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A Proposition Regarding The Improving of Visual Intelligence and Geometric Abstraction Concept in Architecture Students

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Abstract

In building design, result of data inputs is presented by using geometry. During this shaping process, 2D geometry (Thales), which is taught in high school, is not enough; 3D (Plato), curvilinear geometry (Desargues) and subtraction, addition, deformation of forms is required. In order to understand the geometric forms of architectural designs, first year students were given building examples pictures which include both primary forms and derived-composite forms, and then, they were asked to draw the basic primary forms of the buildings near each building Picture by using main contour lines of the buildings. In this education model based on deductive analysis, it was seen that buildings, which have basic forms, were easily drawn; however, they could not solve the shaping logic of deformed froms. It is observed that geometry lectures in education, it is more suitable to study by primary forms in the first two years and move to deformed-composite forms as knowledge of geometry increases on later semesters. As knowledge of geometry increases, so does awareness in both visual analysis and architectural shaping.

Keywords: Architectural Design Education, Visual Awareness, Visual Intelligence, Geometry, Abstracrion.

1. Introduction

The building shape comprises of areas such as function, form, technology, culture, artificial and natural environment in architectural education. Design is expressed as a result of processing these data in layers of knowledge via “Geometry”. During this shaping period, two dimensional geometry (Thales) thought in middle

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school is not enough; a series of knowledge consisting of basic three dimension (Platon), curvilinear geometry (Desargues) and the stages of adding-subtraction-deforming of geometric shapes is necessary.

On the other hand, as well as geometric knowledge for expression, it is necessary to create meaningful relations among shapes during the composition stage. In this stage, it is necessary to give education regarding development of student's visual intelligence.

2. 2. Visual intelligence and geometric abstraction:

According to Berger (1999), seeing and attribution of meaning comes prior to talking in human life. As the continuation of Gestald's theorem, Arnheim argues that perception psychology creates the strong link between science and art.

In this context, it is seen that visual communication is stronger than other means of communication. In relation with this determination, today it is seen that tests and methods developing visual intelligence during intelligence education is given weight to. In these methods the main goal is to find the correlation between forms, differentiating primer principle from others and bringing it into the front.

We can say that the rules that Gestald theory – determined with the aim of setting the psychological principals of visual perception- generate today find place in areas such as visual communication, visual arts and architecture that use two and three dimensional means of expression. In relation with Gestald theory, it is seen that the concept of "abstraction" is used in art. In a general sense, "Abstraction" can be defined as the conceptual expression of a thought using minimum tools. In visual arts, the approach of geometric abstraction in painting can be shown as examples to the notion of abstraction.

3. 3. Case study

In the architectural design education both two and three dimensional composition outputs are aimed. In this inductive education model, deductively the supportive intermediary study which aims to decompose and abstract sample buildings is tried with the aim of developing visual intelligence.

The sample building presented to the students for abstraction is aligned from simple to complex. In order to understand the geometric forms of architectural constructs, first year students were given building samples which are aligned beginning with primary forms and continue with derived-composite forms, and then, they were asked to draw the basic primary forms of the buildings near each building via following the contours of the buildings whereas in deformed shapes the primer form and its transformation was expected. In this education model based on deductive analysis, it was seen that buildings which have basic forms such as cube, prism, cone, dome were easily drawn; however, they could not solve the design logic of deformed forms (twisted cylinder, composite forms from which a piece is extracted or to which a piece is added). When senior class students were given the same exercise, it was seen that visual intelligence and ability of abstraction has increased a little more, however, in the presence of insufficient geometry classes it is decided that the ability for abstraction is not enough.

4. Conclusion

The aim in architectural education is to create two or three dimensional composition. During this period, although various knowledge is used, the result is expressed via knowledge of geometry. In the whole education period, "visual intelligence" and "geometric abstraction" to support it has been gaining importance and starting to become the main method of design education.

For design students the knowledge of middle school geometry is not enough. It is concluded that classes for Euclid, Platon and Desargues geometry should be given in coordination with the design education. Another conclusion is that in design education, it is more productive to study with primer forms in the first years of education, and as the knowledge of geometric from increases, deformed –composite forms are convenient to study. As the knowledge of geometry expands it is observed that both visual analysis and understanding the rules of composition in architectural forming increases.