance support Materials*: On-the-job reference materials that enhance learning retention and transfer, including PDA downloads, and printable references, summaries and job aids.

4. Proposed Spatial Model

Finding a blended educational system can remove the present defects in the education of the students in architecture faculties. The model which is based on it and also based on the relationship of the student with his environment is thus;

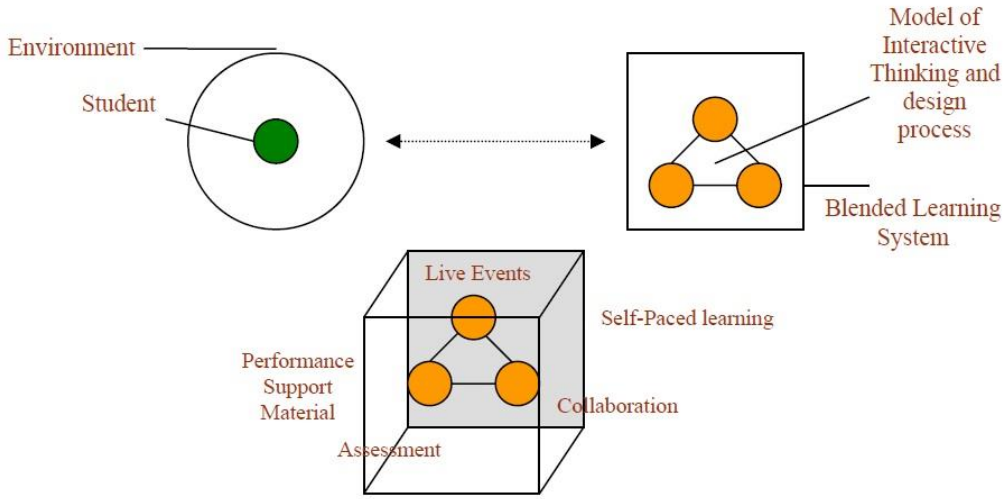

Figure 4: Proposed Spatial Model
(Author)

In this model (see figure 4), the student is surrounded by the blending leaning system in a way that, the students with the help of the interactive thinking model and with the support through the flexible and responsive educational system, take steps in the designing process and solving the problem. They can recognize the various phases in the concise relation with each other through the design process.

Meanwhile the tacit knowledge, which is the base for understanding the creative art, emerges and the student with the help of facilities of this system and its support creates more creative concepts and ideas. At last he presents them as something complete using various methods. Meanwhile the students find the opportunity to interact with one another easily and evaluate their and their friends' potentialities. They also take the most use of the resources of other people. This model, emphasizing on two factors of individual and environment, will have the most efficiency in the architecture educational system and it will affect crystallization of the design process in regard to its potentialities.

5. Conclusion

Today, there is growing agreement that "there is not, and probably never will be, one great unified General Theory of Adult Learning that will solve all our problems."Rather, blended learning offerings should be based on an appropriate blend of learning theories, such as those put forward by Keller, Gane, Merril, Bloom, Clark and Gery. Use of this method along the interactive thinking model offers a particular model. In this new model architecture student and his or her interactive thinking model are set as the center. It is clear that the design process can be criticized from various aspects and clarification of this process means clarification of all effective phases. It needs more research and studying but it undoubtedly is accepted that interactive thinking model and use of the blending learning are two pillars of this process. Also other effective elements would add to them through the time. As Marc Rosenberg (cited in Barbian 2002) puts it," the question is not if we should blend. Rather the question is what the ingredients are?"

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