

Design In / Designing the First-Year Studio: An Experimental Study

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Abstract

This article focuses on first-year design studios, which include of “firsts” and difficulties at the same time for both instructors and students in architectural education. The study questions knowledge that students would encounter tools that they would use and experiences that they would practice and a course was developed accordingly. The course was planned in two phases and lasted 14 (8+6) weeks. The first phase included consecutive practices that were supported by theoretical knowledge, the second one focused on a single complex problem (3D-Portfolio design/tower) which consists of basic knowledge and skills. This problem was designed in a way that it contained the following components: (1) ensuring that pluralistic environment in studio becomes a part of the process (2) in this environment, students learn by experience through back-and-forth steps (3) making the model as an active component of design process and (4) ability to handle 1-1 scale.

In this article, definition/process of this problem, which can be defined as experimental, is demonstrated in detail. Finally design question is evaluated by course executors through components of this design problem and it is revealed that how and to what extend design components determinant/directive in this process..

Keywords: first year design studio, design education,

1. Introduction

In architectural education, design studio starts with a discovery of seeing design as a process of creativity within a contextual framework. In this sense, the design studio is the backbone of architectural education (Caglar and Uludag 2006). Design courses constitute basics of architectural education. According to Nordemann (2010), what is distinctive for architecture is that it bases upon and benefits from design and studio education. Consecutive design courses in curriculums of departments of architecture are articulated to each other and benefited from other theoretical and practical courses of the program; in doing so they proceed by focusing on problems that get gradually more complicated. As a whole a design course is organised by course executors with regard to the fact that students encounter what kind of knowledge in courses, which tools they use and what sort of experiences that they face.

Since the beginning of the 20th century, with the change and transformation in education in general, it has become essential to structure architectural education as a university education model rather than a professional training. Therefore, closed education model of the “architectural studio”, which constitutes the basis, of architectural education, has begun to be questioned and particularly the importance of the first year design education in gaining designer’s formation has gradually be observed (Farisardi, 2001). In this quest, the most emphasized place/studio is the first-year design studios. The main aims of the first design courses of architectural education programs are: to make students to think in two and three dimensions, to teach “design language” through developing their expression skills, to make them use this language, to upskill them to produce space, mass and order (Arkun et. al. 2000) and to prepare the grounds for students to handle architectural problems in a free and creative way (Gür, 2000). According to Dikmen (2011) basic design studios is of primary importance among the places where prospective architects are able to practice the first-year experience and to gain different point of views and designing abilities. At first-year design studios, it is aimed to develop students’ original thinking, designing, presentation and interpretation skills and transformation of theoretical knowledge from theoretical courses into two and three dimensional solutions. In this context, it can be claimed that first year basic design studios is the most difficult process for both students and instructors in architectural education (Dikmen 2011). In the context of the course, ‘the concepts of form, geometry, colour and style’ are conceptually analysed in an abstract way while opinions are expressed concerning concrete architectural products. Therefore students learn ‘how to settle and interpret theoretical setup of a basic design against an architectural problem’; the first year’s acquisitions constitute a base for their later practices (Aydın 2003).

This article focuses on the first design course whose importance in architectural education is above-mentioned.

In the study, the content, planning and way of implementation of the course was analysed, skills and talents that are aimed for students to gain and experiences that students encountered through the course are listed under several titles. Course executors set up a studio study on the basis of these analyses, which focused on the final problem. The definition and implementation process of the problem was presented in a detailed way. Then course executors evaluated the implementation through parameters and they expressed that how and to what extend design components determinant/directive in this process.

2. Method

What should be the basic components of the first design course of architectural education? As design is a phenomenon to be experienced, rather than to be teaching, what sort of problems and experiences that students should encounter here?

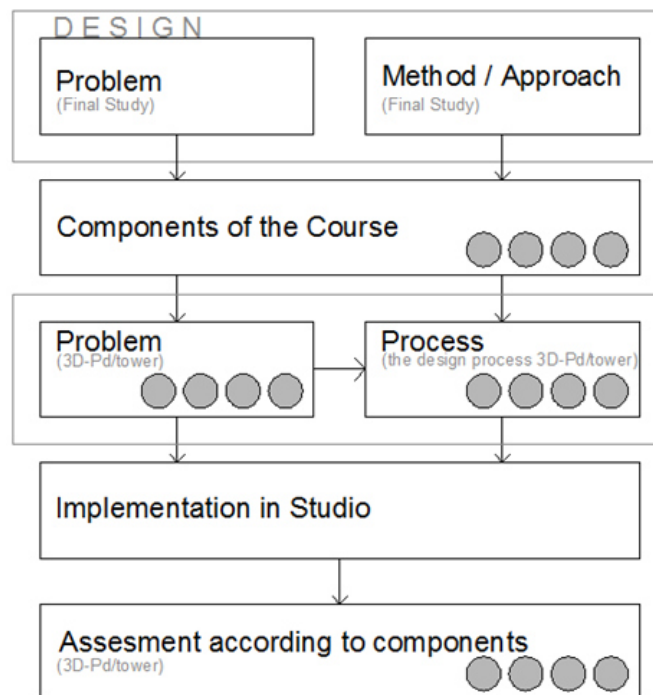


Figure 1: Systematic Approach of the Study

This study seeks answers to these questions. On the basis of course executors' –authors of this article– observations and previous experiences it is identified that the first design course at departments of architecture needs to include some components. A design course including these components was organised accordingly and taught in 2013-2014 Fall semester. These questions in the above-mentioned design course, had impacts on the final study and description of the process rather than on first weeks of the course. In designing the final study, in other words during both steps of its definition and implementation (problem and process), these components played a role (Figure 1). In the context of this article, these components were separately analysed and their place in architectural education in general and in design courses specifically were presented. In the following of this part, the course and its practices were explained in detail. In the end, 6-week process including the final study and experiences encountered in this process were evaluated with regard to prominent components during designing of the problem.

3. The First Design Course

One of the objectives of the first-year design education is to create awareness for students concerning design strategies, decision mechanism and effects directing these skills; this awareness would reveal creativity of students who have different cognitive structures and spatial experiences (Biber and Ertürk, 2011). In other words, how design course is designed should be considered as the first and most important design problem.

3.1. Studio as a Space of Production

The basic objective for architectural education should be to develop students' ability to create and design and to encourage them to find their own ways. Certainly the most important component of such an architectural education is the environment/studio. In architectural education, studios are essential experience for learning architectural design (Arıdağ and Uraz 2006); they are spaces of discussion where two or more people work and think together (Fatouros, 2002). According to Aydinli, contemporary design education pedagogy teaches us that if their creative thinking skills are to be developed, students must be given the opportunity for free expression in a free environment (Aydinli et al. 2004). In this sense, the studio environment undertakes a multitude of functions within design culture. Communication in studio happens through face-to-face conversation, one-on-one interview, group interviews (collaborative approach) (Mumford, 1981) and jury assessments representative approach (Mumford, 1981). Peer to peer studies includes examination by studio executor on student work; group interviews includes group evaluations on student work and jury includes a presentation of a student who reached a particular experience level, criticism from studio executor(s) on his or her work and his or her defence against these critics (Özcan, 1995). In this way, instead of the system where studio executor is seen a dominant figure and student only focuses on his or her work, studios nowadays operate sometimes through individual, sometimes group activities Studio process is now based on mutual reasoning on similar problems where students are active. Uluoglu (1995) defines project studios as a place where design is both learned and practiced, and where the activities carried out in this place serve as the focal point of architectural education. The studio learning/teaching process in studio includes critiques of work, the development of sketches in line with these critiques, jury participation, and similar activities. On the other hand, these activities; dialogues, discussion, criticism, are indispensable component of a studio environment; they are essential for students to express their own opinions and for their self-confidence. In doing so, even on design studies that are conducted individually, traces of this pluralistic process including student-instructor and student-student interactions can be followed easily.

3.2. Experience-Design Relationship or Learning by Experimenting

In architectural design education learning, discovering and eventually internalising are different from other fields. Therefore, studio should be organised/ designed in a way that it includes student's actions of discovering and experimenting. As the core of architecture and design education, the design studio has developed the tradition of learning-by-doing and project-based education, which often seems innovative; the more specific traditions of work, review, and criticism; and tradition that inform of the ways in which groups of students learn from one another (Schön, 1985). Today, there are many examples of studios and environments that are similar to workshops which adapt 'learning by experimenting as a method in formal/informal architectural education. As far as we are concerned, learning by experimentation – which proceeds as a simulation of reality over and over again – is extremely important in architectural education Similarly, Lokce (2002) states that it is necessary to make assumptions and test the most suitable answers to these assumptions for a solution in design, and he defines this as 'technical mastery'. Education that is based on knowledge transfer only is not enough for architectural education (Onat 1995). On the other hand, it is significant that design studio is organised in a way that allows 'personal experimentation'. Students should be encouraged to develop their own point of views to the problematic issues that they encounter.

3.3. The Importance of Working with a Model

While digital instruments are inseparable parts of our life, the opportunity to work with solid models is of great significance in architectural education. We know that even those architectures who fully employ computers (numerical environments) in their designs insist on working on a model. F. Gehry can be given as a strong example for this argument. The design instrument is of great importance for design perception. Archer (1982) defines cognitive modelling as a production of ideas by mental capacity and solid modelling as its manifestation or concretization. Designers use physical models, which are stuffed with solid masses, in order to convert their designs into perceivable images. This enables more than visualizing the image in mind; it allows a direct communication with the design (Akalin 2010). From this point of view working with a model is a concrete way of perceiving designs, comprehending in a three dimensional way and at the same time trying/experimenting. The model helps designer both to understand himself or herself and to communicate with others. In our opinion, working with a model should be regarded as an inevitable design tool in both expression of an intellectual idea and explanation of the final product. There are two types of modelling in the design process: The first is the conceptual model that is used in the stage of design development and that provides the ability to test some of the

attributes that are expected from the design. These models, which are used throughout the design process and up until its finalization, can be regarded as abstract models that allow the design to be further developed and its performance to be advanced. The second type of model is the final (concrete) model that is prepared to explain the final product. The conceptual and concrete models used as tools for communication between students and the teachers, it is believed, help undergraduates to improve their design ideas (Akalın and Sezai 2009).



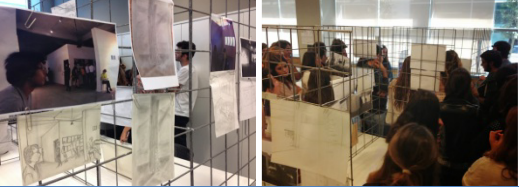
3.4. 1/1 Scale

Increasing up to the 1/1 scale provides trials of geometrical orders in the abstract plane on topics such as gravity, scope, and relationship with body in the concrete world. Through the learning by doing/experimentation method students get a pre-notion on such topics as the mutual behaviour of materials, their structural strength, light and air permeability and volumetric impact (Akipek, 2011). Similarly, Gur and Yuncu describe the benefits of working at a 1/1 scale as: “The action of learning materializes in the process of transforming the action of doing with a 1/1 scale into form, concretizing it as a space/object and experimenting that space/object” (Gur & Yuncu, 2010). The study’s progress on 1/1 scale usually might require a review of the previous stage and changes in previously made decision. It can be said that these changes include particularly details concerning production (materials, connections etc.). In a way, 1/1 learning is an environment for architectural education with its own tools and learning outputs (Gür and Yüncü 2010). Working with models at a 1/1 scale allows architectural students, who have just started their architectural education, to gain the ability to think about their designs in the interface of abstract design environment and concrete product.

4. The Case: Design Course

The 14 week-period of the design course (2013-2014 Fall) was planned in two phases. The first phase included consecutive practices that were supported by theoretical knowledge, the second one focused on a single complex problem which consists of basic knowledge and skills. Although this study focuses on the design problem that is involved in the second phase of the course, in order to understand it accurately, it is considered important to demonstrate approach/process until the final study. On the first week, theoretical knowledge concerning visual examples and principles of basic design elements were presented and accordingly, students were made to encounter/face several different problems about the issue. During the studio process students, before they were divided into groups, became a part of an environment in which opinions of each student and instructor were shared. This studio consisted of 64 individuals (61 students, 3 instructors) and even allowed individual design attempts in a pluralistic environment. In other words, students were able to reflect both their individual properties and skills but also results of this pluralist interaction on their works. In the studio, during the first eight weeks (Table 1) students produced works through different parameters which gradually got close to the space.

Table 1. 8 weeks in the Design Course

	<p>Week 1</p> <p>Exercise Remember and Represent to watch/ to see/to illustrate 1_ courtyard</p>
<p>Week 2 Excursion Biennial</p> <p>Exercise to watch/ to see/to illustrate 2</p>	
	<p>Week 3 Design Elements</p> <p>Exercise Two dimensional representation of an object-Evaluation</p>

<p>Week 4 Pattern</p> <p>Exercise Composition of 2D elements rhythm and pattern</p>		
<p>Week 5 Colour – Light and Shadow -</p> <p>Exercise Face abstraction with photo, sketch, paint and collage</p>		
<p>Week 6 2D Composition</p> <p>Exercise 2D module application</p>		
<p>Week 7 3D Composition</p> <p>Exercise 3D module application</p>		
<p>Week 8 3D Composition</p> <p>Exercise 3D module application</p>		

The aims of the work (which was evaluated in a holistic manner) were that the students gained/developed the following skills as a result of these studies:

- Triggered thinking and imagination
- Abstract cognition
- An understanding of architectural expression techniques
- Ability to transition from two-dimensional to three-dimensional and from three-dimensional to two-dimensional
- Critical perspectives and problem-solving
- Studying/producing with a model
- Familiarity with materials and opportunities, and incorporation of such in designs
- Concepts of scale
- Assuming an active role in studio work

4. An Experimental Work in Design Course: 3d-Pd/Tower

In the second phase of design course, the subject of the design problem was set up in consideration with the above-mentioned design components and it was called “3D Portfolio design/tower or 3D-Pd/tower. While the topic was being specified, the intention was the construction of a multi-faceted and original design problem that could incorporate the information learned so far within the course. In this section of the paper, the methodology and study process utilized are presented in detail.

4.1. Aim/Content

As stated above, students were asked to design a portfolio tower at the end of the mid-semester. In other words, they were expected to prepare a three-dimensional portfolio through which they could present the designs that they had formulated during the course and that would reflect the skills they had gained within the context of the course. Due to constraints in course duration and student skills, some limitations were introduced within the problem and the final model was identified as a two-meter high structure made up of 50 cm long elements. The objectives of this approach were, first off, to reveal the student's gains from the course with this approach and

- to examine the relationship between that which is exhibited and that which is observed via design, which can also be defined as an element of exhibition, and thereby see the place of human dimensions in design;
- to enrich their knowledge on the concepts measure and scale, and;
- to allow the students to grasp the design-construction process and problems within this process via the 1/1 scale.

4.2. Method / Process

The methodology followed in the study described as 3D-Pd/tower, is summarized in Image 1. The 3D-Pd/tower study, which was undertaken within the consecutive 6 (3+3) weeks period, consists of two stages. Both phases include stages of research, sketch, modelling and discussion.

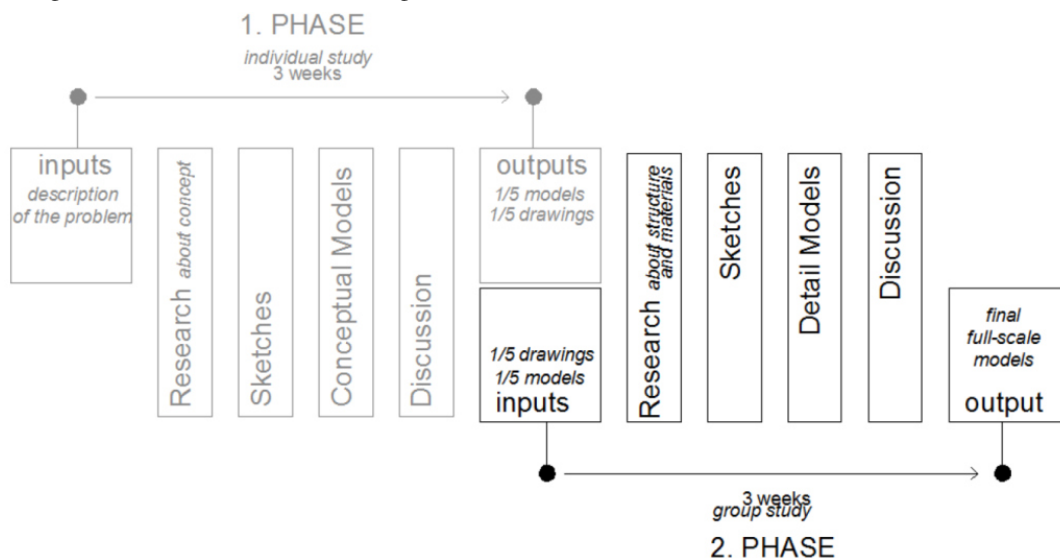


Figure 2: The design process 3D-Td

In the first stage of the project, students were expected to conduct research on the subject. At the end of this one-week research period an exhibition board was set up. This board, which was used to exhibit things accumulated by the students, was public to everyone in the studio. The board exhibited images that were problematic for the students and thus both paved the way for discussion and also guided students over the course of design. Some of the examples exhibited later became inspirations. Following this research period, students were expected to come up with suggestions and to express these suggestions two and three-dimensionally. Despite the fact that they sometimes completed plan/elevation studies and made detailed sketches during this process, it was observed that they predominantly preferred to express themselves with concept models (Figure 3) and in this regard, they became more successful than they had been in drawing as first-semester students. During this three-week period, students continued to conduct research on the subject, developed their ideas with drawing sketches, produced models as part of design process and voiced criticisms over the works that were being developed each week in atelier. At the end of this period, each student was expected to complete their models and drawings at a scale 1/5 of 3D-Pd/towers that they individually developed.



Figure 3a, 3b, 3c: Phase 1 | Conceptual Models

A panel made up of all of the students and instructors of the course was formed at the end of the first stage. In the second stage, one of the works, which had been individually designed by two-man student teams, was selected for development. In other words, the final products of the first stage became the data for the second stage of this study. In the second stage of the study two-man teams worked together, sometimes in the studio and sometimes outside the school. This team work continued until the end of the semester and in coordination with exam schedules. The process, which began with developing sketches in line with critiques voiced by the panel, continued with structure and material research for 1/1 models (Figure 4). In this stage of the study, students predominantly worked on points of junction and on their detailed problems. These studies/trials sometimes resulted in a review of design decisions and consequently, in modifications to the original designs.

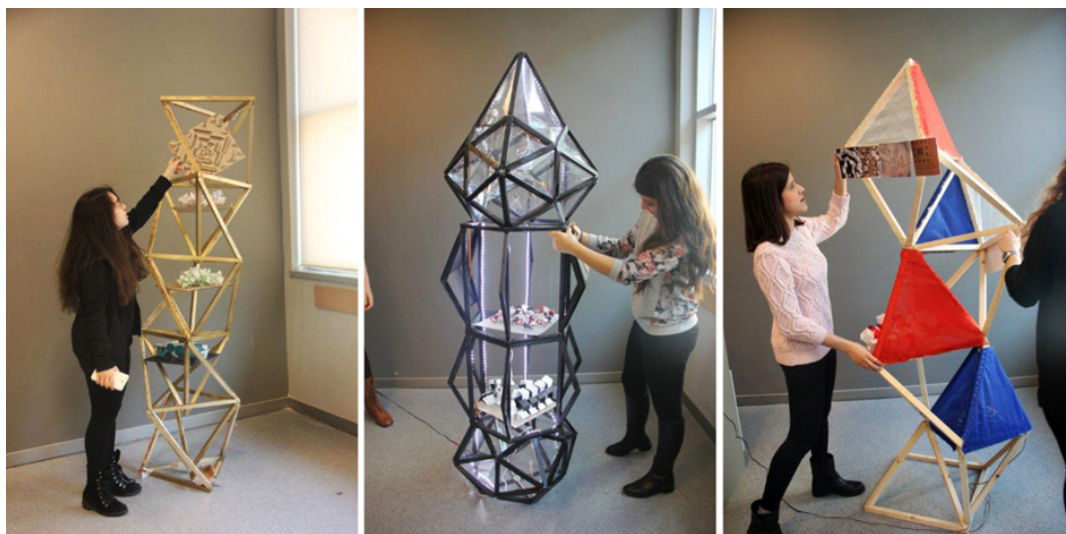


Figure 4a, 4b, 4c: Phase 2 | Final Models (Source by authors)

In fact, this process, which brought students face-to face with problems that sometimes disappointed and sometimes frustrated them, ensured that the students achieved at least partial awareness of the design process. During this process they learned that they have to work on different scales and that they might very well face different problems for each scale. In this respect, this process constituted an important experience for their development as architects. An exhibition (Figure 5) consisting of student works selected directly after the completion of the course and including the performed works ensured the sharing of this work with the entire student body. This exhibition, which consisted of two-meter high, 1/1 scale works, presented all the students with an opportunity to observe the works achieved during the one semester design course. The exhibition also constituted a chance for the students who had taken the course to further observe and interpret each problem that they had faced within the design process and to see again their solutions to these problems, both in their own works and in the works of other groups.




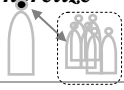


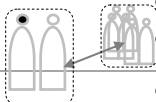

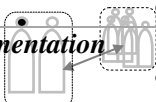

Figure 5 Exhibition

5. Reviews on the Phases of Design Process

The above-mentioned design course is the first design studio and production experience for architecture students. Therefore, students' solution seeking and the development of the final product represent a studio-oriented process. In addition to the final products, perhaps more significantly this first encounter played a decisive role in determination of the problem (3D-Pd/tower). In addition individual production, the problem was designed in a way that it contained the following components: (1) ensuring that pluralistic environment in studio becomes a part of the process (2) in this environment, students learn by experience through back-and-forth steps (3) making the model as an active component of design process and (4) ability to handle 1-1 scale.

In this study, the relationship between design process and these components were analysed through observations. In this examination, each step of the two-phase process was investigated. Activities in each steps, interactions in the studio environment and how and to what extent these four determinants took part in which phase were observed and a table was formed (Table 2).

Table 2 Method/ Process / Outcome Relationship Matrix

Activities	Interaction	Focus Area	Studio	Learning by experimenting	Working with models	1/1 Scale
1. PHASE						
Research about concept	<i>imagination</i> 	<ul style="list-style-type: none"> • Research of “tower” image through pictures and sketches. • Construction of panel of tower image in workshop. 				
Sketch	<i>to concretize</i> 	<ul style="list-style-type: none"> • Conversion of tower image into style through sketches. 				
Concept Models	<i>product</i> 	<ul style="list-style-type: none"> • Structural solution seeking 1-5 model/drawing 				
Discussion	<i>presentation / critique</i> 	<ul style="list-style-type: none"> • jury –presentation and criticisms • formation of pairs (consisting of two individuals); proceeding to the second phase on one group member’s design 				
2. PHASE						
Research about detail	<i>teamwork</i> 	<ul style="list-style-type: none"> • Structural research • Research on details/materials 				
Sketch		<ul style="list-style-type: none"> • Detail sketches • Thinking ports with sketches • Thinking ports with models 				
Concept Models	<i>implementation</i> 	<ul style="list-style-type: none"> • 1-1 model 				
Discussion		<ul style="list-style-type: none"> • jury –presentation and criticisms • evaluation • exhibition 				

• **Studio As a Space of Production:** The process, in which all students and executors of the course took place, sometimes witnessed individual work steps –although it was possible to watch interaction at the background in studio during such individual studies.-In some parts students were all together; these included small group works (referring to students working in pairs) and group works (image panel that was formed by all students together and common juries). In this process, it was observed that studio environment was among the most decisive components. In some cases, a student’s experience triggered another and made him or her to question his or her decision and sometimes a student’s comment on other’s design contributed to its improvement.

• **Experience-Design Relationship or Learning by Experimenting:** Imagery stage was followed by design with sketches and models. In both phases of design process and almost on each step, students followed a ‘trial-and-error and re-trial-and-re-error’ strategy. In this process, in order to handle with obstacles they face or to develop their designs according to the criticism they received, they planned new routes for themselves. In doing

so they had chance to testify their ideas and improve their potentials for initiative taking in decision making stage.

- **The Importance of Working With a Model:** The experience of working with a model, as a perception of designs, comprehending them in three-dimensional way and at the same time as a concrete way of trying/experimenting, is an important part of this course and 3D-Pd/tower application. Students always experimented to work with a model during both their trials within the process (as a concept model), at the end of the first phase with 1/5 model prepared for jury and in developing 1/1 final product. As they were only first grade students, they often found it difficult to express their ideas through drawing whereas it was observed that they were more successful in concretisation with models. In addition working with three-dimensional models provided an opportunity to them for discovering different potentials of their designs and creating alternatives. This awareness increases students' enthusiasm and their effectiveness in studio.
- **1/1 Scale:** The completion of the study with a 1/1 scale final model had become an element of motivation on the process since the problem was suggested. Although students did not face 1/1 scale and scale-oriented issues, they were expected to question 1/1 scale in their suggestions. This way of thinking required occasional review of the drafts and amendments of pre-made decisions. Particularly in the second phase, 1/1 scale-oriented issues were focused; research on possibilities of materials and details was done. Difficulties encountered during these researches sometimes made substantial revisions in design necessary.

Conclusion

“Beginning to talk about education itself is an education” (Teymur 1997)

We believe that instructors have the responsibility to thoroughly critique—and have critiqued – the course they have delivered at the end of each academic semester and then to modify future courses by considering the positive and negative outcomes of these outcomes. In that sense, this article also represents an attempt to take a critical look at a studio experience that can also be regarded as experimental, one that refers to the very design problem as well as a quest for solution to this problem. It is important that we evaluate design experimentation (3D-Pd/tower) (the topic of this paper and also the final study of the basic design course within architectural education); in terms of the process and the final products achieved, and that we then develop the teaching method after understanding its shortcomings. It is also important that we collect such data that can be used as references in the design similar methods to be applied in later periods.

During the 3D-Pd/tower design at the end of the design course, it was observed that students encountered several difficulties. It was found out that students, who focused on tower design and its structural form during the process, did not reach satisfactory results in terms of the tower's function – portfolio. In addition to the fact that they encountered such a problem for the first time, the main reason for this was their limited knowledge and experience. On the other hand, it was observed that this implementation made students to have stronger perceptions and skills of expression concerning three-dimensionality. Moreover it was also observed that students were able to face scale-oriented (for 1/1 scale) problems, they gained ability to question the relationship between material and design and improved themselves in terms of active participation to group work.

On the other hand in designing final/course study, some components/criteria such as studio, learning by experimenting, working with models and handling with 1/1 scale became determinant. The evaluation (Table 2) indicates that the most important and effective component in this process was studio or in other words the environment. The course included many encounters for students. Studio, however, became a stage for such confrontations and it also became a place where course executors and students interacted and observed each other's designs alongside with their own. This place at the same time was where students faced design/designer's notion; it was the place where students began to form new identities. In this process, the most important tools for learning by experimenting/testing were certainly solid models. They tested and improved their designs through these models. Furthermore these models enabled students to observe that their ideas were converted/transformed into a concrete object; therefore they began to feel more desire and enthusiasm. This helps student to improve their new identities as “designers”.

It is very important to design/plan the first design course in which the fresh students of architecture had their first experiences. In this process course executors should thoroughly plan concerning what sort of information and what kind of experience that student face. In this and similar studies, it is important to suggest alternative routes, to implement and share the outcomes of the implementation with architecture/design education circle and even to establish new grounds for discussion for all educators, who share the enthusiasm of this first encounter moment

in terms of development/transformation of design education.

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