Exploring Influential Teaching and Learning Factors on Architecture Students' Form Creation Ability: Case of EMU Introductory Design Studio

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ABSTRACT

Design process in architecture education is based upon Learning-by-Doing method which leads students to understand how to design by practicing rather than studying. First-year design studios as starting educational stage provide integrated knowledge and skills of design for newly jointed architecture students. Within the basic design studio environment, students are conducted to transfer their abstract thoughts into the visual concrete decisions under supervision of design educators for the first time. Therefore, introductory design studios have predominant impacts on students' operational thinking and designing. Architectural design thinking is quite different with students' educational backgrounds and learning habits. This new educational challenge at basic design studios creates severe need to study the reality of design education at foundation year and defining appropriate educational methods with convenient project types with intention of enhancing architecture education quality. Material of the this study has been gathered through the two academic semesters direct observation at first year second semester design studio at Faculty of architecture at EMU (known as FARC 102), Fall and Spring academic semester 2014-15. Distribution of a questionnaire among case study students and interview with upper design studio students who passed same methods of education in past 2 years and conducting interviews with instructors are other used methodologies in this research.

The findings come to the conclusion that students' performance through the design process tends to be individualistic and owe more intuition rather than formalistic procedure. Students also, have been faced with some challenges and dilemma through externalizing their design ideas and thoughts as the concrete products on their form-creation procedure. Furthermore, exerting relevant design strategies through the students' learning process has enriched their design knowledge, skills and experiences better than just making forms through the design process. The research

data has also indicated that students' performance through their design process has isolated design studio from their done design studies. In addition, the professional structure of design evaluation which has been based on the students' final products and grade rather than their design process causes increasing students' obsessed with their final design grades and neglecting on their concept generation and design development process.

The results of this study reveal a risk of a mismatch between the implemented teaching method, project type and scale in this particular level and students' learning style. Although, the existence of such risk due to varieties in students' profile could be expected to some extent but, sort of recommendation can support educators to reach maximum compatibility.

Keywords: Architecture Education; Basic Design Studio; Educational Method; Form Creation Skill

ÖZ

Mimarlık eğitimindeki tasarım süreci, yaparak öğrenme yöntemi üzerine kuruludur ve bu öğrencilerin teoriden ziyade uygulama ile anlamalarını sağlar. Eğitim aşamasına başlangıç olarak ilk-yıl tasarım stüdyoları, yeni mimarlık öğrencileri için bütünleşmiş bilgi ve beceriler sağlamaktadır. Bu temel tasarım stüdyo ortamında öğrenciler, tasarım eğitimcilerinin danışmanlığında, soyut fikirlerini ilk defa somut, elle tutulur kararlara dönüştürürler. Dolayısıyla, bu tanıtıcı tasarım stüdyoları öğrencilerin işlevsel düşünme ve tasarımlarında baskın bir etki yaratır. Mimarı tasarım görüşü öğrencilerin eğitim geçmişinden ve öğrenme alışkanlıklarından oldukça farklıdır. Temel tasarım stüdyolarındaki bu eğitimsel zorluk, temel tasarım eğitiminin gerçekliğini çalışmayı ve mimari eğitim kalitesini arttırmayı hedefleyen uygun proje türleri ile uygun eğitimsel yöntemler tanımlamayı gerektirir. Bu araştırmanın verileri, 2014-2015 eğitim öğretim yılının Güz ve Bahar dönemlerinde, ilk yılın ikinci döneminde, Mimarlık Fakültesi'nde tasarım stüdyosunda uzun süreli ve doğrudan gözlem ile toplanmıştır (FARC102). Vaka çalışmasındaki ölçeklerin öğrencilere dağıtımı, son iki yıl içerisinde aynı eğitim yöntemlerinden geçmiş ileri tasarım stüdyosu öğrencileriyle yapılan görüşmeler ve eğitim elemanlarıyla yapılan görüşmeler bu araştırmadaki diğer yöntemlerdir. Bulgular göstermiştir ki, tasarım sürecindeki öğrencilerin performansı daha çok bireyseldir ve şekilcilikten ziyade daha çok sezgiseldir. Öğrenciler, ürün yaratma sürecinin somutlaşması sürecinde, tasarım fikirlerini ve düşüncelerini dışsallaştırmaları üzerinden bazı zorluklarla ve ikilemlerle yüzleşmişlerdir. Buna ek olarak, öğrencilerin öğrenme süreçleri üzerinden ilişkili tasarım yöntemlerini kullanmak, onların tasarım bilgilerini, becerilerini ve tecrübelerini, tasarım süreci üzerinden sadece form yapmaktan daha iyi bir şekilde zenginleştirmiştir. Araştırmanın verileri aynı zamanda göstermiştir ki, tasarım süreci üzerinden öğrencilerin performansı, tasarım stüdyosunu tamamlanmış tasarım çalışmalarından ayrıştırmıştır. Ayrıca, öğrencilerin final ürünleri ve başarı notlarından ziyade tasarım süreçleri

üzerine kurulu olan profesyonel tasarım değerlendirme yapısı, öğrencilerin final tasarım notlarına, tasarım kavramının ihmaline ve tasarım gelişim süreçlerine olan takıntılarını arttırmıştır. Bu araştırmanın sonuçları, uygulanan öğretim yöntemi, proje türü ve bu belirlenmiş alandaki ölçek ile öğrencilerin öğrenme şekilleri arasında bir uyuşmazlık riski olduğunu gösteriyor. Buna rağmen, öğrenci profiline bağlı olarak meydana gelen bu tip bir riskin varlığı belli bir dereceye kadar beklenebilir; ancak bu tip bir öneriler eğitimcilerin azami uyumluluğa ulaşmasını destekleyecektir.

Anahtar Kelimeler: Mimari Eğitim; Temel Tasarım Stüdyosu; Eğitimsel Yöntem; Biçim Yaratma Becerisi

DEDICATION

This thesis with eternal love and gratitude is dedicated to my parents; to my father, Mohsen Nikanjam who inspired me to be strong against any obstacle in life, he is truly my hero and to my mother, Azamssadat Jafari who prays for the tiniest events in my life with great love and does not let my heart be troubled, she is my confidant.

The thesis is also dedicated to my beloved siblings; to my sister, Shida Nikanjam who has been my emotional anchor through not only these years, but my entire life and to my twin brother, Shahram Nikanjam who has always been with me, through the unspoken communication of our deep heart connection.

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INTRODUCTION

1.1 Research Background

At the beginning, architectural education was based on the apprenticeship system and has been implemented in the design studio. In the eighteenth century, studio-based model of teaching was established by the École Des Beaux Arts in Paris. Then, the tradition of "Learning-By-Doing" developed toward the "Project-Based" and "Problem-Based" educational methods (lackney, 1999). The concept of the studio-based learning refers to the students' active participation in their design process (Vest & et al, 2011). Any design is composed to solve the specific problem and to find the most appropriate solution for the given design problems. This is what expected to be taught to design students within the design studios where future architects get their first experience of their professional life.

The curriculum of architecture was structured to enhance theoretical and practical aspects of architecture education (Broadbent, 1995). Design studio as a core of the architecture education makes a balance between creativity and design principles to improve the architectural quality of the design products and emphasizes on form producing. Design studio provides an educational environment for students to learn how to transform the design principles on the basic geometric shape to produce an architectural form under the supervision of the studio masters (kearsley, 1994).

Thus, the studio assignment should be structured in a way to give holistic perspective from the design approaches to the students. Moreover, assignments have to create a condition for students to investigate different contexts, perspectives and ideas.

Equipping students with form-making skill is the initial goal of architecture design education (Yavuz. 2012). But it is mostly observed that students especially who are at the beginning stage of the architecture education have difficulties to create appropriate architectural forms, because students at preliminary design studios do not have enough knowledge and experience to transform their initial design ideas into proper architectural forms by employing basic geometric shapes (Yavus, 2012).

The conventional educational method in basic design studios is "Learning-by-Doing". Students learn architectural design instructions while experiencing their two-dimensional thinking on their three-dimensional design models. Ledewitz (1985) explained three aspects of the gained experiences in the architectural design studios; Learning and practicing the visualization and representation skills, Learning and practicing new graphic and verbal language and Learning how to think architecturally.

Improving students' design knowledge about the general design principles and elements in architectural designs helps them to materialize their ideas more architecturally and produce rational architectural forms. Ching (1979) claimed that geometrical shapes are fundamental elements in producing architectural form.

Schön, (1984) defined design learning process through the process of "Reflection-in-Action" which is communication activity between the instructor and student and has referred to the student reflection on instructor action and vice versa. This activity forms the critique process in a design studio and improves instructors' understanding of students' design learning levels while communicating with them.

Kolb (1984) described the design process as a cycle which starts with experience and is closed at experience too. It is an experiential learning process from very beginning to final design product which is accomplished by the design instructor within the studio environment. The applied methods and means through the educational process for first-year design studios play fundamental role on the students' design knowledge in architectural design education.

Therefore, there is still a need to study the reality of design education at foundation year and compare it with determined objectives and facilitate the selection of appropriate educational methods with convenient project types for the beginning design students. Through these, of course teaching techniques and learning styles are needed to be studied as well.

1.2 The Importance of the Thesis

Architecture is a multi-disciplinary field that includes art, sciences, technology, history, philosophy and mathematic within itself (Koranteng & Essel, 2013). Architectural design is the aesthetic expression by the visual grammar in concern with deign principles to reach the rational architectural designs. Design studio is the main mean of teaching in architecture education (Little & Cardenas, 2001) where learning style is more self-generated and intuitive (Risebero, 2001). The main outcome of this educational environment is students' design projects which are amateur and small-scale of their future realistic architectural design projects.

Basic design students are introduced to architectural designs and learn to present their design thoughts in regard to the design principles for the first time within their studio environment. Therefore, facing with the new studio culture, difficulties through the instructional method and challenge of learning-by-doing within the design process make this level more crucial.

Students through their design process might feel confused about instructors' critiques and have been faced with a dilemma between their own design ideas and instructors' ideals. Basic design students are not too much familiar with the meaning of creativity in the architectural designs and also they do not know how to use their creativity on their design projects. So, most of the time students make imitation (even not creative imitation) from other designs instead of making inspiration. Some students have non-working ideas for their designs, but still insist on applying them on their projects and pay not enough attention to their instructors' critiques.

On the other hand, some students have doubt to explain their own design ideas and prefer to take the next stage of the design process mostly based on their instructors' ideas and develop the projects with their low-level contribution through the design process. Since, basic design students are not enough mature in design architecturally, therefore in introductory design studios, instructor's opinion has influence over the student's design idea because of existing some shortcomings on student' design knowledge and skills. But, through the design process expectations from students will be increased and instructors' contributions in the projects is expected to be decreased for training independence future designers.

This thesis studies relevance and rationale of the conventional educational methods in first-year design studio. And distinguishes the existing difficulties which students and instructors might be faced through the form creation procedure within the architectural design process. Possible solutions and recommendations on improving students' architectural form creation skill would be provided by this study to diminish unsatisfactory conditions made by students through the design process and to develop architectural quality of the studio productions as much as possible.

This research is helpful and beneficial in enhancing students' form creation skills at the basic stage by taking benefits from the applied teaching system on students' learning style. The study supports developing further studies in the field of architectural design education and presents a supportive criteria for students to improve their form transformation knowledge and skills for presenting formal design products with proper architectural quality at the basic design stage.

1.3 Problem Statement

Architectural form is considered as the concrete product from designer's abstract design ideas and design models are the main materialized outcome of the students' subjective thought. However, basic design students are special cases due to their limited design skills and knowledge. First-year design students experience how to design architectural projects for the first time in their basic design studios so, having more difficulties is expected.

Basic design students are coming from a very disciplinarian educational system of secondary school where there is no possibility for students to improve their self-expression, self-confidence skills and have no chance to do the research and present their creativity through their educational process. Although, students' performance is not defined only by their individual creativity and talent, but their education and training system has influences on their learning style.

The study habits of secondary school students are based on reading, memorizing and writing for grade capturing while in the higher educational system, especially in field of architecture; perceiving, analyzing and making is expected from students as their learning styles which are in contrast with their previews learning habits. These differences in learning methods cause serious problems for students in their higher education to accomplish their academic tasks. Therefore, such challenges should be overcome through the educational methods at introductory design studios in first-year

architecture education. Thus, this stage is the most problematic level in design education for training the critical-thinker designers and creative decision-makers to design the innovative architectural forms.

Although, many studies have been carried out on first-year architecture education based on literature, but still many of existing architecture institutions are suffering from lapses in their first-year education. Thus, this level of education needs extra care and attention and also, more in-depth studies and challenging discourses. So, to realize how students gain expertise in use of trained material, to examine influential factors on form-creation skill and finally to figure out students' difficulties in design process at the basic level, this study proposed with defined objectives and scope.

1.4 Objectives of the Thesis

The research objectives of this thesis have been set in a way;

I. To study and document applied conventional teaching and learning methods for the first-year architectural design studios.

II. To critically analyze the reality of basic design education in the first-year; second semester design studio (FARC 102) at Eastern Mediterranean University (EMU) Faculty of Architecture.

III. To evaluate students' form-creation abilities and difficulties through the implemented educational method.

IV. To develop recommendations and suggest supportive criteria to be used in the basic design studios at EMU.

1.5 Methodology of the Research

This study has been equipped with in-depth reviewing of existing literatures about most conventional methods in design instructions and from creation in the field of

architecture. The qualitative and quantitative research methods have been applied throughout the study. Research data based on the objectives has been collected through the personal direct observation from first-year (second semester) introductory design studios (known as FARC 102) within two academic semesters (fall and spring semester 2014-2015) at Eastern Mediterranean University (EMU) department of architecture.

Throughout the observation period two times questionnaire survey (one time in each semester) had been distributed among FARC 102 basic design students. Four interviews with EMU basic design instructors were held and discussions had been transcribed. Then, another interview with upper-class design students (second and third-year; ARCH 292, ARCH 391 and ARCH 392 design students) at EMU were held in order to understand the usage and the consequence of their acquired design knowledge in FARC 102 on their architectural design skill for upper design studios.

Corresponding findings at each phase were analyzed. And the results along with literature reviews have been examined and contributed in the study to reach the research objectives and make recommendations.

1.6 Limitation of the Research

The qualitative and quantitative research methods have been applied in this study to examine the implemented educational methods for creating architectural forms in the introductory design studios at EMU. The limitations for this thesis are as follow;

I. The chosen case studies are Introductory Design Studio (FARC 102) and not FARC 101 (Basic Design Studio). FARC 102 design studio and students' form producing procedures would only be focused, not other service courses or assignments in the design studio.

II. This study conducted a survey among two academic semesters (Fall 2014-15 and Spring 2014-15) with the 80 number of participants both male and female from

two observed design groups at Eastern Mediterranean University (EMU) Faculty of Architecture.

III. The research was carried out based on the FARC 102 design students' form creation abilities (the process of transforming subjective unique idea to the concrete decision) through the term project design process and from the concept generation stage till final design outcome presentation.

IV. The recommendations suggest supportive criteria for the students to transform, externalize and exert their subjective unique ideas as the concrete outcomes and rational solutions on their projects and develop their ideas architecturally through their design process.

1.7 Structure of the Thesis

In chapter one, the research background and importance of the thesis have been described and the proposed research problem and set objectives of the study were clarified. Accordingly, the relevant research methodologies to collect and analyze the data and also, scope of the study have been defined.

In chapter two, existing literatures relevant to the generalities of architectural education and design instructions are reviewed. And the importance of the first-year design studio within the architectural design education are being noted. Then, the conventional instructional methods and tools for basic design students (first-year design students) are studied. After that, applied teaching and learning methods in first-year design studios in the case of Turkey and North Cyprus are discussed. Lastly, according to existing done studies on first-year architectural design education the placement of the thesis will be defined.

Following that, chapter three provides a multi-layered methodology and an overview of how the study was organized and also forms of the data collection (direct observation, questionnaire and interviews) are explained. Chapter four, illustrates the findings based on the author's direct observation, students' questionnaire survey, instructors' interviews and students' interviews.

Then, discussions on the findings to detect the educational strength and weakness points based on the influential factors in architectural form creation in introductory design studios (FARC 102, first-year second semester). Lastly, chapter five concludes all the finding throughout the research and presents suggestions and future work.

The flowchart for the thesis structure is presented in Figure 1.1.

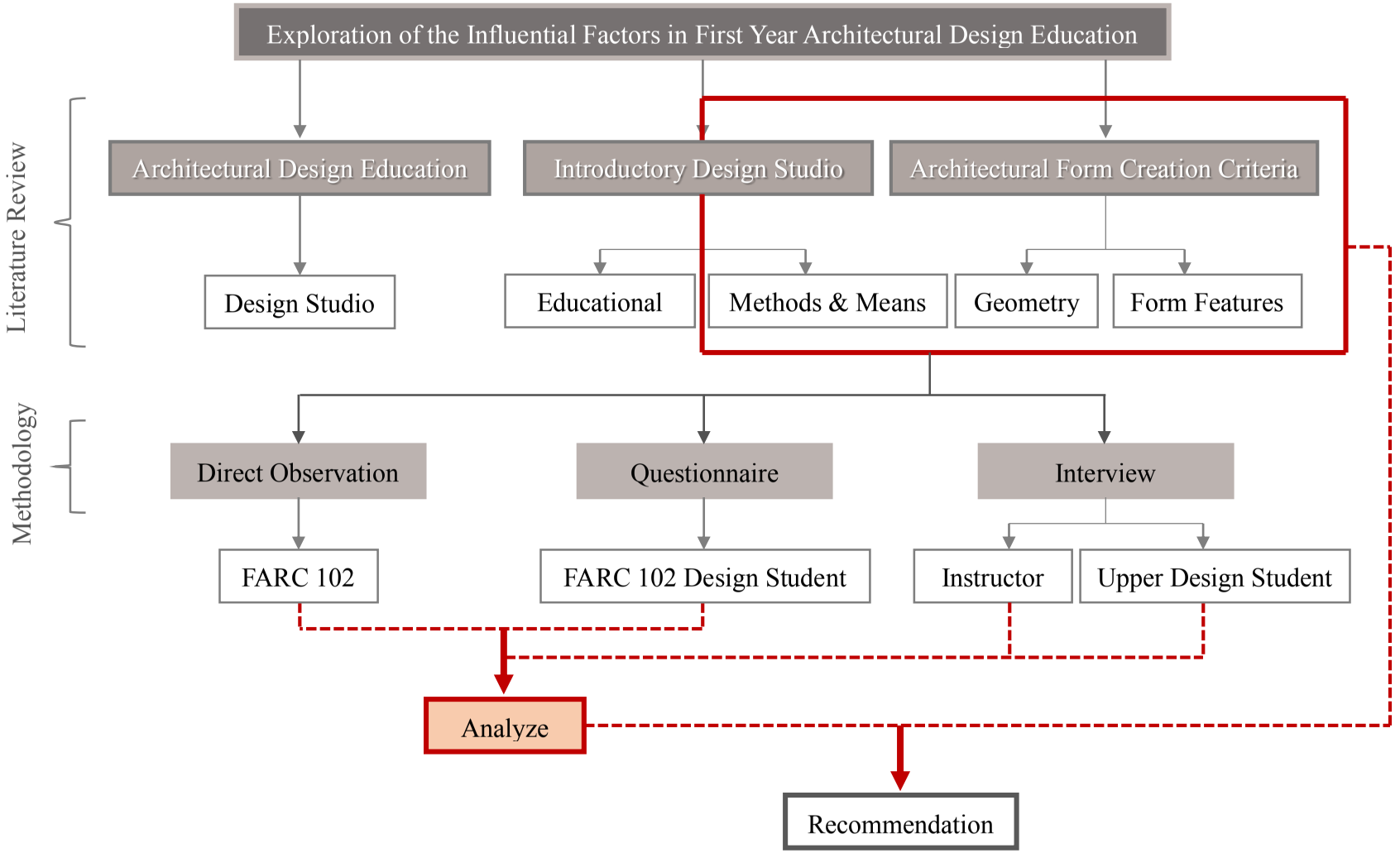


Figure 1.1: The Structure of the Thesis, by the Author

Chapter 2

ARCHITECTURAL DESIGN EUCATION SYSTEM

2.1 Introduction

This literature review focuses on architectural education with main concern on the first-year design education. And aimed to realize the importance and matters of the first-year design education under the following headings through the whole chapter. The history of studio-based learning method in architectural design education which has been emerging from four prominent models within the different periods have been studied. Then, the role of the design studio as a core of the architectural design education has been reviewed. The importance and value of the first-year design education as the foundation year in the educational process of architectural designs have been discussed. The influential factors on the architectural form creation have been examined through the study. Architectural education and notably first-year architectural design education have been studied in the case of Turkey and North Cyprus. Finally, according to all done studies in field of architecture education in Turkey and North Cyprus the placement of this thesis have been well defined.

2.2 History of the Studio-Based Learning in Architectural Education

Architectural design education from the late of 1800s has been conducted in design studios where the traditions of "Learning-by-Doing" developed toward project-based and problem-based education system (Lackney, 1999). And tends to increase student's abilities in re-use of learned knowledge, skill and creativity in finding new solutions and gain permanent skills in their architectural design (Schön, 1984; Onat, 1985). Although nowadays, architectural education approaches are mainly turned toward cultural modifications, but curriculums are somehow the same. And it seems most of

the graduated architects are getting similar education process which Lackney (2000) believed they are emerged from synthesis of the well-known models such as “French Model”, “German Model”, “British Model” and “United States Model”;

A. The French Model of Architectural Education

The French architectural education in 1671 established by The “Academie Royale d'Architecture” to regularize its system (Heskett, 1997). Moreover, in 1743 School of fine arts was established by the means of providing an equal pattern of the skilled designers. This school offered the special program with lectures on geometry, perspective, mathematic and the like. The foundation of the Beaux Arts system was the “design problem” that has been given to the students to solve under supervision of the professors. The teaching system was based on the “Learning-by-Doing” with neoclassical style and monumental building projects. The projects were being judged by the jury members including instructors and guest architects without the students’ presence by the same criteria and expectations for all the projects.

B. The German Model of Architectural Education

In 1919, the Bauhaus school of art and craft was established by Walter Gropius, at Weimar in Germany with the aim of uniting art and craft to establish a new sort of collaboration in industry and craft (Heskett, 1997). In this school, design studios were organized in a way that different art students can work together and in this, consciously created an environment where students are enabled to experiment different shaping tools, different materials and realize their influences in their products. Such an environment cultivates students’ design skills through the “Learning-by-Doing” and allows them to experience intangible aspects of the form by considering the architectural design principles. This type of design studios also enable students to materialize their thinking as a model with foam, wood, plastic and any appropriate materials in this field. The significant aspect of the model-making process in the design

studios is signifying design objects and process and as a result the detected design problem will be solved.

C. The British Model of Architectural Education

British system was an almost modification of the medieval apprenticeship system by controlling pupilages for five or six years (Utaberta & et al. 2012). The first school in the United Kingdom to implement the structured teaching system was the Architectural Association (AA) in 1847. Oxford and Cambridge universities were the first universities based on the ideal of vocational training and development of the practice-based training in England (Garry, 1998). Apprenticeship system makes a connection between architectural students and firms from the early stage of the carrier and sparks the hidden talents of students.

D. The United States Model of Architectural Education

The United States bring other models beside the “Practitioner-Dominated” system of professional education of Britain and the “State-Dominated” system of France (Garry, 1998). The main difference between American and British education system is the absence of historical continuity. This model was based on the Learning-by-Doing to demonstrate thoughts through the artworks and long-term projects (Lackney, 1999). The system which has been rooted from the Bauhaus of Architecture School. Students were passing the time in the auditorium through the lectures, presentations, negotiation and reviewing art works.

Figure 2.1 demonstrates summary of the four aforementioned models of architectural education.

French Model	The model was established by the École des Beaux Arts and its main aim was providing skilled designers. Solving the design problems was expected from the students along with the instructors monitoring. The model was based on the Learning-by-Doing method and students' design products had been evaluated by the jury, according to the same normative standards and in the absences of the students.
German Model	The model was established by Walter Gropius and was making a connection between art and craft. The model is considered as the fundamental teaching model with Learning-by-Doing learning method in architecture education. German model required both, students and instructors working jointly within the design studio, where students' design knowledge and skill are achieved to materialize their abstract design ideas. The outcome of the model students' concrete design product and solutions for the given design problems.
British Model	The model is modified format of the apprenticeship system and its main aim was arousing students' talents through their designs and connected them with firms.
United States Model	The model was based on the French model and its main difference was the absence of the historical continuity in the United States model. The model has rooted in the Bauhaus School and based on the Learning-by-Doing method, through the term project, lecture, presentation and dissection through the design process.

Figure 2.1: Four Architectural Design Education Models

The history of design education illustrates some important characteristics of the current design studio model. Austerlitz (2000) and Aravot & Ben-Ze'ev (2002), outlined four characteristics which make modern design studio as the different learning medium than it was in the past:

(a) The reflective learning component.

(b) The personalized design process, which implies creativity.

(c) The instructor's influence on the product of the project.

(d) The fact that a student's action, personality, and feelings are laid out in the open.

The fact that most of trained architects have gone through similar programs, but marginally different in training procedure, criteria and curriculum (Lackney, 1999), prompts scholars to specifically study design studios in different levels and stages. Of course understanding and portrayal of the architecture studio-based learning and their associated problems contributes to the development of a set of recommendations to improve the performance of the architecture critique sessions and its acceptability to architecture students.

2.2.1 Architectural Design Studios

According to Dutton (1996) the classroom is an environment where some strategies are presented to specify those things that, should be known in order to construct the word with similar views, values and subjectivity. The architectural design studio is core to architectural curriculum and provides an environment for the students to engage with the design projects under studio master supervision. Each studio at the beginning of each semester introduces a design problem by the instructor(s) to the design students and has been expected to be solved during the semester. The design problem is given in the form of project that highlights the project requirements, instructor's expectations, user requirements, site characteristic, technical information and any other important factors that is needed to be considered to propose appropriate solutions for the given design problem. Students also would receive formative feedbacks of their projects from the mentors who examine the projects development though the students' design models and their architectural drawings (Crowther, 2013).

The design process as a thinking process enhances the students' analytical skill and leads them to be more proactive (Parashar, 2010). According to Jones (1990) the design process is a systematic way of producing something. Also, the creativity is introduced through the design process by practices and brainstorming with the students within the design studio (Parashar, 2010). Therefore, design studio is the meeting point where demonstrates all the subjects that have been taught through the architectural education. It creates the learning environment and also, makes the situation for opening the effective discussions to better understanding of the project requirements for the design students. Normally twelve to twenty design students are spending time and working on their projects and receiving common design critique from the studio instructor (Schön, 1983).

Figure 2.2 displays six well-known elements of architectural design studios in the conventional educational methods.

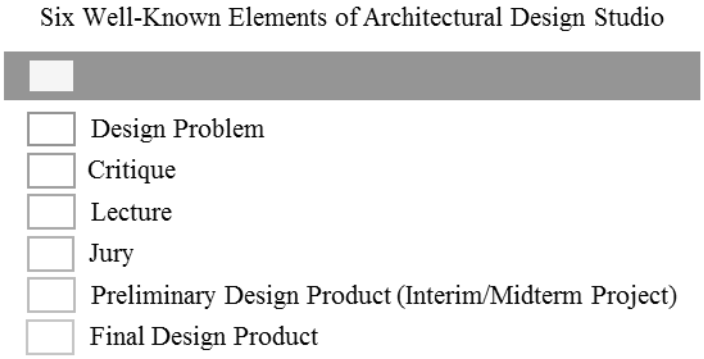


Figure 2.2: Elements of Architectural Design Studio

Sometimes at the beginning steps of the design project students are asked to do research about the specific design problem of the project and sharing the results with other students in the design studio. Generally, students' performance in the design studios has the individual nature which had resulted in proposing different alternative solutions for the given design problems (Lackney, 1999).

Studio performance could be enhanced by the systematic procedures to help students for having structured improvement within the design process (Hassanpour & et al., 2010). There are four well-known different phases of critique during semester within the design studio, Figure 2.3 demonstrates four conventional critique types in the architectural design education.

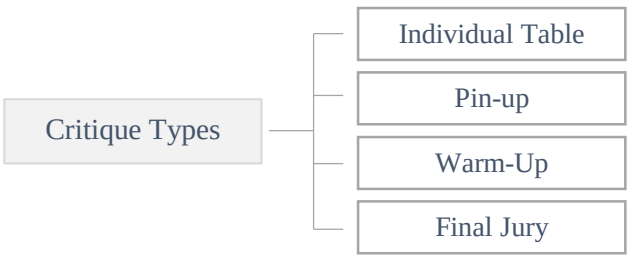


Figure 2.3: Critique Types in the Architectural Design Education

First one is the “Table-Critique” which is the negotiation and dialogue between the studio instructor and student about the student’s products based on the design problem for about twenty to thirty minutes and once or twice a week within the studio environment (Hassanpour & et al., 2010). Through this process students will be fostered various skills in architectural design, drawing, model-making and construction techniques from the instructor and other students in order to present their proposed design solutions. The solutions will be presented in different formats such as sketches, drawing and design models by considering the required scale of the project. Second type of critique at the design studios is “Pin-Up Critique” that is the most common interaction between students and experts of the field which occurs during the semester and students would be evaluated. Third one is an interim and midterm critique sessions which are usually considered as a “Warm-up Criticism” to the final type of critique. The “Final Jury” session is a situation that students are waiting for their turn to present their best solutions for the project to the jury members who have usually been in their midterm jury and are familiar with their projects (Hassanpour & et al., 2010). Further, the components of the “Studio-Based Learning” are: materializing the design solutions, presenting of the solutions, evaluating the proposed solutions and modifying them by the reviews and design critiques (Vest & et al., 2001).

2.3 Educational Value of First-Year Architectural Design Education

The common purpose of education is knowledge transformation and continuing experiences (Battle & Lewis, 2002). Dewey (1988) stated that education is a literal fact and its goal is continuing any experience between social groups by the means of social continuity of life. Bunch (1993) noted that the historical purposes of the education are: socializing, preparing the practical, intellectual or self-cultivated person, shaping the human personality to do the research for a profession.

Mainstream of the pre-university education focuses on memorizing of the information which leads students to vertical thinking rather than critical thinking and perception

(Snaoff, 2003; Salama, 2009; Salingaros & Masden, 2010). Design education (understanding concept of design) is complicated issue and somehow controversial (Gulmez & et al., 2014). The purpose of the design education especially at the beginning stages is making students' mind free from the established, regular and inflexible design perceptions and leading them to design architecturally and present innovative proposals. In the process of learning architectural design, some students mostly at introductory design studios are imitating certain architectural ideas and styles from the other architects or designs without being aware of those designs contexts. Therefore, their proposed solutions may not be appropriate for their local project context (Ghaziani & Montazami, 2013).

The first-year is known as a transition period for taking the design students apart from vertical thinking that have been forested by their secondary education and starting to depict comprehensive thoughts. The students start up to think architecturally out of the pre-existed framework and familiar with lines and patterns in order to propose appropriate design model (Heidarian & Ghafourian, 2014). Students from different backgrounds would train to enhance their synthesis and analytical abilities, communication, visualization and representational skills (Parashar, 2010). Table 2.1 compares the students' habits of learning in their secondary schools (*Pre-University*) with the common and expected learning system in higher education (*University*), particularly in field of architecture.

Table 2.1: Compression of Student's Learning Habits in Secondary School and University Education, EMU ADHOC Committee Report, 2015

Pre-University	University
Student is passive actor in learning process	Students are considered as an active performer in learning process
The fosterage system is based on Using ready and defined information	Expecting innovations and explorations from students within their learning process
Riskless ground knowledge	Knowledge requires student to take risk

Learning for success	Learning from challenges and failures
Multiple controlling powers on students to learn according to the set system	Students have multiple permission to learn

Introductory design studio is the foundation for architecture students to understand the required basic design knowledge (Tavasoli, 2014). Which are considered as the best starting point in architectural education and clears students' mind from the existing and pre-established knowledge in field of architecture and also, leads them to the true ways of architectural designs (Clarke, 2014). Students come to the introductory design studios with immature perception of the architecture and start to build themselves as an architect (Tavasoli, 2014).

Basic design studio influences on the student's design ability in the upper classes with respect to architectural design principles. Basic design studios have high credit hours per week and aim to prepare students with the required skills and knowledge in order to produce creative, inventive and proper design solutions. Tracking students' performances at an early stage of design education as a preventive process helps to recognize poor design performer and implementing varied learning methods (Atanas, 2012). The basic design is regarded as a basis and thought system within the design education which catalyzes the education (Denel, 1981). The basic design education has been originated from the Bauhaus school in Germany and routs from teaching and learning design theories (Learning-by-Practicing).

The educational program of the first-year aims to announce the creative motive and initiate the visual design in respect with the basic elements like points, lines, planes and solids in conjunction with the architectural design principles. In fact, these principles help to convert the vision into the visuals (Parashar, 2010). Along with this, any design practice is done in notion with these principles which are inseparable elements in architectural design instruction.

Design teaching method especially for first-year students creates the sense of confusion among the students which makes the learning process much more difficult for initial design students (Roberts, 2006). Fresh mind architecture students will experience architectural design at the basic design studios for the first time. Students at basic design studios learn some skills and design knowledge to present their initial design ideas which make this academic year a special one in the students' educational life. Abstract way of thinking and rational thinking are two main requirements in the basic design studio which students have some difficulties to fulfil them (Gulmez & et al., 2014). Generally, they need to obtain specific ability in field of architecture to transform their imagination into a concrete outcome. Mental image would be created unconsciously in designer mind and also play fundamental role in decision making process. Later, this transition gives students the chance to experience and combine several academic disciplines with different systematic training later (Heidarian & Ghafourian, 2014). Due to complex structural considerations on upper design studios some of the senior design students pay not proper attention to the basic design principles on their design project (Parashar, 2010). Through the basic design studio environment the process of working, thinking and learning are supporting each other.

In a broader perspective, enhancing the critical thinking is essential for the students to have desirable educational outcomes (Farivarsadri, 2001). In fact, basic design stage prepares students to think out of routine with architectural manner in order to clarify the real designs and lead the students to design in a true way (Heidarian & Ghafourian, 2014). Students through the basic design are faced with different tangible and intangible aspects of creativity. And basic design studio aims to make the intangible abstracts clear as well as tangible facts in architectural designs for students (Yurekli, 2014). The course objective of the basic design studio is to intensify the student's sensitivity toward the space quality (Parashar, 2010). Due to, the leakage of some basic design skills such as model-making or drawing skill and also, absence of the basic

architectural design knowledge among the students so, educational methods and objectives in basic design studios should be set very carefully (Farivarsadri, 2001).

Introductory design studios are multi-dimensional learning medium with varied participants and mutual relationship between design learners and educators where the ground knowledge of architectural design is taken shape in order to prepare students for overcoming on their design incapability (Gulmez & et al., 2014).

Generally, introductory design studio has been perceived as an elementary educational environment for novice architecture students to teach design elements and principles. The basic design which could be rightly called the "*Mother of all Designs*" starts with the basic elements and principles in the design and finishes by the special experience of the components by the students in their first-year of architectural design education (Parashar, 2010). Students' ability of converting their visions into visuals needs especial training from the basic design studios.

Basic design studio aims to aware students of the formal design elements, their characteristic and rules on architectural design works (Heidarian & Ghafourian, 2014). Considering the human-scale in design, sectional organizations and form-function relationship are also have been linked in the basic design studio's subjects. However, the attempt of the first-year architectural design education is developing students' design awareness, having deeper insights and look to their living environment in order to gain proper skills and abilities to present their perception with their own individual and unique architectural terminology (Gulmez & et al., 2014). Basic design studios teach some educational theories like: theory of color, material, form, rhythm and etc. which have been taught through some abstract exercises and usually with the same manner and method in education to the design students. Such an abstract exercise

brings mismatch between practical and theoretical aspects of the architecture education for students (Broadbent, 1995).

The course is usually base on the design concept generation and creates learning medium by experimenting the procedures of two or three dimensional forms. Students will become familiar to the basic design elements as well as design principles through the semester. They also have been introduced to the "vocabulary of design" through their form-creation process (Heidarian & Ghafourian, 2014). Students at the basic design course try to make balance and synchronization of their design concept with whatever they are doing which has effected on their architectural perceptions. This mental balance for the students has great influence on their performance (Tavasoli, 2014) also, thinking innovatively is asked from the incoming students. In fact, one of the major purpose of the design studio is leading students to figure out the innovative design solutions (Roberts, 2006). In the basic design studios students learn architectural terminology through their acting and practicing.

The course undertakes the active learning approaches in architectural design education and students present their own perception, concept and experience from the essence of architecture verbally and non-verbally. In fact, students share their perception of "*What is Architecture?*" with their classmates and mentors within the basic design environment (Tavasoli, 2014). Teymur in 1994 stated that building design and learning are not simple. Any problem has its own complexity which could be appeared in any stage of learning and teaching context. Since, the main objective is applying the appropriate methods to organize the problem into a coherent system to provide the logical solutions (Farivarsadri, 2001). According to Kalogeras and Malecha (1994) teaching the beginning students have specific requirements. It is a great responsibility that has been accomplished for best preparing the individuals, and needs advising, inspiring, monitoring and counselling through the training process.

Student in basic design studios learn the appropriate knowledge and mental skills and also, develop some physical skills like: drawing and model-making (Farivarsadri, 2001). Since, basic design students are facing with these features for the first time so, they need to be trained for integrating them properly during their design process. Table 2.2 indicates three basic features of design education by Ledewitz.

Table 2.2: "Basic Design Features", (Ledewitz, 1985)

A	Learning And Practicing Visualization And Representation Skills
B	Learning A New Language
C	Learning How To Think Architecturally

Students' background plays important roles in their abilities for critical thinking and analyzing in their own design process (Atanas, 2012; Reffat, 2006). Since, first-year architecture design students are coming from different backgrounds they would face with some challenges such in form-making, function organizations, interior design solutions, technical drawings, model making, graphic communications and presentation skills. Therefore, realizing students' needs through their design process and improving architectural teaching methods could diminish the students' challenges in their design process (Koranteng & Essel, 2013). Right student's background in architectural education resulted in better quality of the design outcomes and student's performance in design studios. It is stated that "Architecture is as much Background as it is Foreground" (Farooq, 2011).

Using the student-centered educational method in architectural design education creates dialogue or two ways transforming the information instead of monologue or one way and also, changes students' role from the passive participants to the active participants in their educational process. Thus, student's background should be considered in a dialogue which is the main point of "Critical Pedagogy".

2.4 Educational Methods and Means for First-Year Design Studio

Education is defined as the first step of any activities for the humankind (Battle & Lewis, 2002). In architectural education it is important to reconsider how to begin training with learnable characters rather than teachable features and also, give new definition to the architectural instruction. (Serim & et al., 2011).

Figure 2.4 indicates Kuhn (1999) definition of five major characteristics of the traditional design studio.

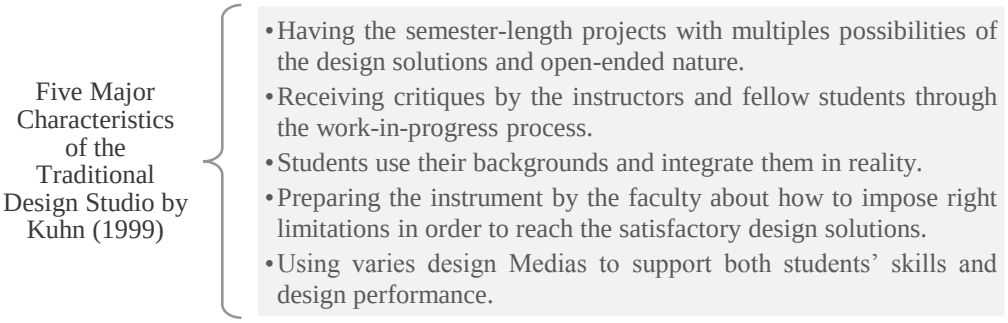


Figure 2.4: Characteristics of the Traditional Design Studios by Kuhn (1999)

"University Education" In field of architecture originates from *"Training through the Knowledge Transformation"* and serves to prepare the apprentices with the appropriate skills for their occupations (Farivarsadri, 2001). Architecture education provides specific skills and knowledge and also, develops students design thoughts by community of instructors through the teaching process. Design instructions have varied meanings for educators who apply design ideologies according to their view points and as the result create a distinct architectural design methods (Ghaziani & Montazami, 2013). According to Little and Cardenas (2001); Demirbas and Demirkan (2003) general educational methods and means for first-year design studios could be classified into six categories such as "Physical Space", "Pedagogy", "Student Exercises", "Project Type", "Communication Tool" and "Assessment".

Figure 2.5 displays six categories of the educational methods and means for first-year design studios.

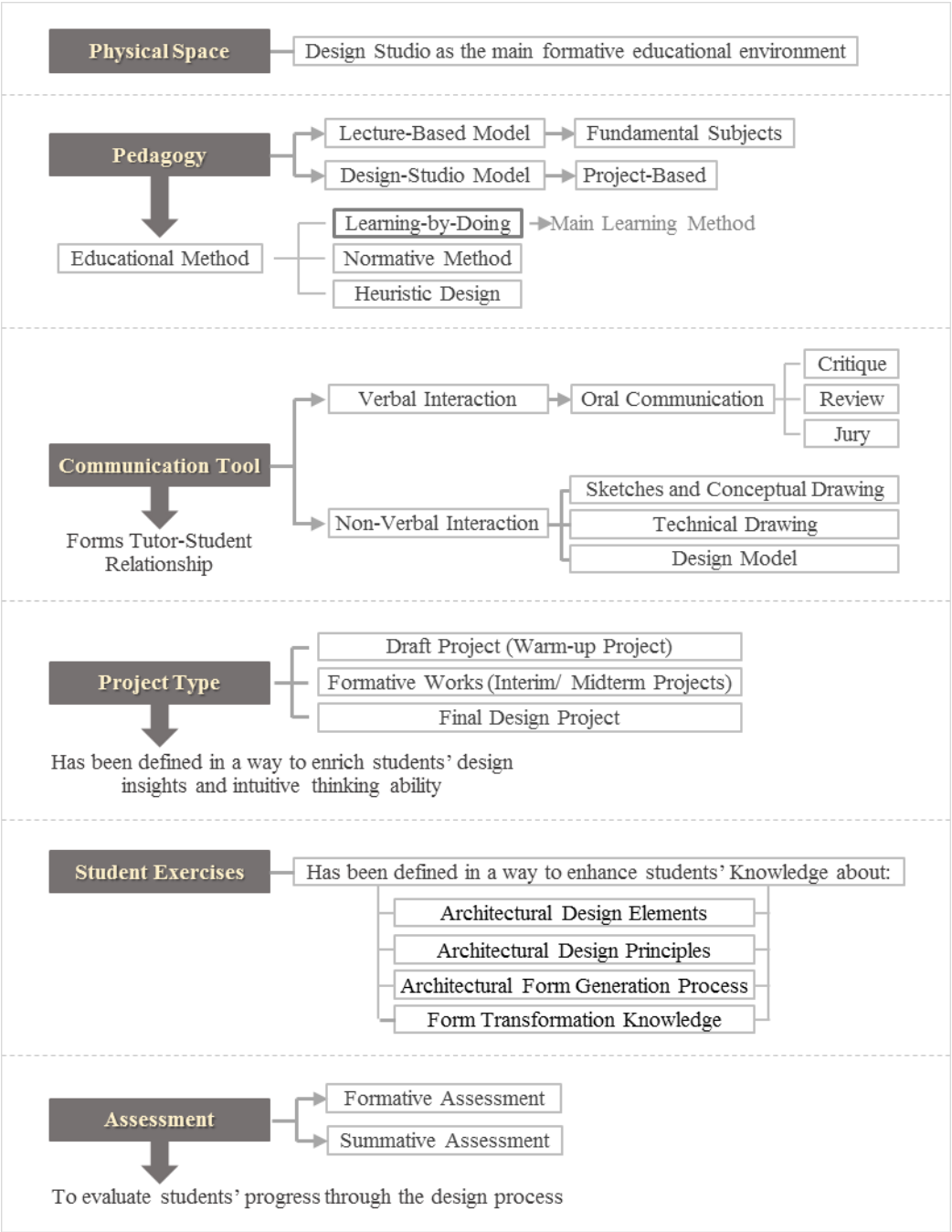


Figure 2.5: Six Categories of the Educational Methods and Means for First-Year Design Studios, by the Author

2.4.1 Physical Space

Physical Space has great influence on the students' performance and reaction in active learning environment. Elements such as good lighting and views are important factors

in visual thinking and designing. Design studio is the main academic medium for teaching design instructions in architectural education (Little & Cardenss, 2001). It creates an environment for students to do design practices and for instructors to transfer their design knowledge in an academic educational environment (Demirbas & Demirkan, 2003). According to Anu Yanar design studio is a pedagogical and formative educational environment for training new members in architect's community (Yanar, 2007). Where, epistemological aspects of knowledge and the quality of the learning and teaching process are interpreted (Salama & Wilkinson, 2007). This learning environment in architectural education based on the constructivism approach accommodates students to organize their design knowledge experience and also, provides a realistic learning context with defined learning strategies. Generally, design studio encourages students to apply those strategies on their designs, improves student's viewpoints to propose different alternatives and solutions for the given design problem, develops student's sense of the responsibility and self-awareness, promotes varies presentation skills and prepares students to be respectful for the multiple viewpoints (Kurt, 2011).

2.4.2 Pedagogy

The Pedagogy of studio is based on planning the complex or open-ended assignments for students to experience different ways of reaching the proper solutions and learning best those needed things. Student's design perception depends on different factors like personal talents, discovery and understanding abilities, student's background knowledge and applied educational methods.

Architectural education is being offered based on "Design Studio" model where design projects are tutoring and student's practical skills are enhanced. And also, based on "Lecture Based" model where technical skills and fundamental subjects have been taught. In fact, they are complementary to each other in order to enhance students' perception of the appropriate design quality (Dinham & Stritter, 1986). Design course

is combination of all fundamental and technical courses in architecture education. Elements of the design education are exercise and lectures which are being taught within the studio environment or formal classes in field of architecture. Through these educational environments students are expected to represent whatever they have been taught (Salma, 2012). Lectures and seminars through the teaching process in field of architecture provide an appropriate situation and discussions for students to develop their criticism and investigation skills (Samuel, 2001). The general academic curriculum in architecture contains three categories; firstly, some fundamental courses of literal art. The second one, is associated with practicing aspects of professional courses such as: building construction, structure, material selection, environmental control system and etc. And the last one which is related to apprenticeship system and experiencing through the architecture design studio that has important consequence in architecture education (Dinham & Stritter, 1986).

Equipping architecture students with various knowledge and skills by the means of theory and practice in different branches of architectural studies and learning seems necessary in architectural education (Vitruvius, 1914). “Architectural Knowledge” is being transformed within two phases by the technologies (theory subjects) and humanities (design practices). In addition, the current architectural education manners, making integration between theories subjects in the field of architecture with the design studios are expected from the design students, which is not happening only by the organized teaching practice. It somehow, needed the students’ inherent ability to learn new skills. Actually, expanding the descriptive teaching format of the relevant theories in architectural education might enhance these abilities among the design students (Rathod, 2009). And design studio as the major course component in architectural education is expected from students to apply all theory lessons that have been learnt in fundamental courses within the design practice (Crowther, 2013).

Thus, having the small design projects and applying the gained knowledge from the lectures modules (taught modules) into the projects (design module) would integrate the both modules. According to Bloom taxonomy students' performance to apply relevant gained knowledge on their projects in line with developing their designs according to their taught modules giving them the benefit of transforming from the "*comprehension*" and "*knowledge*" level into the "*application*" level. These also, help the students to fulfil the "*analysis*", "*synthesis*" and "*evaluation*" phase of their design projects (Ghaziani & Montazami, 2013).

Architectural education is planned in such a way to fulfil five phases "Design", "Technology", "Practice", "History" and "Elective". And "Design" phase among all areas has central significant value. Generally, the teaching methods in architectural design studios are based on "*Problem-Based Learning*" and "*Project-Based Learning*" (Green & Bonollo, 2003).

Architecture education at early stage aims to prepare students for understanding the problems, proposing the proper solutions and critical thinking in accordance with the social realities. Achieving fundamental design skills such as graphic communication or verbal skills, research and critical thinking are needed in architectural design education to do design tasks and practices in a formal way. Also it is important to understand varied national and regional traditions, western and non-western tradition, life living and safety system, human behaviors and diversities which demonstrate the multi-dimensional aspects of the architectural education (ACSA News, 1988).

First-year design educational method motivates students to learn architectural terminology and instruction significantly. Actually, student at introductory design studios gain new experiences in design with architectural language which could change their overall design perception for their whole life time career (Tavasoli, 2014).

In contemporary design teaching method, students and instructors have joint collaboration to develop design ideas and propose appropriate design solutions. In order to gradually revise and monitoring overall layout of the projects and also, highlighting the problematic parts of the students' designs by instructors (Seniz, 2009). Generally, the main learning method at introductory design studios is "*Learning-by-Doing*" that has been took place through the students' projects and within the design studios or through students' form-making in the design workshops. The basic studios outcomes demonstrate students' performance to combine their design strategies with the established architectural terminologies (Clarke, 2014). The term "Learning-by-Doing" has some linkage with Pestalozzi's idea of "Learning through the Experience" and Polanyi's idea of "Knowing by Discoveries". Conventionally, the teaching methods at the basic design studios is basis on "Student-oriented System" which is referring to the students understating of what have been learnt (Tavasoli, 2014).

One of the methodologies in introductory design studios is the "*Normative Method*" which is implemented to formulate design projects. This method is more traditional and is based on the information gathering, analysis, synthesis, evaluation and presentation of the defined knowledge. The method separates the problem from the defined phases (Farivarsadri, 2001). Students by this method may be confused about applying the corresponding results that have been obtained through the analysis and synthesis phase through their studios environment or they may feel overwhelmed by the analysis phase and lose their purpose in proposing their design solutions (Koranteng & Essel, 2013).

"*Heuristic Design*" is the other method that has used in introductory design studios which is based on the exploratory design and tends to indicate the holistic perception for students about their design activities and is developed according to the student's needs (Farivarsadri, 2001). Lasada and Hines claimed that heuristic process works as

a cyclic network which each phase completes formulations of the others. Actually, in heuristic design the problem definition and solution extremely involved with each other and seem like spirals of interaction (Lasada & Hines, 1993). Figure 2.6 demonstrates three design teaching methodologies by Sprinthall (1977).

Three Design Teaching Methodologies according to Sprinthall (1977)	▪ Teaching through the knowledge transforming
	▪ Teaching by the Inductive Discovery
	▪ Teaching through the Individual Learning Methods

Figure 2.6: Design Teaching Methodologies by Sprinthall (1977)

All aforementioned methods are applied in the introductory design studio, but still the main method is "Learning-by-Doing", which is the dominant educational method. The method is supported by relevant lectures and implemented in the studio environment. Design education deals with "*Experiential Learning Theory*" of Kolb (1984) which had assumed "Problem-solving Process" like a cycle. According to him the learning process could start from any point of the cycle. Figure 2.7 displays Kolb's Cycle of "Experimental Learning Theory".

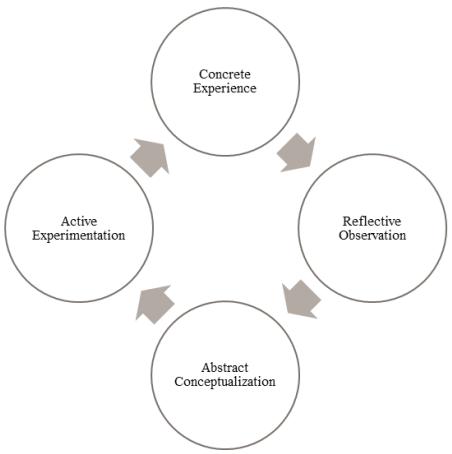


Figure 2.7: Kolb's Cycle of Experimental Learning Theory in 1984

Firstly, learners are placed in a new experimental environment (*Concrete Experience*, CE). Secondly, learners should have sufficient time for indicating the gained experience from different aspects (*Reflective Observation*, RO). Thirdly, learners need to shape new idea or reconstruct their ideas to integrate them for investigating the logical theories (*Abstract Conceptualization*, AC) and as the result, to gain the (*Active Experimentation*, AE) (Ghaziani & Montazami, 2013). The theory of "*Reflection-in-Action*" held by Schön (1983) also refers to the same idea of learning through the experiencing which are considered as the basis theories in the architectural knowledge development and education (Kumkale, 2010).

"Learning-by-Doing" is main leading method in design education and had been taught from many years ago till now which established by the École des Beaux-Arts. And its approach is based on "Design Problem" which has expected from students to propose the proper solutions and develop them under guidelines of the studio master (Lackney, 1999). Since, any design is composed to find optimal solution for the given problem thus, design students are trained by thinking, doing, reflecting and experiencing all activities through their problem-solving process (Demirbas & Demirkan, 2007).

There is a difference between the human current life situation and desired condition in our living system. This contradiction in architecture means design problem and eliminating this contradiction through the design means design problem solving in architecture (Kurt, 1994). Problem-solving process in basic design studio is an open-ended activity that allows students to propose new solutions for the determined design problem (Cuff, 1992). But, this process could be easily turned into the geometrical puzzles and difficulties for the students and lead them to forget a main domain of their design ideas. In problem solving process, designer's experience is more effective than the actuality of the idea (Demirkan, 1998). Innovative architectural designs are

outcomes of the successful problem solving process, functional organization and interior plan solutions through their design process (Heidarian & Ghafourian, 2014).

2.4.3 Communication Tool (Lectures, Terminologies and etc.)

Design is common language among architects which requires verbal and non-verbal communication between students and instructors. Design instructors at introductory design studios create and develop students' design language and also prepare them for as the future architects. Thus, design educators are training students to have their own design language for their final products. Further, each design instructor has his /her own method while communicating with students. For example, some of them give critique and the other prefer demonstrating like sketches or model making and some suggest both types (Demirbas & Demirkan, 2003).

Communication has a fundamental effect on students' design experiences and learning in architecture education (Demirbas &Demirkan, 2003). Schön (1984) claimed that "Critique Process" will be formed through the mutual communication between students and instructors in design studio where is regarded as the "Communication Medium" for these two sorts of active actors "Students" and "Educators" (kahvecioğlu, 2001). Instructors could understand students' learning process while communicating with them. Design studio is well-supplied milieu for communication and team working because, it encourages students to work in a group with various verbal and visual communication skills (Nicol & Pilling, 2000). The common objective of design studios at the beginning stage, is teaching students how to design with regard to their initial ideas and also, how to implement their concept on their projects with respect to the design principles and elements (Farivarsadri, 2001). But, students' communication skill is the main obstacle in catching the mentioned objectives. Actually, basic design students have some difficulties to communicate and share their design ideas with the others. However, the introductory design studios were formed in such a way to train

students for overcoming this obstacle through learning the appropriate skills in order to present their design ideas both visually and verbally (Farivarsadri, 2001).

2.4.3.1 Verbal Interactions

Design studio in one hand, is mainly based on the "communication" between student and their peers and also, between students and instructors. On the other hand, it is based on "investigation" and "criticism". Wender and Roger (1995) claimed communication is an important component of verbal interaction between the occupants in architectural design studios which makes tutor-student relationship (Çıkısa & Çila, 2009). And this interaction forms "Critique" in design education which is one of the important activities within the studio environment. For having useful communication students first should have a deep comprehension about the critiques and then, try to apply those intended massages on their design very carefully (Uluoglu, 2000).

A. Design Critique

Criticism is one of the teaching tools in design studios with the aim of developing quality of the projects. Design criticizing is core of the design education and practicing through the design process (Schön, 1987). Design tutors express and transfer their design ideas about the students' projects through the design criticizing by in order to lead students' design in an architectural way (Graham, 2013). However, students sometimes have a negative perception of the design critique (Malecha, 1985).

Design criticizing could be done by illustration and revealing, telling or both models according to the instructor's preference. Students in introductory design studios are trained to gain visual experience through their model making process and sketching along with the instructors' critiques which guide them to think and design architecturally (Heidarian & Ghafourian, 2014).

Design critiques are based on the constructive approach and improvement of real architectural designs (Kurta, 2011). “Constructive Criticisms” alarm students about failure aspects of their design and lead them to present more rational architectural design (Attoe, 1987). Design critique as the benchmark in design education helps students to revise their projects and improve their design ideas in an architectural manner. Through the design critique students’ mistakes will be clarified thus, critique sessions enhance the pedagogical dimension of the architecture education.

Studio critique is considered as the main tool of the education in the introductory design studios which creates a better medium for discussion between students and instructors (Farivarsadri, 2001). Actually, desk critique and juries were structured to develop design ideas and producing tangible architectural design outcomes.

There are two models of studio critiques in the basic design studios, one is “Individual Critique” which is done for each student separately and the other is “Group Critique” which is arranged for a number of students in the design studio to participate in the design process more actively and also, to see other alternative solutions for the given design problem which proves that there is no only one solution for their design problem. In this model, students could receive more related critiques for their design and also for their peers from different perspectives (Farivarsadri, 2001). Design critique is not only limited between students and their instructors, it can happen in-between students as the “Peer Interaction” which is also very valuable and advantageous for the students to enhance their self-criticism skill within their design process (Conanan & Pinkard, 2001). Peer critique gives students a chance to express their design ideas with each other freely (kahvecioğlu, 2007).

According to Conanan and Pinkard (2001), students feel more satisfied within peer critiques because, they will be informed about their friend’s design process and

improve their designs as well. However, the way of giving these critiques is very important in architectural design education.

Critique could be given by the means of grading (Final Jury) which has effects on the students' design assessment or could be carried out just by giving comments on the projects (Design Review). In fact, any design session is started with design critique and has been lead to the design reviews and juries throughout the academic semester (Green & Bonollo, 2003).

B. Design Review

Design Review is the kind of discussion between student and educator about the students' performance, drawings and design models. The review system creates a critical analysis on the studios outcomes and also, makes learning opportunities for students to acquire design knowledge from their peers' projects (Çıkısa & Çila, 2009). Varied reviews have usually taken place in architectural design education, for long-time projects "Individual Criticism" is made by instructors and it is the most common reviewing format between the students and instructors in design education (Çıkısa & Çila, 2009). Individual criticism (table-critique) has considerable effects to examine students' design development process. Panel-discussion is another type of the reviews within the deign education. Panels present students' projects which are evaluated by the instructors randomly without knowing their designer and sometimes intentionally. In this petitionary medium, discussions are opened between the students and instructors interactively (Çıkısa & Çila, 2009).

Panel review at basic design studios distributes basis terminology and highlights common notions of architectural design for all students and also, leads the instructors to follow their students' design development process and their projects' weakness and strength points. This type of reviews gives feedback to the students about their projects

and provides common criteria for the all projects in the studio. Generally, panel review has been recommended for basic design students in order to prepare them for their formal juries (Çıkısa & Çila, 2009). Finally, the last and more formal review is "Design Jury" which is a performative stage for students (Webster, 2006).

C. Design Jury

Formal evaluating method of students' design performance is a Jury (Seymour, 2008). Design students represent finalized and formal format of their design activities through their jury (final-jury). At this stage (design jury) one or group of students present their design products and could receive different feedbacks on their design from the jury members. Actually, Jury creates well-organized medium for both, design education and assessment jointly (Emadi, 2014). Design Evaluation within the juries has principal effects on architectural design education and also, has various meanings for learners according to their knowledge backgrounds and tutor-student relationship.

However, the most formal and regular evaluation method is in design education is "Design Jury" which has taken place within the studio environment. Jury is a public critique (group critique) which is accomplished by the proper design jury members with the aim of expanding the discussions about students' projects and based on the constructive criticism within a studio environment (Farivarsadri, 2001).

Design jury encourages students to share their own design ideas with others, both graphically and verbally. In general, "critique", "review" and "jury" are the main practical issues which happened in the studio environment and with mutual interactions between the students and instructors (Dewey, 1934). Critiques (individual and group type), Reviews, Juries all have been attached to the learning design process through "learning-by-doing" method (Çıkısa & Çila, 2009).

2.4.3.2 Non-Verbal Interactions (Sketch and Design Model)

Students' design ideas causes a medium for conceptual drawings and sketches (Oxman, 1999). These drawings reinforce a connection between the designer's eye and hand (Maslen & Southern, 2011). Students' design ideas and proposals for the given design problems make a medium for the conceptual drawings and sketches (Oxman, 1999). Which have a significant role in their conceptual design and their creativity, especially for students at the beginning stage of architectural design learning. In fact, sketches are the pictorial representation of the designer's ideas on paper in order to externalize his/her mental images (Medway, 1996; Vermeersch, 2013) and have direct interaction with the designer (Suwa & et al., 2006).

Traditionally, the pedagogical dimension of architectural drawings is the geometrical perception of the space. Visual and non-visual information shape human perception of the space jointly. In architectural education, drawing of spatial perception of the space with non-mathematical expression will be done through the sketches (Schaeverbeke & et al., 2014). Introductory design students gain very first principles and tools for their visual communication skill which the basic ones are drawings or sketches and design models (Yurekli, 2014). And the students share their design ideas with their instructors through their conceptual drawings and sketches. Making sketches by the mean of proposing appropriate design solutions is usually done by the design instructors on the students' projects (Emadi, 2014). The physical act of sketching helps basic design students to integrate their conscious and unconscious relations between their symbolic language and architectural design terminology (Jenkins, 2010). Conceptual drawing and sketches support students to gain background information and improve their way of architectural thinking (Inceoglu, 1995; Gencosmanoglua & Nezorb, 2010).

Conceptual drawings illustrate non-visual knowledge of the designer and have close relation to his/her. They play a considerable role on designer's creative thinking (Suwa

& et al., 2006) and also link designer's perception with vision of things. (Schaeverbeke & et al., 2014). Informative sketches and projective drawings are graphic explorations of the designer (Yurekli, 2014). Basic lines and planes are the basis of linear perspectives and projective drawings (Schaeverbeke & et al., 2014). Furthermore, the conventional way of transforming observations and revealing space into the drawings is using linear perspective. So, linear perspective drawings are the most important and powerful way of communication to transfer the visual information (Evans, 2000).

In basic design studios, initial sketches and conceptual models are the first tools for presenting students' abstract design ideas with the architectural language (Yurekli, 2014). It is expected from students to enhance their imagination and creative thinking skills while making sketches and design models (Yavuz & Çağrı, 2012).

In first-year design studios, two /three dimensional presentations are the most common techniques for externalizing design ideas. Two or three dimensional drawings or models help basic design students to express their design ideas and present their transformation skill through their design process (Yurekli, 2014). Two dimensional presentations, such as technical drawing, sketching and poster presentation, and three dimensional presentation techniques like design models, both implemented in basic design studios in order to, assessing intangible and tangible design outcomes (Çıkısa & Çila, 2009). In general, transforming initial design ideas into the drawings or models (transformation from one system to the other) is the main required skill for the students and considered as a focal point in basic design studios (Yurekli, 2014).

Design model is a comprehensive and major mean which achieved through the form creation process. Bacon (1974) noted that a connection between mass and space will be made by the architectural forms. The quality of the architectural space will be inserted by the architectural forms (Heidarian & Ghafourian, 2014). Students in basic design studios gain required design knowledge and skills through the form producing

process. They use different materials like paperboard, foam, paper, wood and etc. for their model making. Through the process, students could improve their material selection and model making techniques in parallel (Aly, 2013).

2.4.4 Project Type

Selection of the appropriate assignments has profound effects on implementing the studio pedagogy. Basic design as a grammar of visual language in design education has its own specific design principles which are related to the architecture and building construction. It aims to lead students to understand design principles and architectural visual language on their design project and through practicing. Thus, basic design students could develop their visual thinking and spatial perception of the space by carrying out design assignments (Parashar, 2010). Newcomer students are asked to start scheming their ideas without being aware of what their design will be contained.

Instructors' knowledge in basic design studios improve students' impressions of the real architectural projects. They also, attempt to inform students how design principles participate in the architectural design process. So, studio assignments in first-year design studio conduct students to compose design in the correct way and motivate them to apply design principles on their projects. Pedagogical dimension of basic design studio expands student's capabilities to have control over their spatial perceptions through their design process (Galil & et al., 2014). Studio assignments touch students' creative spirit and improve their spatial perception in order to teach students how to construct and alter their design imaginaries into the real architectural project (Parashar, 2010). Project requirements in basic design studio help students to have a deeper design perception and present rational solutions (Clarke, 2014).

"Practicing" is an important phase in architectural education (Onat, 1985). Actually, design practices supply students with experience and determine a better perception of innovative architectural design for the students (Salama & Wilkinson, 2007). Design

quality at basic design studio could be enhanced by experiencing and practicing rather than theoretical phases. John Dewey (1933) believed that, student should have something to do instead of learning which has thinking demand in its nature and result.

Training basic design students are started by practicing (Klein, 2006). Thus, tasks and practicing at introductory design studios enrich students' design insights and intuitive thinking ability. Basic design studio aims to teach students to think about the design problem to present proper design solutions (Altas & et al., 1994). Applied educational methods in basic design studios make students familiar with the design principles and design limitations to elevate their mental images. Design practices increase students' confidence to think individually and also help them to materialize their design thoughts (Sukhatme, 2001). Pestalozzi claimed that the idea of "*Learning through the Experience*" is constant issue in the design learning process. Basic design students learn design instructions through their individual experiences on their projects.

Design instruction should be accomplished technically for preparing students to think more independently (Klein, 2006). Basic design studio is usually based on the "Design Projects" in a convenient level that have been under took by the student (Çıkısa & Çila, 2009). There are varied types of the design projects through the basic design process, firstly, "Draft Projects" which are developed according to the concept and project requirements. Then, the result of this stage are presented as a "Formal Works" that enhance the formal transformation of draft product from the previous stage by some arithmetic operations and geometrical transformation in order to transmit the achieved formal work to "Final Project" which is presentation of the materialized design ideas as a formal design product (Yavuz & Çağrı, 2012).

Defining the design problem for the introductory design studios should be in such a way that students perceive the quality of a space and could organize their mental

images for presenting smart design solutions and rational space arrangement (Farivarsadri, 2001). First-year design students learn gradually to propose appropriate solutions for the given design problem. (Gulmez & et al., 2014). Some common activities like Brainstorming, Abstraction, and Geometric Transformation, Verbal and Non-verbal Communications within basic design studios improve students' creativity with respect to their talent (Parashar, 2010). But, to achieve creative architectural designs, the creative stimulus firstly should be introduced and then, be led through the design exercises. Integrating design exercises with history, sustainable elements, nature, geometric shapes and architectural biographies as the source of the creativity is very practical for basic design students to have distinct architectural articulation on their projects (Parashar, 2010).

2.4.5 Student Exercises

Succeeding of the educational design methods at design studios is defined through their exercises. And those exercises which are sufficient complex and have multiple possibilities to do in different ways prepare a situation for the students to learn formal design methods and tools, improve students' contributions with others. Also, having enough length of time to implement and demonstrate the results leads students to have a successful design.

Normally, design problem is given to students while they are expected to solve it according to the established architectural design principles and carrying out some research in order to propose the best design solutions. But in Project-based Learning, students are supposed to find and define the design problem (Green & Bonollo, 2003). Further, students' performance is not defined only by their individual creativity and talent, it somehow related to their education and training system as well.

The initial purpose of the introductory design studios is introducing students the formal design methods. These methods have been conducted with different means and

strategies through the design process. Generally, design strategies at basic design studios are set in such a way to achieve certain goals through employing the design principles, elements and students' design experiences to figure out how to apply basic design principles on the students' design projects.

2.4.5.1 Architectural Design Elements

Design elements are being integrated and interacting with each other (Henderson & Cohen, 1996). Wucius Wong (1977) classified the three-dimensional elements of design into four sets: First the elements like: point, line, plane and volume as a "*Conceptual Elements*" in design. Second, size, surface, color and texture as the "*Visual Elements*". Third group is related to the space, position and direction that is known as a "*Rational Elements*". And the last group is the structural consideration and qualities which are "*Constructional Elements*". Moreover, Geometric shapes are demonstrated by the powerful drawings tool like linear perspectives and projective drawings which could express the actual world. Architectural elements could be solid, void or composition of both, most of the solid elements makes void space which create the margin of the space (Alsac, 1997). Employing the appropriate design elements and providing proper organization among the elements within the composition according to the architectural design principles are taught to design students with different methods in order to compose rational architectural design.

Design process could be considered as a process that associated with different activities which are participating through the design activity from the early stage of the design until locating the final solutions (final design product) by the designer (Kurt, 1994). It is kind of "Decision-making Process" and has been taken place through the "Project-Development" and "Conceptual Design" process till producing the "Final Design" product. This iterative activity will be continued between students and design instructors (Green & Bonollo, 2003) which makes "Design Communication" and the outcome of this negotiation, develops students' design knowledge and technical skills

and also leads them to find out optimal solutions for the design problem (Kurt, 2009). Schön, D. A. (1984) called the design learning process as "Reflection-in-Action" Process. Which is a method of communication activity through mutual reflections between instructor and student which referred to the student reflection on the instructor action and vice versa, instructor reflection on the student action. In basic design studios, design process is defined within the three stages: the first one is consideration of the functional requirements and environmental data of the projects which applied to the concept or draft project and developed accordingly. The second one is development of draft project to the formal composition through the geometric transformation, formal deformation and arithmetic operation on the proposed form. And the last one is visualization of the two previous stages as a final design product (Yavuz & Çağrı, 2012). Moreover, Students' technical skills to transform their verbal thinking into the visual thinking will be developed through their design process in architecture education (Yurekli, 2014).

2.4.5.2 Architectural Design Principles

Basic design principles could be considered as the basic concept which help to enhance generative designs and also facilitate the students' transformation ability of their conceptual design ideas as the concrete products. Actually, basic design studio clarifies design principles which have been applied in any architectural designed composition and improves student's visual consciousness to recognize the reality of any architectural design. This ability also helps students to have the "Critical Thinking" ability for analyzing their design practices and helps them through their problem-solving process to propose appropriate design solutions (Heidarian & Ghafourian, 2014). Generally, the course content of introductory design studios is related to the basic and fundamental architectural design principles which have been rooted in the developed model of the "Basic Design" in the Bauhaus school and is associated with some issues in visualizing and organizing of two or three dimensional forms.

Therefore, two or three dimensional abstract compositions are commonly used in basic design studios (Farivarsadri, 2001).

There is a strong relation between the design principles and the form-creation process in architectural designs (Heidarian & Ghafourian, 2014). So, basic design studio provides an educational environment for the students to learn how to apply design principles on basic geometric shapes in order to produce the architectural forms under supervision of the studio master (Kearsley, 1994). Design elements and principles are inseparable from each other and are the significant visual resources in design strategies. Design elements introduce the "Basic Vocabulary" and its principles appoints the "Structural Considerations" in the designed compositions (Kilmer, 1992).

2.4.5.3 Architectural Form Generation Process

Articulation of volumes to compose the "Architectural Forms" are taken place by the "Geometry" (Parashar, 2010). So, introducing the geometric shapes and characteristic of point, line, surface and figure, to designers could lead them to express the real world as the quantifiable phenomenon (Hernandez, 2013). So, examining geometric shapes transformation properties in architectural design process helps student to design rational architectural forms. Actually, students in design studios are trained to characterize all positive and negative aspects of the basic geometric shapes and different geometric transformation approaches by the means of design problem solving in order to achieve proper architectural design product (Yavuz & Çağrı, 2012).

This visualization stage in design process leads designer to use some basic geometric shapes to produce design products as the outcome. Actually, the regular arrangement and transformation of geometric shapes within the designed compositions create architectural forms. Through the "Design Formation" process, design knowledge and skills propose and develop proper solutions to fulfil the projects requirements (Heylighen & Neuckermans, 1999).

2.4.5.4 Form Transformation Knowledge

Geometry is considered as the basic science in architectural designs (Leopold & Matievits, 2001) and it is the essence of architectural forms with respect to formal orders in design principles. Pottman and Asperl (2007) defined geometry as element which exist at every steps of design process. Hence, geometry can be considered as a basis of architectural design process. It determines the overall shapes of the design objects also, design ideas are externalized by the geometrical elements (Yavuz, & Çağrı, 2012). Geometry could be defined a source of creativity and inspiration in architectural design process (Parashar, 2010) especially, for basic design students.

According to Ching (1979), "Primary Solids" are the simplest geometric shapes that could be extended or rotated in order to create volumetric shapes which also could be easily perceived. The term of solid has referred to three-dimensional geometric shapes as; Sphere, Cylinder, Cone, Pyramid and Cube. Figure 2.8 displays primary solids.

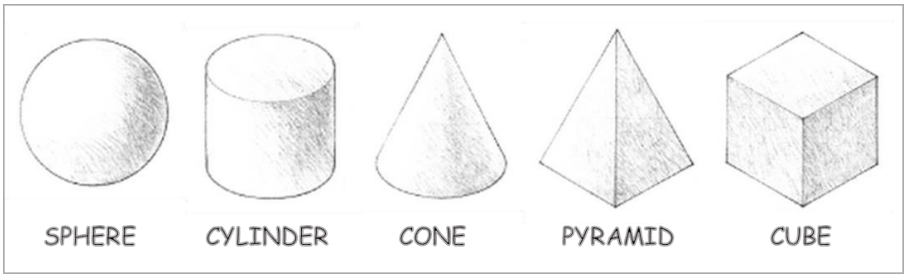


Figure 2.8: Geometric Shapes "Sphere", "Cylinder", "Cone", "Pyramid", "Cube" as "Primary Solids", (Ching, 1979)

"Sphere", this solid is defined by the perfect round shape (rotation of a semicircles around their diameters). The solid is highly concentrated and self-centering from its originated circle. By rotational movement on the sloping plane, sphere could be blended. Generally, this solid from any position preserves its roundish and circular shape (Ching, 1979). "Cylinder", is a kind of curvilinear geometric shape which has straight parallel sides and its surface has been taken shape through the fixed points from the specific straight line (axis). Actually, two straight perpendicular planes to the axis define cylinder. The solid is stable by posing on the one of its circular faces.

"Cone", the solid is originated from a triangle on the one of its sides. It has circular base which makes the shape stable. Furthermore, it is could be unsteady when its vertical axis has been upturned or sharped. The solid also could be stable with uncertain balance statues and by emphasizing on its top (Ching, 1979). "Pyramid", this solid is taken shape by connecting the polygonal base and apex (common point on top). It has triangular faces and all of its surfaces are flat planes. So, it is stable about any part of its triangular surfaces and considered as the almost hard and angular geometric shape. "Cube", this solid has six square faces, twelve edges and eight vertices. It has flat planes and two adjacent square sides with a right angles. Cube is static and highly recognizable form which is stable unless resting on the one of its edges and is the only regular hexahedron shape (Ching, 1979). As a whole, "circles" generate sphere and "cylinder", "triangle" generate "cones" and "pyramids", and "squares" generate "cubes".

Ching (1979) reported that geometrical shapes are the fundamental elements in producing architectural forms. He believed that architectural design could not be defined just by understanding the basic elements in design. He described the rules of transforming form by central, liner, radial organization and practical geometrical organization regulation such as: adding or subtracting parts from the whole or changing the overall dimension of the geometric shape. Table 2.3 Indicates Ching's statement (1979) about transforming geometric shapes.

Table 2.3: Ching's Statement (1979) about "Transforming Geometric Shapes"

Important Role of Geometrical Organization on Producing Architectural Form	**Regulation for Transforming Geometric Shapes**
	Radial Organization
	Liner Organization
	Girdle Organization
	Central Organization
	Regulation for Practical Geometric Organization
	Adding or subtracting parts from the whole
	Change the overall dimension of the geometric shape

Other geometric shapes are easily recognizable through the “Form Transformation” of the primary solids. And by some modifications such as dimensional transformation, adding and subtracting elements about the volume. Ching (1979) classified Form Transformation into the three groups that are:

(a) “Dimensional Transformation”

(b) “Subtractive Transformation”

(c) “Additive Transformation”

“Dimensional Transformation” is modifying one or more dimensions of the solid while maintaining its initial identity and has been considered in a group of its basis form. For instance, a cube could be turned into alike but not identical “Prismatic Forms” by changing the heights, width or length, or squeezed into “Planar Forms” and or extended to “Linear Forms”. Figure 2.9 shows dimensional transformation by Ching.

Figure 2.9: Ching (1979), Form Transforming by the “Dimensional Transformation”

“Subtractive Transformation” is turning shape into a new form through subtracting of a part of the volume. The initial identity of the basis form is bounded according to amount of the subtractive process. For example, a cube could maintain its initial identity even when a piece of it has been removed or turn into regular polyhedrons and approximate sphere when starts up to transform into a sphere. Figure 2.10 shows subtractive transformation by Ching in 1979.

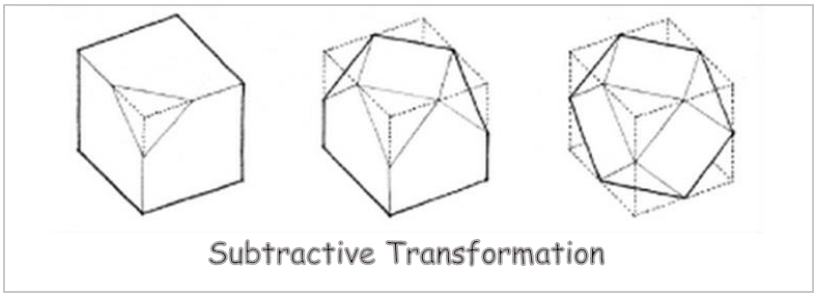


Figure 2.10: Ching (1979), Form Transforming by the “Subtractive Transformation”

And “Additive Transformation” is transforming solid to new form by adding elements to its volume. Throughout this process, the initial identity of the solid is modified and remained according to the sort of the process, number of the additive elements and their sizes. Figure 2.11 displays additive transformation by Ching in 1979.

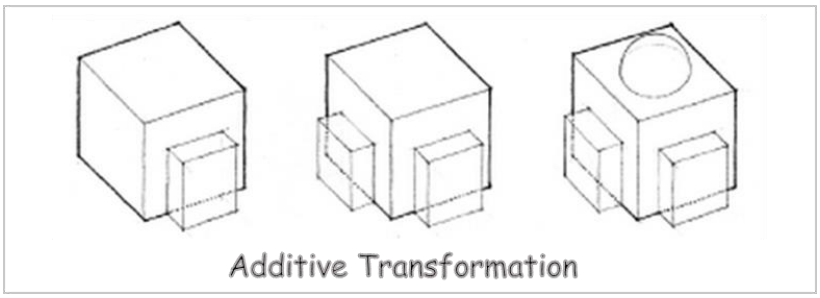


Figure 2.11: Ching (1979), Form Transforming by the “Additive Transformation”

Pottman (2007) also, characterized formal transformations principles into three groups; First group is related to the combination of the new geometric shapes with the basic geometrical forms. Extracting new geographic form from the basic one or crossing section by arithmetical operation from two objects. The second group is applying some basic geometrical operations like transformation, scaling, lengthening and reflection to forms. And the third one is changing the value in points or volumetric data which results in the form modification and explains a new basic geometric form. This modified form is obtained through the formal deformation by changing some values in the basic geometrical form such as: “inflection”, “enfolding”, “torsion” and

"shrinking". Table 2.4 indicates three principles of the formal transformation by Pottman in 2007.

Table 2.4: Pottman's definition of the Formal Transformation Principles in 2007

Three Principle of Geometric Transformation	Changing geometric by extracting new shape from the basic one. Or crossing Section from two forms.
	Applying Some Operations Like Transforming, Scaling, Lengthening and Reflection to Form.
	Form Modification by Changing the Value of Form Through The Formal Deformation Such As: Inflection, Torsion, Enfolding And Shrinking.

Design is creative manipulation of the "space", "volume", "mass", "light", "shadow", "material", "texture" and "program". It also, driven by pragmatic elements like: "construction", "technology" and "cost" (Heidarian & Ghafourian, 2014).

Design activity in its nature has three phases which are: "*Analytical Understanding*", "*Critical Thinking*", and "*Creative Decision Making*" (Salama, 2005). Indeed, design education makes a balance between creativity and design principles through the design development process (Demirbas & Demirkan, 2007). Within the architectural design process, creativity is defined by the students' designs and innovation skills which are able to be swapped (Mozota, 2003).

Bailie (1998) described the critical pedagogy in education as an approach that creates challenges for students to do their responsibilities. Students' participation in the design criticizing and development process help them to overcome their difficulties in a way of "naturalness". As the result, those students who are able to think critically could solve the design problems more efficient (Synder, 2008). Having critical awareness of some objectives principles in architectural design helps students to materialize their ideas more rationally. This also makes the design outcome more functional in design concept statement and development (Demirbas & Demirkan, 2007).

Enhancing students' "Critical Thinking" ability seems necessary in architectural education because, it has effects on the students' overall design quality and improve their knowledge based on the architectural terminology (Izadpanah & Günçe, 2014). In addition, students' design experiences within their own Tutor-student relationship improve their critical thinking skill and motivates them to take up different challenges and demonstrate their experiences and practices through their design process (Dutton, 1991). The first experience of designer in "critical thinking" will be gained in basic design studios through some discussions on the students' design projects. Instructors conduct these negotiations in such a way to getting students involved in the discussions in order to train the future critical thinker designers (Cross, 2007; Lawson & Dorst, 2009; Gray, 2013). But, the conventional design teaching methods concentrate on the form manipulation and students' technical drawing skills rather than their critical thinking ability (Goldschmidt & et al., 2000; Salama, 2006).

Commonly, students learning method at beginning stage of the architectural design education is more based on imitation instead of innovation. So, architectural projects should be chosen in such a way to demand students' innovations and make balance between the creativity and science (Salma & Winkinson, 2007). Basic design studios create a learning medium for students to fulfill their lack of design knowledge and keep them away from imitating pre-existed or existing architectural approaches in order to produce their own and innovative design products. So, the architectural design process without basic design backgrounds will intensify students' imitations instead of their innovations. Also, the applied learning method should be relevant and meaningful for this transition year in architectural education (Clarke, 2014).

However, the learning process at basic design studios is defined by the students' perception of the subject and has been effected by many factors and individual abilities in the students' learning. Through this process, students begin to understand the subject

and then, they will come up with their own concept of the subject that has rooted in their individual perception (Tavasoli, 2014). Developing the student's standpoint and the sense self-awareness by the studio master is important issue in basic design teaching methods (Dinham, 1988).

Moreover, architecture is the knowledge-rich field and the essence of architectural design needs varied information through different steps of the design process and design students should apply all that information through their design activities. There is a defined process in the form transformation step (Teymur, 1985) that should be applied on the designs to result in products with architectural definition. Initial design thinking in field of architecture is non-verbal thought whereas theory is verbal explanation (Brawne, 2005) and facilities transforming non-verbal thoughts into the concrete and verbal expressions.

Polanyi (1983) engaged tacit knowledge with the educational process. Thus, design knowledge has not bounded with verbal expression. Tacit side of knowledge is very considerable in design instruction (Mareis, 2012) which exists in contrast with the explicit knowledge. In "explicit" knowledge data is able to be verbalized and transmit to others. But in opposite of this kind of knowledge, the "tacit" or "implicit" knowledge data is not readily transmitted among persons (Heylighen & Neuckermans, 1999). So, in comparison with "explicit knowledge" which has rooted in theoretical and academic knowledge "tacit knowledge" has rooted in practicing and empirical knowledge (Dewey & et al., 1981).

However, design knowledge could be determined as the focused knowledge for the designers which enable them to deal with the particular aspects of the design without being necessary to understand other aspects (Heylighen & Neuckermans, 1999). Therefore, required knowledge through the design process is not only based on the

pre-established theories in design instruction some of them are related to tacit side of the design knowledge and students' perceptions.

First-year design studios prepare students with the required skills and knowledge in order to produce creative, inventive design solutions and gaining critical thinking skill for their projects. Creativity is a fundamental skill in architectural design (Zatsepin, 2010) which is characterized by ultimate matters and facts and also, through the learning instruction with experiencing (Pestalozzi, 2007). Aristotle stated that creativity is neither passive nor receptive and it could be presented with any human activities such as artistic and scientific ones (Anthony, 1992). In addition, the idea of "Personal Self-education" by Froebel and "Learning through the Experiencing" by Haris (1970) motivate students to integrate their creativity with their design learning process (Pestalozzi, 2007). Students in basic design studios are faced with different tangible and intangible aspects of their creativity.

Basic design students are expected to implement their learned knowledge of each phase on their projects through their design process. Accordingly, the general perceptions and practices in teaching basic design promote a comprehensive, creative and experimental methodologies to enhance students' cognitive skills, creativity and learning style (Parashar, 2010).

Enhancing students' knowledge in art, science, mathematics, psychology and etc. helps them to use their own creativity scientifically and find rational reasons to reach their final design product. Combination of all gained design knowledge and applying them on the projects turn the design process into the dilemma for junior architecture students (Kurt, 2009).

2.4.6 Assessment

Assessment is an important activity in though the design instruction. Any design or proposal for the given design problem must be examined by the group of instructors from the inside or outside the studio environment according to the studio objectives and their explicit considerations. Since, students and their designs are the initial output so, assessing system could be quite problematic to determine the course effectiveness in reaching its set objectives.

Design teaching and assessment are in company with each other, instructors consider assessment as a positive learning strategy which notifies students' weakness and strengthens and helps them to enhance their technical and practical skills, quality of their designs and investigative ability (Hickman, 2002). Within the design education assessment contributes to the quality of the students' design learning outcomes (Devlin & et al., 2002) and measures students' progress by its grading nature. Students establish their design outcomes through the design assessment (Ehmann, 2005).

They also, experience varied design knowledge through the system (Çıkısa & Çila, 2009). Design assessment is a decision-making process and starting-point for judging by observing (Felder & Brent, 2004). Thus, assessment and evaluation are two related and important process within design education (Felder & Brent, 2004).

Assessment of the basic design projects is carried out through the "Juries" with clear educational objectives. And is an important issue in introductory design studios which is being done in continuation of the studio critiques to evaluate (final design products) and to guide students about their design improvement though their formal projects (interim projects) (Farivarsadri, 2001).

There are two assessment methods in architectural education, one of them is "Formative Assessment" (Interim) which is commonly used in reviewing and to evaluate students' performance through the semester and has been considered as the teaching strategy in design education. The second one is "Summative Assessment" (Final) that evaluates students' learning level at the end of the semester based on design strategies and standards. However, both of them are based on the qualitative methods and also, are subjective (Çıkısa & Çila, 2009). Assessment system in basic design studio is mainly based on the quality of students' drawings, presentations and their overall design layout (Kostof, 1977).

Figure 2.12 demonstrates the flowchart of the educational methods and means for first-year architectural design studio based on the existing literatures. As the Figure displays the conventional method in architectural design education is "Design Studio" through the defined "Design Project" that is included the "Design Process" which has accomplished by "Decision-Making Process". In order to take the next stage of the project design process, students and tutors have "Verbal" and "Non-Verbal" interactions with each other that creates "Communication" through the design process. "Critique" as the core of the communication is usually carried on the both, verbal and non-verbal communication tools and through "Review" and "Jury". All the means and methods have been ended in "Evaluation and Assessment", which has two types, "Formative" and "Summative" that ending with comments or grading.

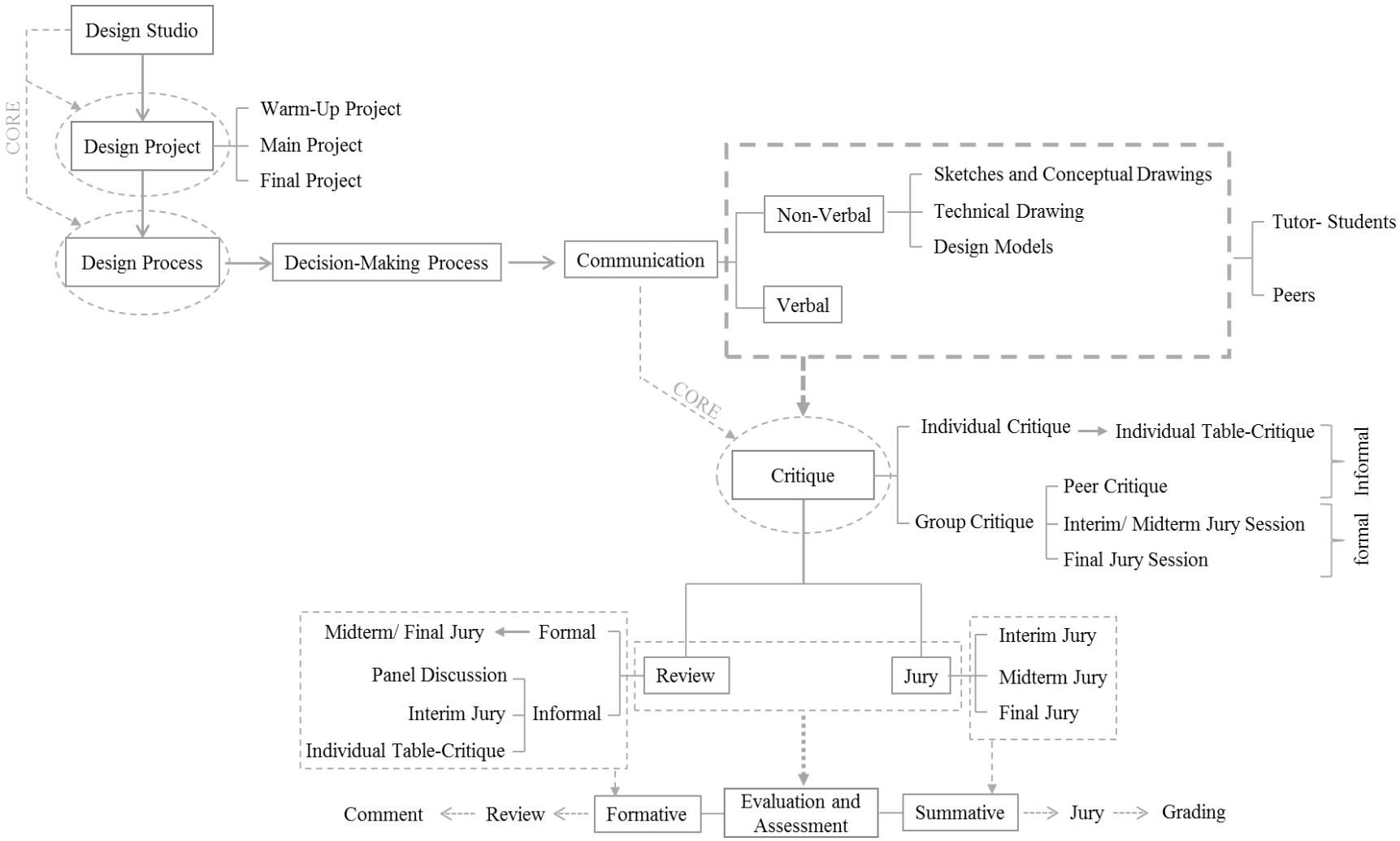


Figure 2.12: Educational Methods and Means Flowcharts in First-year Architectural Design Studio, by the Author

2.5 Architecture Education in Turkey

In Turkey, department of architectures have been accredited by the National Architectural Accrediting Board (MIAK) for six years, which provides learning environment and support academic development through the students' performance, researches, design studios and workshops and etc. Architectural Accrediting Board (MİAK) is a TMMOB Chamber of Architects and has applied the principles since its establishment in 2008. The main concern of MİAK is assessing and enhancing the quality of architecture education for competence.

The Architecture education in Turkey has been emerged since 1900s and in 2012, the total number of architects in Turkey was established over 40 thousand, around 39925 active members (Şenol & et al., 2013). That have been derived in three big cities such as: Istanbul, Ankara and Izmir. Along with, there are amount 75 Architecture Departments and 20 departments of Urban Planning in Turkey.

Different universities through their architecture faculties offer architectural education for enthusiastic students in architecture. Generally, architecture has various fields within itself like Architecture, Industrial Design and Interior Architecture. All the universities in Turkey offer the Introductory Design Studio I-II which have been spread by Johannes in 1920 at their first-year of the educational program and are mainly based on the Bauhaus rational design methodology in field of architecture which motivates students toward modernism (Clarke, 2014).

Students' ability to learn architectural design terminologies are usually influenced by different variables like students' cultural backgrounds (Wall & Daniel, 1993), one of these variables in Turkey is students past educational experiences of their secondary schools. The university entrance system in Turkey is based on the entrance exam, which its content has heavily relied on comprehension of students on mathematics and

science (ADHOC Report, 2015). Architecture education in Turkey lasts four years and in United Kingdom or to some other place this process takes minimum seven years (Clarke, 2014). And those four years have been followed by two-year for master degree and then four-year for a doctorate degree in postgraduate programs.

According to Aytaç Dural the common characteristics of the secondary education in Turkey are: memorizing based learning system, suppressing students' natural talents, gaining knowledge through the lecture-based teaching method and complete dependency on the educators (Dural, 1999).

The method of instruction in introductory design studios includes a clear perception about the educational system. In some countries like Turkey and North Cyprus and many other countries, students start architectural education by different backgrounds. Actually, they come from a very disciplinarian educational system of secondary school to universities where there is no possibility for students to improve their self-expression, self-confidence skills and have no chance to do the research and present their creativity.

The educational system of the secondary school in Turkey is generally based on memorizing and also, preparing the students for the university entrance exam. This rigid educational system causes serious problems for students in their architectural academic education where looking for those students that have skills to decide independently, define their design problems and think critically to solve the problems appropriately. Therefore, such challenges should be overcome through the instruction methods in introductory design studios at first-year architecture education (Farivarsadri, 2001).

2.5.1 First-Year Architecture Education in Turkey and North Cyprus

Fresh mind architecture students in Turkey and North Cyprus will experience architectural designing in their basic design studios for the first time. They could obtain specific abilities to transform their imaginations into the concrete outcomes through their design process. At the majority of universities in Turkey, the essence of teaching method in basic design education had rooted in the Bauhaus. Design principles through some abstract design exercises are implemented in introductory design studios which is known as the FARC course in architectural design and interior architecture curricula.

Generally, first-year architectural design program in Turkey covers four courses:

- "Basic Design Studio" course (Introductory Design Studio I&II)
- Visual or "Graphic Communication" course for working drawing skills.
- "Introduction to Architecture" course.
- Some must common courses like "Theory of Architecture", "Turkish History" and etc. (Şahin, 2013).

There are some academic prerequisite courses like "Introductory Design Studio I" and "Art and Design" which equip students with the appropriate and supportive design knowledge. First-year design education in Turkey carries several meanings for students and involves varied theoretical and practical lectures about meaning of design concept in architectural designs. Its learning method is based on practicing which is in contrast with memorizing learning method of secondary schools (Serim & et al., 2014).

Project-based learning method is implemented on the most of basic design studios in Turkey and North Cyprus. Basic design students here are asked to find proper solutions for the given problems on their semester projects which require to design architectural spaces (living, performing, working and etc.) in order to, develop their design knowledge and perceptions of formal architectural designs and some components in design like: form and space, structure, building material, landscaping, natural light,

scale and climatic issues. Considering humanscale, graphic communication skills, function arrangement and three-dimensional organizations are being emphasized for basic design students through their design learning process.

Architectural design methods in basic design studios have been set in such a way to give a holistic perception about architectural way of design for the upper design studios and also, to lead the students for real architectural designs (Heidarian & Ghafourian, 2014). First-year architectural design students in Turkey universities have different design projects through the semester like “Draft Projects” which is the first materialized design ideas by the students. “Formal Works” is a development of the warm-up design models and lastly “Final Projects” that are the finalized format of the design models with proper workmanship which had been developed throughout the semester (Yavuz & Çağrı, 2012). Some subjective and expressive theories in field of architecture like theory of color, form expression, aesthetics, art and design theories, Gestalt theories, design functionalism and organization and etc. are remind to basic students in order to develop their semester projects according to architectural design principles and instructions.

Design educational system in Turkey tries to promote “Student-oriented System” which assigns students to apply their design knowledge, proceeding their design skills and understanding on their projects under supervision of the design instructors (Öztekin &Tunalı, 2015). The pedagogical dimension of the basic design studio was organized to transfer the trained design knowledge to the students in order to achieve the maximum efficiency in designing with the architectural manners. The course goals could be caught, by considering the students as the active member through the educational process (Farivarsadri, 2001).

In Turkey, material of the basic design education focuses on the visualization phase of architectural designing and its goal is highlighting and training the design principles and organizations as the perceptible phase in architectural designs (Bayındır, 1994) and also, creating theoretical backgrounds for the students (Norberg-Schulz, 1988).

Basic design students at the end of the semester should present the visualized format of their design ideas via design models and drawings in their final jury sessions (Öztekin &Tunalı, 2015). They receive critiques from their instructors on their projects during critique sessions within the semester. In introductory design studios, the formal evaluation method of the students' design products is "Design Jury" which happens through the "Public Critique", and contains guest jury members and the course instructors in the jury sessions (Çıkısa & Çila, 2009).

Furthermore, some basic design students tend to open up discussions with their peers in their design studios, in a term of "Peer Criticism" and informal discussions (Farivarsadri, 1998). Introductory design studios in Turkey and North Cyprus are considered as the multi-dimensional learning medium with varied participants and mutual relationship between design learners and educators. Where the ground knowledge of architectural design has taken shape to prepare students for overcoming on their incapability (Gulmez & et al., 2014), encourage them to design something new for the modern life and have a deeper view toward their living environment (Heidarian & Ghafourian, 2014).

Basic design studios are foundation level for students which teach them to learn architectural terminology through their designing and presenting their own perception, concept and experience from the essence of architecture. Generally, basic design students share their perception of "what is architecture?" with their peers and mentors through their design process and in their studio environment (Tavasoli, 2014).

2.6 Placement of Thesis

Architecture education expected provides integrated skills and knowledge and design studio is the main medium to reach this goal. Newcomer students have the common problem of lack of design knowledge and experience through their design process. Actually, they initiate to learn abilities for transforming basic geometric shapes into the well-designed and rational architectural forms, which is known as the major problem for basic design students by many scholars (Yavus, 2012).

In basic design studios, students need to be taught the general design principles and elements. The objective of introductory design studios is expanding the common vocabulary and terminology of the architectural design for the students, which leads students to overcome on their leakages of design knowledge and skills in order to present their abstract ideas as the architectural design products (Farivarsadri, 2001).

In architectural education, different studies have been carried out on varied areas, design education as a core of architectural education and its applied instructional methods were some subjects of them. Figure 2.13 demonstrates the whole done researches from different countries by focusing on the architectural education and architecture design education from 2000 until present.

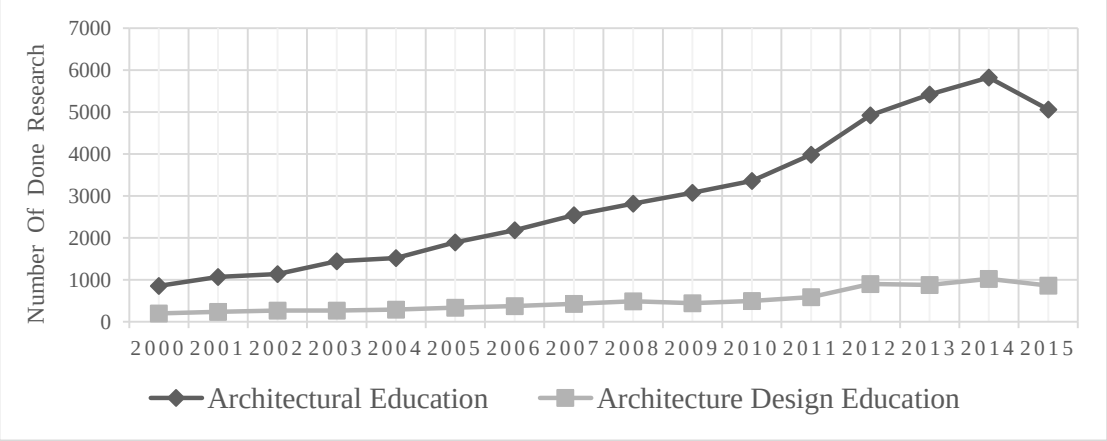


Figure 2.13: Number of Done Researches in Architectural Education and Architecture Design Education till 2015. (www.sciencedirect.com, Access Date: 20.07.15)

By referring to Figure 2.13 it is easily perceived that architectural education studies are exponentially increasing from 2005 till now while done studies about architectural design education still remained somehow in same level.

In process of the design instructions the first-year design studio is considered as the foundation year because, students from different backgrounds start to learn architectural design principles through their projects and instructors' critiques. It also, prompted many scholars to study this subject in details. Figure 2.14 indicates all the done researches on the architectural basic design education, the importance of the first-year in architectural design education and also the implementing teaching methods in introductory design studios from 2000 until 2015.

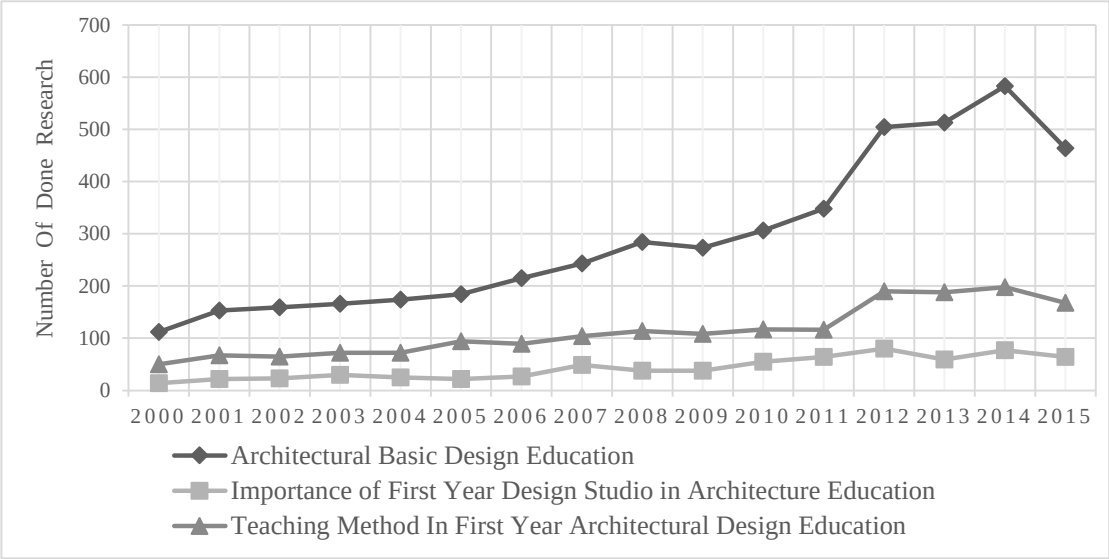


Figure 2.14: Number of Done Researches in named till 2015.
(www.sciencedirect.com, Access Date: 20.07.15)

According to Figure 2.14 Number of done researches on the architectural basic design education, has dramatic difference with number of done studies on the other topics. The last two subjects have slightly difference with each other.

Figure 2.15 shows done studies in architecture education, basic design studios and also the applied teaching methods in the introductory design studios just in case of Turkey.

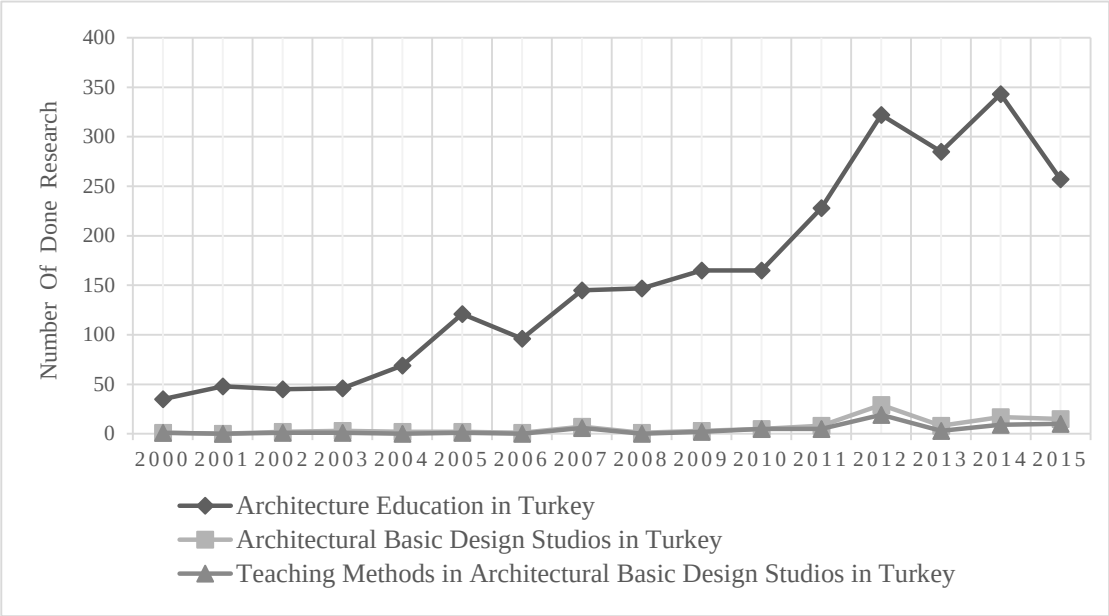


Figure 2.15: Number of Done Researches in Architecture Education and Basic Design Studios and also Number of Relevant Studies on Teaching Methods in Basic Design Studios in Case of Turkey till 2015. (www.sciencedirect.com, Access Date: 20.07.15)

As demonstrated by Figure 2.9 researches on the architecture education in Turkey has progressed specially, from 2010 until 2014. However, between 2014 and 2015 this number has slightly decreased. Doing studies on basic design studios and teaching methods for first-year design students in architecture education have almost incremental and gradual progress in Turkey but, these subjects between 2011 and 2013 had been more evaluated by scholars. Varied researches have been done with the aforementioned titles in Turkey. For instance Demirbas & Demirkan (2013) on their research have focused on students' preference of learning style based on Kolb's "Experimental learning Theory" through their design process. As a result, it was indicated that students' performance score with varied learning styles are significantly different at each stage of the design process and also, have been increased at the end of their design processes.

And the other parable researches such as Koca & Uluengin (2014), this study has asserted to assume analogy as an analytical tool within the design process. The research argued that thinking through the analogy conducts designer to think with qualitative value rather than quantitative data and helps students to convert their design concept into product more properly.

Aytac Dural as one of the experienced mentors in basic design at Izmir University who has work more than 30 years in educating foundation level design students, suggested to consider some factors for basic design students like; considering the subjective and prescriptive learning and teaching style in secondary school because the students have very few opportunities to learning through discovery and using their creativity which causes a problematic condition for them through their higher education. She also recommended that using theatre helps basic design students to improve their own self-expression and also self-confidence (Dural, 2014). According to one done research in 2013 between secondary schools of North Cyprus by Nil Paşaoğlulari Şahin about the problematic issues in architectural design education, the results indicated that intangible materials like designing could be taught as the tangible materials like mathematic in design education by applying systematic way of learning and teaching models in design education and implementing related design alphabet, principles and languages. Authors also have offered recommendations for their proposed problem in the research, such as; implementing Inter Creative Course Model (ICCM), and applying three methods of learning for the students in North Cyprus which are the conventional methods and known as "*learning-by-doing*" as a "*Hands-on-Minds-on*" method, learning from the friends or with them as an "*Over the Shoulder Learning*" method and then, learning from the experiences which is defined as a "*Know How Learning*". The proposed leading methods in the essay give five advantages to the students that are; enhancing students' problem solving skills by their creativity, increasing students' self-dependency and self-confidence sense, developing students'

social skill, reinforcing aesthetic importance in their design and also, promoting students' design management skill (Dağli & et al., 2013).

Ciravoğlu has proposed a new teaching method in architectural design education by eliminating a single instructor and student and as a result the individual critique through the design process. The data have been collected through the distributed questionnaire between design students and instructors. The research was carried out in two academic semesters in fall 2010-2011 and spring 2011-2012 in Design Studio IV at Yildiz Technical University in Istanbul. For the research purpose instructors reviewed the students' design project with together and students received Group Critiques from design tutors. As the results (positive sides) it was indicated that the applied new method has different perceptions among the students and instructors. The tutors have believed that the method makes students more responsible through their design process and improves their self-criticism skill. The implemented method helps tutors to know other tutors' pedagogical approaches. Students could receive varied design ideas for their projects from the instructors which help them to accelerate their project development process. Projects could be based mostly on the students' design ideas rather than the instructors' ideas. By group critique students feel less stressed on their juries. On the other hand (negative sides), through the Group Critiques more time should be spent that exceeds from the regular class hours and somehow decelerate design development process. Some students do not participate in the discussions. Tracking students' performances and progresses become quite difficult. The students may feel confused through the design process by receiving critiques from more than one instructor. To sum up, research has concluded that applying new teaching methods in design education take time to be implemented, but because the study proved students do not require to receive critique from the instructor at each class session so, it can be stated that the new method has the possibility to be implemented in the design education (Ciravoğlu, 2014).

By reviewing the number done researches in the North Cyprus as a proposed case study by this thesis, Figure 2.16 indicates the number of done studies based on the basic design studios in architectural education and the applied teaching methods in introductory design studios in North Cyprus as the case study.

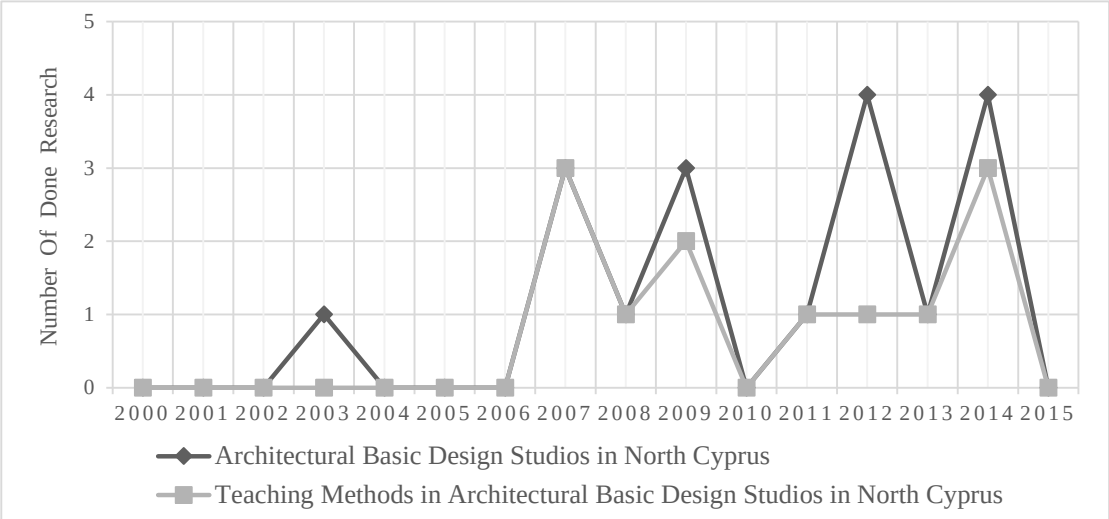


Figure 2.16: Number of Done Studies Based on Architectural Basic Design Studios and Applied Teaching Methods at Architectural Basic Design Studios in Case of North Cyprus till 2015. (www.sciencedirect.com, Access Date: 20.07.15)

By referring to Figure 2.16 it is perceived that the number of done researches on architectural basic design studios and their teaching methods in the case of North Cyprus have not been exceeded more than 5 researches till now.

For instance, Koyuncugil (2001) has done a study to investigate the effects of the social interactions between design students on formation of the students' preferences on their design projects in basic design studios. And the result presented that these interactions cause similar students' tendencies and preferences on their designs which is in contrast to the main pedagogical objective of the basic design studios.

Çıkı and Çila (2009) have done research on the way of assessing students' performances in first-year design studios at Cyprus International University. The

research data has been achieved through the questionnaire survey and interview between the basic design students. As the result, the study has indicated the main focus of design assessment is on the studio productions in the final jury stage.

Kurt in her study has evaluated the feasibility of visual design studios in architecture education. As a result, by integrating a computer technology with the "Constructivist Learning Theory" in the architectural design process the "Constructivist Design Approach" will be achieved (Kurt, 2011).

One research has done by Yavuz, Yildirim in Gazi University which studied the "*Mimesis Technique*" as a teaching method in architectural design education. The aim of the research was to evaluate students' design skills improvement. For this purpose, students were asked to design by inspiring from relevant samples to solve the given design problem. The research concluded the proposed teaching method is a time saver and is a useful method in the creative education (Yavuz, Yildirim & et al., 2012).

In 2012 one research has done to get feedback on the students' perception of their gain knowledge through their studio sessions during the semester (Basic Design II has been considered as a case study for the research) in Istanbul Technical University (ITU). Students were asked to submit their diaries as a magazine at the end of the semester to clarify their design awareness's improvement and project development process throughout the whole semester (Gelmez &Bagli, 2012).

TANERI (2013) on his study has explored students' perceptions of architectural design from first-year until four-year design studios throughout the students' undergraduate education. The research has been done among Izmir Institute of Technology and Dokuz Eylül University. As a result, design was assumed as the problem solving issue

according to the students' perceptions. Students also, perceived nature of design as a linear process because of the current educational pedagogy in architecture.

Imamoglu and Inan did a research base on the commonalities between creative process and studio experience by running the workshop in a Music School under supervision of the architectural design instructors for first-year design students. Research findings indicated that both, the intellectual resources of architectural design and musical composition jointly, could be considered as the useful tool in creative architectural education (Imamoglu, Inan & et al., 2013).

Şahin by outlining the first-year architecture curriculum on his study in Turkey (40 universities in Turkey) has asserted that a new course with the aim of enhancing students' design perspectives and insights should be added in the architecture curriculum. The outcomes of the new course will be displayed on the exhibition at the end of the semester to share products and making opportunities for the students to show their whole design process to the others (Şahin, 2014).

One research has done by Emadi based on students' perception of their jury system at Eastern Mediterranean University (EMU). The study realized that, design jury is a proper way to evaluate students' design projects. The author has considered design jury as the backbone of the design studio which creates the specific condition for the students to express their design ideas and design models for the others. The students have a chance to receive varied design ideas from their peers and instructors on their projects (Emadi, 2014). The other done study on fourth year design student in 2014 at EMU revealed that students have some difficulties to think critically. The authors suggested to add one extra course to enhance the students' critical thinking and self-criticism skill which also could improve students' communication and interpretation abilities (Günçe & Izadpanah, 2014).

Another research in 2014 by Yavuza & Shadmand has done that introduced a new method for teaching the basic design students. And named "*Generative Design*" which employed inspiration for the form producing process in basic design studios and helps the students to present their creativity thoughts and design ideas as a tangible outcome. The authors noted that in a generative design any solution is obtained from inspiring and abstracting of the nature. In addition, the method improves students' creativity in parallel with their understanding of the relationship between forms.

Memikoğlu, Berker and et al. (2015), on their research suggested that using clay as a design tool for basic design students could be effective to develop their creativity on producing three-dimensional conceptual design models.

According to this limited of done studies in these fields, severe need of more studies is understood. Another important issue that should be considered in accordance with the named done researches, is lack of the studies about students' abilities in the architectural form creation and also, evaluating given project types for design students to support the aforementioned subject.

2.7 Chapter Summary

This chapter presented history of studio based learning in architecture and architectural design studios. Various educational values of first-year education also discussed. A comprehensive review on conventional methods and means for first-year architectural design education, such as physical space (studio environment), pedagogy (teaching and learning methods), student exercises including project types and finally assessment have been carried out. In fact, the basic design studio is the most important learning environment with special characteristics. It has also relation to the further design studios and could be considered as the foundation and enrichment step for all the upper design studios in terms of critical thinking skills and creativity. Placement of the thesis clarified in last section by reviewing major done studies.

Chapter 3

METHODOLOGY AND RESEARCH PROCESS

3.1 Introduction

This chapter describes the general methodological approach that used for this study and explains the relevancy of the research question and research methods. The selection of methodologies was based on obtaining a good quality documents about the relevant established theoretical perspectives for basic design education in architecture by literature survey and actual data about its instructional and learning style along with the author's direct observation. The chapter first introduces a case study (FARC 102, first-year second semester at EMU) and its physical context, the methods of data collection and data analysis. Then, the methods for the study to measure students and instructors ideas, expectation and concerns in that specific level of education have been outlined. The measurement strategy employed to collect data in this thesis, is the surveyed questionnaire and interviews.

Direct observation at FARC 102 design studio and found critical issues through the educational process became an appropriate mean to conduct students' questionnaire and interviews questions. The questionnaire was used to find out students' placement at the design process from their perspectives, the relevancy of their design ideas with their design products, their opinion on the applied teaching techniques and semester project, students' used methods in visualizing the design ideas, their sense of belonging to their design projects and their difficulties on the form generation process. Obtained feedbacks from these surveys guided the author to manage tutors' questions at interviews to understand their ideas, experiences and concerns about design instruction

for first-year design students in architecture education. An interview has been conducted among students of upper design studios who had passed FARC 102 in the last two years at EMU. The main aim of the conversations was studying the usability of students' gained design skills and knowledge in their basic design studios for their current design projects.

3.2 Relevancy of the Research Question and Research Method

To answer "What Are the Influential Factors on First-Year Architecture Students' Productivity" as research question of this study. So, the fundamental aim of this study is examining the influential factors on students' capability of transforming abstract thought into the concrete architectural design outcomes in basic design studios.

Design studio is known as an environment which subjectivity is at the center (Anthony, 1991). For instance students, tutors and even project types are unique among themselves and even in relation with each other. Therefore, the combination of different methodologies required to cover each concern that underlined by research question. The both qualitative and quantitative research methods have been applied for the aforementioned purpose. The data has been collected through the various stages in order to understand FARC 102 students' perception, expectations and concerns about the teaching techniques, project types, their involvement in the design process and sense of learning and belonging to their proposed design models and etc. Therefore, the quantitative study was found necessary. Then, according to the students' responses on the questionnaire some of the questions were asked to prove the findings in a format of interviews among the basic design instructors at EMU. Lastly, one question in a format of the inquiry was asked from the students in upper design studios (ARCH 291, ARCH 391 and ARCH 392) about offering of employing their gained design knowledge in FARC 102 on their current design projects in order to understand the usage of FARC 102 design instructions in the upper design studios.

3.3 Case Study

Eastern Mediterranean University (EMU) is one of the public-private universities in North Cyprus, Famagusta. The university was established in 1979 as the technical intuition for Turkish Cypriots in the direction of the higher education. In 1984 three engineering programs was added to EMU educational programs which were civil engineering, electrical engineering and mechanical engineering. About the mentioned year, some Turkish Republic Council members of higher education had considered the educational program of the established institute of technology by the mean of converting it to the university. And then, in 1986 this institute of the higher technology was transformed to the state university by the Turkish Republic and Turkish Republic of Northern Cyprus's considerations and had been named Eastern Mediterranean University (EMU). In 1990 the faculty of architecture in this university was established by the mean of applying conventional and interdisciplinary methods of teaching for students with different cultural and design backgrounds. And focuses on innovation, creativity and enhancing students' critical thinking skill. Architecture department at EMU University is known as one of the largest departments which is under process to achieve the international accreditation programs.

Students are attracted to educate at Eastern Mediterranean University in North Cyprus from different countries and nationalities (more than 49 countries) like: Iran, Palestine, Nigeria, Syria, Iraq, and also from others Turkish and Cyprian cities. The faculty provides holistic and high quality architectural education to more than 600 local and international students.

In Turkey and North Cyprus the common system of teaching and learning architectural design instructions is the "Design Studio" with the "Project-based" teaching model and "Open-ended Problems" in the projects.

Through the design studio as a main model of teaching design instructions students' creative skills and critical thinking abilities are valued. The introductory design studios known as FARC 101 and FARC 102 at EMU University are the first educational environment for EMU architecture students to externalize their imaginaries with architectural terminologies. The outstanding outcomes from these introductory design studios at EMU is rational transition of the students' imagination or initial design ideas into the tangible design products with specific architectural language. Through this learning process several transition skills are necessary for the students to shift their design concept in accordance with their design knowledge into the architectural design outcome. Figure 3.1 demonstrates the proposed case study for the research at EMU.

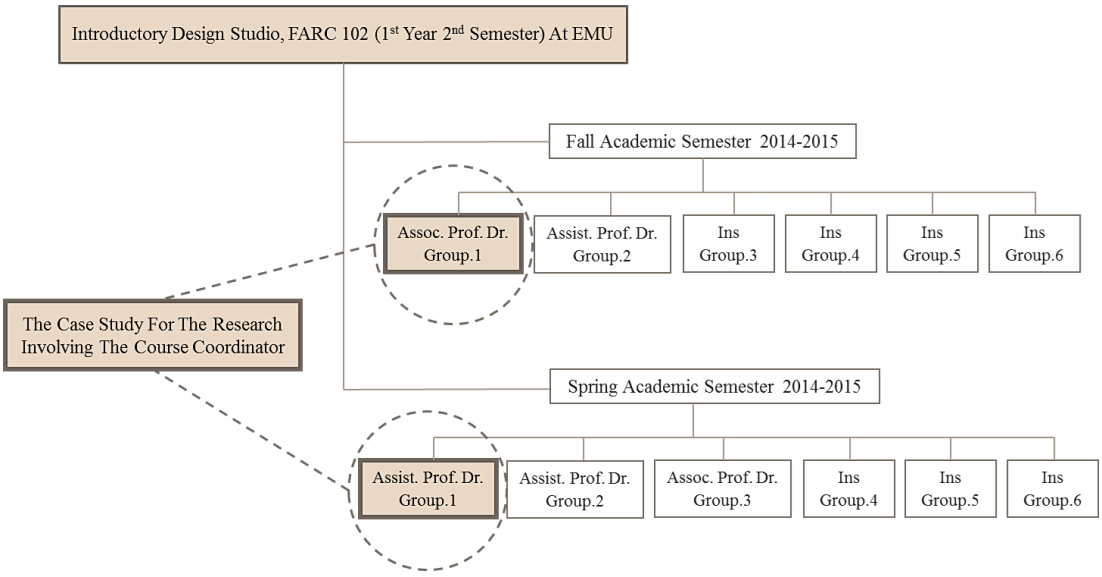


Figure 3.1: The Chosen Case Study of the Thesis "FARC 102" in Fall and Spring Academic Semester 2014-2015 at EMU

The introductory design studio (known as FARC 102) at EMU in Famagusta, North Cyprus, has been selected as a case study for the research which is composed with architecture and interior design architecture students. The course code is FARC 102 which has 6 credit and held twice a week on Monday and Thursday at 08:30 AM- 12:30 PM, almost 8hours per Week. EMU deign students for attending in the selected design studio need to take the Architectural Design I (Basic Design Studio; FARC 101) course

as the prerequisite. Generally, design instructions are taught to the students through the five or six groups by supervision of the design educators. Each group has one main design instructor under supervision of the one course coordinator with the aim of improving the relationship between students' design concept and rational architectural forms in accordance with general basic design principles. The assessment system for the research case study is based on jury system about the students' design idea demonstration, their project development process and their final design outcome also, with regard to their attending to the studio sessions.

3.4 Data Gathering Process

The research was carried out at Faculty of Architecture, Department of Architecture at EMU within two academic semesters (Fall and Spring semester) in 2014-2015. According to the research objectives data has been collected through both, the quantitative method by the questionnaire survey and the qualitative method through the direct observation, interviews and the existing relevant literatures. So, the assembled materials for the study have been obtained within three methods; firstly, by author's long term direct observations from the introductory design studios at EMU within the two academic semesters (Fall and Spring semester in 2014-2015), secondly, by distributing the questionnaire among the design students of the chosen case study and thirdly, by conducting interviews with four FARC design instructors at EMU, and also making discussions (interview) with upper-class design students at EMU (ARCH 292, ARCH 391 and ARCH 392). After that, all the findings had been analyzed and their results have been contributed in the study together with written literature survey in the research to achieve dynamic information for making recommendations based on the research objectives and defining relevant encompassed future work.

3.4.1 Direct Observation

Direct observation has been accomplished by the author for the study towards perceiving the applied teaching and learning methods at EMU introductory design studios (FARC 102). The observations (long term study) had been done within two

phases in one year (two academic semesters in 2014-2015). The first phase was carried out in the Fall semester 2014-2015 by participating in each FARC 102 studio sessions (two times a week), and the second phase in the Spring semester 2014-2015 was performed by observing one class session (FARC 102) in a week. Which led to recognize the common activities and tutor-students interactions in FARC 102 design studios of EMU. The observations have been carried out within the studio number (A14) in the Fall semester 2014-15 and studio number (E06) in the Spring semester 2014-15, on Mondays and Thursdays at 8:00 AM till 12:30 PM in faculty of architecture at EMU. (Appendix A, FARC 102 Course Outline in Fall and Spring Academic Semesters 2014-2015)

The observations had focused on factual data, instructors' and students' performances through FARC 102 design process. During the observations, some photos and notes of the students' design models have been taken by the author in order to record instructors' critiques, suggestions, students' inquiries and questions on their design and their usual and occasional activities within the design studios, (Appendix B, Recorded Photos from the FARC 102 Design Studios throughout the Two Academic Semesters 2014-15 at EMU). Then, achieved data as the descriptive information for the case study (FARC 102) has been transcribed by the author and employed in this research. (Appendix C, Taken Notes during the Direct Observation in Fall and Spring Academic Semester 2014-2015)

Figure 3.2 demonstrates FARC 102 design studio in Fall and Spring academic semester 2014-2015.

Figure 3.2: FARC 102 Design Studio in Fall and Spring Academic Semester 2014-2015 at EMU

3.4.2 Students' Questionnaire Survey

Through the observation periods to evaluate the students' weaknesses and capabilities in presenting and developing their initial design ideas toward the design products, one questionnaire survey had been distributed among 80 FARC 102 design students during the 2014-2015 Fall and Spring academic semesters at EMU. In order to achieve some clues for making suggestions and enhancing students' architectural form creation skills, the questionnaire contained varied three sections: First, "Personal Information", Secondly, "Personal Preference Rating about the Architectural Design Product" and lastly, "Comments Or Expectations" which involved: Open and Closed-end Questions, Dichotomous Questions, Likert Scale Questions, Multiple Choice questions and Matrix Questions. The questions covered students' feeling and perceptions on their proposed design models, the students' used methods to externalize their design ideas, their problems within the design process, their comments and expectations through

their architectural educational process. (Appendix D, Students' Questionnaire Survey) Figure 3.3 shows FARC 102 students while answering the questionnaire in Fall and Spring semester 2014-2015.

Figure 3.3: FARC 102 Design Students while Answering the Questionnaire in Fall and Spring Academic Semester 2014-2015 at EMU

3.4.3 Tutors' Interview

After distributing the questionnaire and collecting data from the students' responses, in order to notice instructors' desires, considerations and approaches in the process of enhancing students' design quality in introductory design studios at EMU a personal interview was scheduled with the four studio masters in the faculty of architecture at EMU in the Fall academic semester 2015-2016. (Appendix E)

The interviews had participant-led style and the conversations were based on the instructor's experiences and suggestions on the architectural form generation process and the conventional teaching and learning methods of the architectural design instructions that were applied on the first-year design studios. Approximately, 30 minutes were spent for each interview session and the whole interviews were done within 20 days in the faculty of architecture at EMU and according to the appointed time by the participants in November 2015. All the participators were female and involved in the EMU introductory design studios. Within the interviews instructors were asked to express their ideas about the students' form generation process (focused

on FARC 102 design students) and shared their suggestions and considerations with the research. Then, the outcomes of the interviews were analyzed and employed in this study, according to the research objectives. (Appendix E, Letter Requesting an Interview and Asked Questions)

All the conversations had been recorded throughout the interviews and then have been transcribed by the author. Four design mentors who have participated in the interviews, sort by the date of the interview were; Assistant Professor Dr. Nevter Zafer Cömert, Associate Professor Dr. Nil Paşaoğluları Şahin, Assistant Professor Dr. Guita Farivarsadri and Assistant Professor Dr. Pınar Uluçay. (Appendix F, Instructors' CV)

3.4.4 Students' Interview

Throughout the research the other interview has been held in order to understand the efficiency level of trained design instructions in the introductory design studios (FARC 102) in upper design studios at EMU. The author had made discussions with 30 EMU design students in second and third year design studios (ARCH 292, ARCH 391 and ARCH 392). The main aim of the conversations was realizing the usability of the students' design knowledge in their introductory design studio (FARC 102) for their current design projects. The interviews were conducted in the inquiry format by asking one Yes/No question (students could explain their responses if desired) and were held in the faculty of architecture at EMU within 10 days in December 2015. The author's manuscripts of the students' responses were reviewed and analyzed to give the benefit of enhancing the quality of the recommended suggestions in this research.

Figure 3.4 displays used methodologies to collect data through the thesis research process in three academic semester (Fall and Spring semester 2014-15 and Fall semester 2015-16) at EMU faculty of architecture.

Direct Observation	FARC 102 Introductory Design Studio Fall and Spring Academic Semester 2014-15
Questionnaire	FARC 102 Introductory Design Students 80 Students; Fall and Spring Academic Semester 2014-15
Tutors' Interview	EMU Design Mentors 4 Design Instructors; Fall Academic semester 2015-16
Students' Interview	Upper Design Students 30 Students; ARCH 292; ARCH 391; ARCH 392; Fall Academic semester 2015-16

Figure 3.4: Methods of Data Collection in the Research

3.5 Data Analysis

The findings for each used method have been analyzed and contributed to the study in order to enhance quality of the study. Diverse methods of data analysis have been applied in the research for each mentioned technique in the data gathering process. The findings of the author's observations have been evaluated by reviewing the field notes and photos belong to the students' design models and performances. As the result, one observation form had been provided (two observation forms for two academic semesters in 2014-2015) which indicates all the details about the case study such as, the aims of the course, project requirements and etc. (Appendix C)

The corresponding responses from the students' questionnaires have been analyzed by Microsoft Excel Program and displayed through some bar-charts and graphs of the obtained data which are comparison of responses across the students. And then, the transcribed format of the tutors' interviews has been reviewed and the instructors' suggestions are transformed into one the Table which highlights their concerns about the educational methods and architectural form creation process at EMU introductory design studios (FARC 102). Lastly, the obtained data from students' inquiries in the transcript format have been revealed and the efficient comments have been described.

In addition, according to the taken photos of the FARC 102 design models and the author's perception of the students' performances through their design process, 19 design projects in FARC 102 have been selected by the author to demonstrate the students' design process from the conceptual design, its project development process and the final presentation of the design product (seven projects had belonged to the Fall semester and the rest belonged to the Spring semester 2014-2015). Analysis of the projects has been done based on the authors' notes of instructors' critiques throughout the observation period. (Aforementioned in Appendix C)

3.6 Chapter Summary

This chapter was introduction to the applied research methodologies for the study in order to distinguish the influential factors on transforming students' design ideas into the concrete design outcomes along with the architectural design principles in the introductory design studios. In order to reach the research objectives this study was carried out by both the quantitative research methodology through distributing questionnaire surveys among the basic design students and the qualitative research methodology by observing EMU introductory design studios (FARC 102) as the research case study, for the one academic year in 2014-2015 and also, conducting interviews with first, basic design (FARC) instructors and then with, students in upper design studios.

The chapter described the data analyzing methods of the relevant findings at each stage of the data collection process through the research. In order to be contributed to the study and along with the done literature review, which have been written in the Chapter II for answering the proposed research question and reach the set research objectives.

Chapter 4

DESCRIPTIONS OF FINDINGS

4.1 Introduction

The material of this chapter would be presented in two sections. Firstly, all the findings throughout the direct observations at FARC 102 design studios, students' responses to the questionnaire, tutors' interviews and the upper-design students' inquiries will be presented and then, all the obtained data from each used methodology in the research have been discussed in more details. The second section, makes discourses on corresponding responses of the distributed questionnaire with respect to the content of the conducted interviews (design instructors and upper design students) and author's observed findings, which have been accomplished in Fall and Spring academic semester 2014-15 in the Department of Architecture at EMU. In addition, a done literature review of the research has been contributed to the material of this section.

4.2 Reality of First-Year Architecture Design Education at EMU

First-year design education in faculty of architecture at EMU (both FARC 101 and FARC 102 design studios) is considered as a foundation year and involved with the architecture and interior architecture students. Who are coming from different parts of the world with diverse cultural backgrounds and design knowledge to study architecture in EMU. Regularly, FARC 101 design instructors (first-year; first semester; Basic Design Studio) by finishing the academic semester attend in FARC 102 design studio (first-year; second semester; Introductory Design Studio). Actually, the students have a chance to take their new design course (FARC 102) with their own previous design instructors (FARC 101 design instructor).

In general, the main educational objective of EMU introductory design studio is making newcomer students familiar with the general design elements and principles to design proper architectural products. The implementing teaching method for these design studios is based on the defined projects which are being expected from students to be carried out throughout the semester. Students by these projects, make design models and get familiar with the problem-solving process and decision-making process to present appropriate solutions. Students' projects (design models and drawings) are improved by following the project requirements and applying their instructors' critiques during the semester.

The chosen case study for the research, is the Introductory Design Studio in the faculty of architecture at EMU, with the course title "Introductory Design Studio" and course code "FARC 102" in first-year second semester level. The studio contained around 40 students (in architecture and interior-architecture) with different cultural backgrounds. The course had been offered twice a week on Monday and Thursday around 4-hours for each session and is the main course in the EMU architectural curriculum with 6 credit. The students need to pass "Basic Design Studio" (FARC 101) as the main prerequisite course and "Introduction to Design" (FARC 113) as the fundamental course in order to take FARC 102 design studio. Through the two academic semesters, during the author's observation period, the course (FARC 102) has been offered within the six groups and each group was included two or three design instructors.

FARC 102 course defines the methods and means of architectural design production for the beginning design students with the approach of improving the relationship between design concept with proper architectural form, structure and space. In addition, the course highlights the awareness on the building materials, vertical and horizontal circulation, human-scale design, considering site characteristic, accessibilities, environmental and climatic considerations, sun and wind orientation,

spatial organization, natural context and existing landscaping for the students in order to propose high quality architectural products and in parallel with general basic design principles. It is also expected from the students to apply their ideas through their design models and drawings with the rational design scenarios. Mainly, FARC 102 attempts to clarify the basic design principles for students with helping of small-scaled basic design projects.

In general, aims and objectives of the introductory design studio at EMU (FARC 102) could be defined as follows;

- Introducing the students formal producing of architectural design projects.
- Developing students' awareness of the relationship between design concept and some components like form and space, structure, building material, natural light, scale, landscaping, climatic issues.
- Emphasizing on the functional organization and integration of the basic design principles with the three-dimensional organization.
- Improving students' graphic communication skills.
- Familiarizing the students with basic design issues in architecture
- Leading the students to transform geometric shapes into the architectural forms.

The assignments were defined based on the two types of projects (warm-up project and main project) to improve students' design knowledge and perception in the following phases;

- The general design principles and elements in architectural design.
- Adequate understanding of the relationship between Form-Function-Space and proper structural awareness in architectural design.
- Climatic and environmental consideration.
- Contextual characteristic.
- Natural context-relationship with the proposed design.

- Data gathering, synthesizing and analyzing in order to propose appropriate solutions for the given design problem.
- Designing according to the real human-scale.
- Awareness in integrating natural characteristic of the site, with the design like using natural light and wind through the project design process.

The project requirements were divided into two the phases, at the beginning stage (first phase) of the design process until the midterm period, students should analyze the existing natural features of the project site and improve their scenarios accordingly. They also should develop their design concepts with respect to the existing context and site characteristics and in parallel with their instructors' critiques (phase 1).

Project requirements for the first phase (midterm jury) have been defined as follows; (for the both Fall and Spring academic semester 2014-2015)

- Top View or Site Plan, SC: 1/100
- Plan, SC: 1/100
- Silhouette drawings - 2 Site Sections, SC: 1/100
- 2 Site Elevations, SC: 1/100
- Model, SC: 1/100
- Site Analysis poster, SC: 1/500
- Concept Poster, 70*100 Cm
- Scenario Poster, 70*100 Cm
- Structural Poster, 70*100 Cm
- Structure Model
- Film Poster, 70*100 Cm

} Added for the Spring academic semester

In the second phase (final jury), the students were expected to design the selected part of their designed composition in a bigger scale and with more details on both, plan and

design model (phase 2). Students in the second part also should propose the proper structural system for their projects and develop their projects through their individual critiques for preparing to present their final design products.

Project requirements for the second phase (final jury) have been defined as follows; (for the both Fall and Spring academic semester 2014-2015)

- Site Plan, SC: 1/100
- Silhouette - Site Section, SC: 1/100
- Plan, SC: 1/50
- 2 Sections, SC: 1/50
- 2 Elevations, SC: 1/50
- Design Model, SC: 1/50

The implementing assessment method for the EMU basic design students is based on, jury (in-term, mid-term, pre-final and final Jury), students' attendance to the studio, their progress and development through their design process and also, students' final design products.

- Warm-up project1, (5%)
- Design project part1+ (a) + (b) + (c), (40%)
    (a) Site analysis + Scenario development + Concept development (10%)
    (b) In-term jury (10%)
    (c) Midterm jury (20%)
- Design project part2 + (a) + (b) + (c), (40%)
    (a) In-term jury (10%)
    (b) Pre-final jury (10%)
    (c) Final jury (20%)
- Warm-up project2, (5%)
- Process and Progress (10%)

Throughout the whole semester, FARC 102 basic design students had one time site-visit from their term project, two times in-term jury (pre-midterm and pre-final jury), one midterm jury and one final jury for evaluation of their design development and progress (both Fall and Spring academic semester 2014-2015).

At the end of the semester, the FARC 102 studio productions were expected to present rational and proper students' decision-making in varied stages of their design process. Within the design process, students should integrate and apply their last given design knowledge and critiques on their projects in order to learn new issues in architectural design. On successful completion of the course, FARC 102 students are expected to improve their; design knowledge and skills in the problem-solving process, verbal and visual communication, form-making and producing process, graphic communication, team-working, time management skill, decision-making skill and the architectural plan drawing techniques. Further, enhancing the architectural design understandings and designing the innovative architectural forms, have been supposed to be obtained by the EMU basic design students through their educational process.

4.2.1 Two-Term Direct Observation Result

Direct observation from a chosen case study for the research (FARC 102 Introductory Design Studio at EMU) has been accomplished based author's participation in the studio sessions in Fall and Spring academic semester 2014-2015 at EMU. In general, the current design teaching method in the EMU, is "Studio-Based" like many other universities. So, "Design Studio" is the main learning medium in architectural design education. EMU also has provided such a medium for the architecture students.

First-year design studios in EMU are known as the Introductory Design Studios or Basic Design Studios with FARC 101 (1st year 1st semester) and FARC 102 (1st year 2nd semester) course codes. These studios were equipped with the white rectangular tables and stools which are appropriate for the architectural plan-drawing and model-

making. Drafting tables in the studios have a white top drawing board in size 100x70 cm. The number of tables was appropriate for each student to have its own table to work on his/her design project, however, some students preferred to use one table jointly. In some studios, video projectors have been installed to present lectures (design examples) and students' researches on the screen. Heating and cooling system of the studios were supplied through the air conditioning system beside the natural ventilation and lighting from the windows. And their lighting system is based on the daylight-integrated and artificial electric lighting which has been controlled by the light switch. Figure 4.1 displays the introductory studio medium (FARC 102) in Fall and Spring academic semester 2014-2015 at EMU.

Figure 4.1: FARC 102 Studio Medium in Fall and Spring Academic Semester

Generally, faculty of architecture at EMU has accommodated design students in an appropriate educational environment to learn architectural design instructions. And basic design students (FARC 101 and FARC 102) through their design process and during their studio hours use these facilities.

Architectural design training at EMU is based on the defined semester "Design Project". Basic design projects encompass the specific design problems and students through their design process are expected to find proper design solutions for the given problems. "Learning-by-Doing" is the main learning method at EMU which is applied for the introductory design studios. Through the method, students learn design

principles and instructions while doing design exercises and making three-dimensional design models they also get familiar with different aspects of presenting their designs ideas. Actually, “Learning-by-Doing” is the main learning method at the FARC 102 design studio.

In the chosen academic semesters (Fall and Spring 2014-2015) the selected studio as the case study (FARC 102) had included 30 to 40 students and involved two or three design instructors. During the studio sessions, students were sitting behind the rectangular tables and working on their design models and drawings till to be called for receiving individual-critiques from the instructors or assistants. Any activity within the studio environment was about the students’ and instructors’ performances on the determined “Design Project” as the major learning and teaching methods within the studio medium. The main aim of the introductory design studio (FARC 102) at EMU is teaching students to externalize their initial design ideas as the concrete decisions and then, developing them based on the architectural design methodologies to achieve expressive architectural design products as the outcome.

Generally, the pedagogical dimension of the EMU for the introductory design studios is instructing students; how to present their concepts and applying the design principles on their design projects in order to create architectural forms. The first depiction of the design ideas by the FARC 102 students have been done by their conceptual sketches and model-making through their design process. In addition, the students had done research on the similar examples and architectural forms related to their projects for inspiring design ideas. Students’ ideas have been developed by instructors’ critiques throughout the semester and presented as their formal design projects on the final jury.

Through the semester, students gained varied design knowledge in “Problem-Solving Process” and proposing appropriate “Design-Solutions” within the design process and

all were accomplished on their design projects. So, design project had been considered as the core of the design studio for the FARC 102 students, which all the learning and teaching techniques were applied on it. And finally, it was the main subject for assessing and grading students' learning outcomes and success level in the course.

The defined design projects for the introductory design studios at EMU are different in each semester. Due to foundation approach within two academic semesters of the authors' observation period -Fall and Spring 2014-2015- FARC 102 students were given two different semester project.

A. 2014-2015 Semester Project

Designing a personal living, working and performing space for musician "Music Park" and writing a scenario about the desired design strategies for the semester project should be accomplished by the FARC 102 basic design students in Fall academic semester 2014-2015. Students were expected to have their first proposal in term of design models and sketches and also, one case study poster contained some keywords which showed the students' perception of the "musician" and gave them some clues in the process of form generation for their semester design projects. Figure 4.2 reveals students' key-word posters in Fall academic semester 2014-2015.

Figure 4.2: Students' Key-poster Samples of FARC 102 Design Studio in Fall Semester 2014-2015

During the conceptual design period, at the beginning of the semester, the course coordinator presented some pictures and sketches as the examples in architecture, interior design and art on a screen during the studio hours. She explained the pictures in a simple way and clarified the initial ideas behind each design in order to give students some clues in the formal architectural design. Figure 4.3 shows the first studio session in Fall semester 2014-2015 the session that students was expected to present their first conceptual models

Figure 4.3: First Session of Concept Presentation by FARC 102 Student in Fall Semester 2014-2015

In addition, during the semester, instructor's suggestions have been described through her personal file which contained some printed pictures as the examples in architecture and interior design. The instructor reminded students that design is an experiential issue, so try to play with forms in order to achieve rational organization for your designs. She conducted students to define their concept by "inspiration" not "imitation" which is also one of the appropriate instructional methods in architectural design. The instructor emphasized the students to express their design ideas in a way that could be comprehended easily and along with the architectural design principles.

During the critique sessions, the instructor first listened to the students' explanations of their design ideas on their proposed models and then, FARC 102 design mentor tried to reshape the masses to achieve more appropriate form in respect with the students' ideas and the formal architectural design instructions. She also made some sketches of

her design ideas while criticizing the projects to clarify her suggestions for the students (instructor's sketches also had been given to the students after the critique).

Students at the end of the critique time should take photos from the latest version of their design models obtained by the instructor's critiques to improve their design in the suggested way and then, they have to show the photos in their next critique session. Figure 4.4 indicates several activities of FARC 102 instructor and students in Fall academic semester 2014-2015 at EMU.

Figure 4.4: FARC 102 Instructor and Students Activities through the Design Process in Fall Academic Semester 2014-2015

B. Spring 2014-2015 Semester Project

In Spring academic semester 2014-2015 students were asked to design a "Movie Themed Park" with some well-defined open and semi-open spaces. They were expected to manipulate the project by some areas like cinema, shop, cafe, gathering area and exhibition in Famagusta. Students at the concept stage of their design process watched a movie in order to get some clues and ideas to start their design.

They should integrate their selected movie with their design ideas and present a keyword extracted from the movie as their design concept. They have to present this exercise on A4 paper size as the poster and explain their design ideas with the help of the poster though their design reviews. Figure 4.5 shows samples of FARC 102 students' concept posters (Movie Poster) in Spring semester 2014-2015.

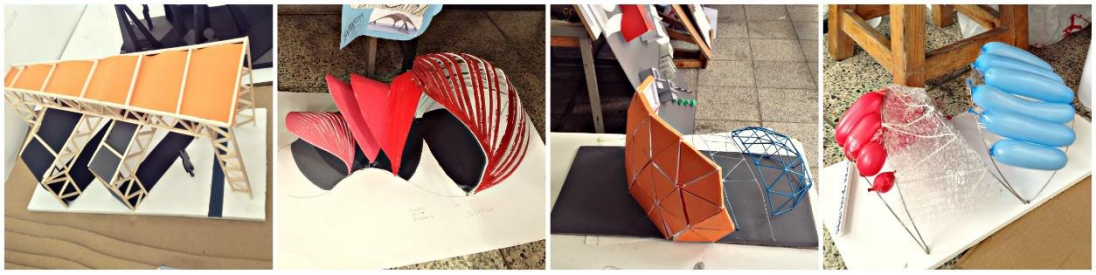


Figure 4.5: FARC 102 Concept Poster in Spring Academic semester 2014-2015

Students should do research about the structural systems that might be appropriate for their projects. As the result, some structural models were made by the students, which represented their perception and desired constructional system for their proposed designs. Figure 4.6 demonstrates FARC 102 students' structural models in Spring academic semester 2014-2015.

Figure 4.6: FARC 102 Structural Models Samples in Spring Academic Semester 2014-2015

In addition, writing a scenario for the design project and making a concept poster according to the students' inspiration of the selected movie and also, the site analysis poster referring to the students' perceptions of the site features were defined as the warm-up project requirements. At the first session of observation, the instructor took a glimpse of the students' design models and gave them very short critiques. Then, each student has been called to receive individual table critique from the course instructor and two assistances more deeply.

Instructor, first was listening to the students' design ideas and defenses for their proposed models and then, gave them some critiques and suggested them to develop their design ideas in an architectural way by manipulating their design models and making some sketches to present her concept. At the end, students should take photos of their new design models, for making most proper and closed models in accordance with their latest critiques. They also, should show their taken photos on the next session for reminding and assessing their workmanship. Figure 4.7 reveals several activities of FARC 102 instructor and students in Spring academic semester 2014-2015.

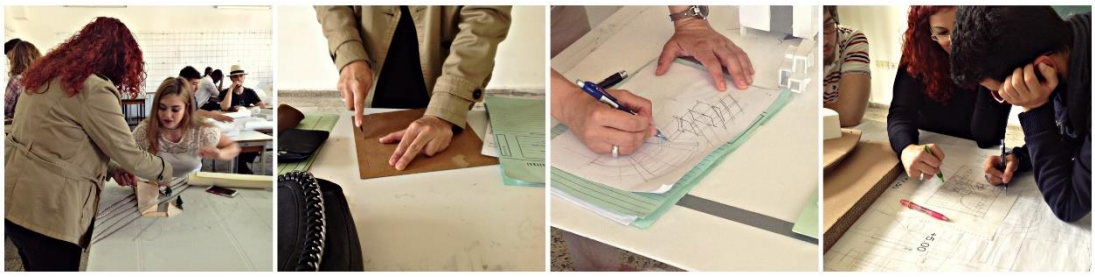


Figure 4.7: FARC 102 Instructor and Students Activities through the Design Process in Spring Academic Semester 2014-2015

Until the midterm jury the studio program had focused on the form generation and many critiques have been offered by the instructors to improve the architectural quality of the students' design models. But, after the midterm period, except two or three beginning sections, FARC 102 students were expected to work and develop their plan drawings and distributing the functions properly in their proposals. So, amount of revisions and criticisms on the students' design models had been decreased in order to spend more time for improving their drawings skills and problem-solving abilities.

Generally, during the critique sessions, the students were called according to the list to receive the critiques. Table 4.1 indicates the most common given critiques to the FARC 102 students during their critique sessions by the instructors throughout the whole semester in both Fall and Spring academic semester 2014-2015.

Table 4.1: Common Given Critiques at FARC 102 Studio Recorded During the Observation in Fall and Spring Semester 2014-15

Apply the architectural design principles on your design projects.
Be brave and creative in the process of design.
Be creative designer instead of imitative person.
Define contextual relationship in your design by making formal connection between your design and project site.
Define the function for any open and closed space in the composition.
Define spaces according to their functions such as main spaces and sub-spaces.
Design in a human-scale.
Design outdoor space as well as indoor space.
Geometrical expression is needed and projects should have well-defined space with proper functional organization.
Create indoor-outdoor relationship in your design by providing semi-open and open-spaces in the composition.
Ignore monotonous repetitions (enhance dynamic form organization) in your design by integrating different materials, colors, textures and elements (vertical and horizontal) within the composition.
Integrate and link the level differences (topography) to your design.
Keep the alignment in the design.
Make dynamism between the masses in the composition.
Masses should be clearly understandable and well-defined (geometrical order).
Pay attention to the site characteristics and integrate its features with your design.
Try to come to the solutions rationally.
Try to rich the quality of the space.
Use appropriate angular for the mass to define the useable space.
Use simple geometric forms and try to make integration between them.
Use the level differences to create active organization on the design.

Through the table-critique sessions, a very few of the students were taking notes from the instructors' critiques. However, instructors tried to create a condition for students that did not forget the main purpose of their critiques by asking students to take photos of their last revised design models or giving them their own sketches on the students' design projects. Additionally, the number of a few students were standing around the instructor's table and listening to her critiques while she was giving critiques to the

other students. Figure 4.8 indicates FARC 102 students' positions while receiving critiques from the instructors in Fall and Spring academic semester 2014-2015.

Figure 4.8: Students' Positions during the Critique Time in Fall and Spring Semester 2014-2015

Generally, throughout the semester some students brought forms which had usually flat surfaces and same ceiling height with no dominant part, no contrast and no texture in the design or even the hidden entrance part. The instructor step by step, improved the projects in an architectural manner and because, most of the models had usual flat surfaces they suggested students to change the height dimension of their forms in order to be abandoned of the static organizations and conducting the designs toward being more dynamism. Actually, there were many usual cubical forms among the students' projects that had same proportions and only were enclosed with their edges. Using glassing wall had been seen in a very few cases at the beginning.

In majority of the projects, semi-open or open spaces have not been defined properly and the contextual-relationship between form and project site was not clear enough to understand also, the definition the functions organization of the projects had some problems. Interestingly, most of the projects were promising to the chosen key-words (Fall semester 2014-2015) like isolation, affection, minimalism and etc. The studio masters motivated the students to use pure geometric shapes with different proportions

to materialize their design ideas in a better way and combine some transparent areas and semi-open spaces in the design to create solid and void relationship between the masses. They reminded students that you are designing for users, so, it is important that your designs invite people and be comprehensive for them.

Most of the students used just simple geometric shapes which were more rectangular and square shapes in their initial drawings and model making. The students just extruded these shapes without any addition or subtracting for presenting the three-dimensional format of their proposals. Some of the proposed forms had not any relation to each other within the composition or had been too much integrated with two or three geometric shapes which made them too much complicated and as the result, distinguishing the shapes were not easily understandable.

In the some projects, students put basic geometric shapes side by side with no meaningful relations with each other and also with the project site. Further, attention had not been much paid by the students in the function distribution, human-scale design and material selection through their design process. During the semester, instructors reminded their students the importance of the geometry in architectural forms. They believed, meaningful geometrical forms could create rational architectural designs with the proper functional organization. Moreover, FARC 102 students were motivated to propose and develop their design ideas in parallel with the critiques to present the formal design products.

In reality, FARC 102 students had some working ideas in their drawing, but while transforming them into the three-dimensional models they usually lost their first design ideas through the process, they added or subtracted too much from the basic forms (initial drawings). Instructors suggested the students that by making three dimensional forms, the nature of the forms should not be changed. Actually, extruding and

subtracting of basic geometric should not be too much or little, they should be done in a meaningful way. Instructors also tried to show the importance of the orientation in the overall layout of the design, thus they asked the students to put the forms in different levels of the site in order to achieve active organization in their designs. Static organization was denied by the instructors, they lead students to catch dynamic organization on their designs. They also, suggested students to divide public and private spaces and integrated open and semi-open space by using the natural context of the project in their designs.

Students were prompted to design on the topography for the first time, but they paid not much attention to this issue. Most of the students even did not fix the location of their models on the site model because they were not sure about the proper location for designing on the project site. Hence, instructors tried to lead the proposals toward the topography and emphasized on the importance of level differences in the form-finding process and achieving the active organization in the design.

Seven projects as the samples have been chosen to be analyzed in their conceptual stages by the author. The analyses belong to the form generation process at the beginning sessions of the semester and they are based on the instructors' critiques and project requirements which have been taking notes by the author during the observation sessions. In addition, the form generation, project development and final product have been considered for another twelve FARC 102 design projects and demonstrates by the author. Each sample is followed by one or two other FARC 102 projects that have almost the same overall design layouts according to the author's selection among the all projects throughout the Fall and Spring academic semester 201-2015 at EMU.

Analyzing the seven selected projects have been done with three colors (red, blue and yellow) which are representing the specific meanings. Figure 4.9 reveals the meaning of each color used in analyzing the selected sample projects.

Figure 4.9: Legend of the Analyzed Seven Chosen Projects in the Research

Throughout the observation period, students' tendency to use simple and mostly cubic shapes in their design projects was quite obvious to the author. Some of the students by employing simple geometric shapes in their compositions could catch the expressive and meaningful designs for the semester project. Students by playing with cubic shapes and adding or subtracting some parts to the simple forms or boxes in respect with their tutors' critiques through the semester were quite successful to present the proper design products for their final jury. Such projects have very simple shapes in their essence which are quite comprehensive for the viewers. Actually, this type of the projects there is no complexity in perceiving the concept of the designer and through their design projects the addition, subtraction, exaggeration and decorative elements have not been used too much and the definition of the design has been done in a proper way which is a prominent issue in creating the rational and meaningful architectural forms. Figure 4.10 is an example of using simple geometric shapes in the composition which caught a proper complexity in the design. The proportion, order and transparent materials had used to integrate the shapes and defining transition space between the cubic masses.

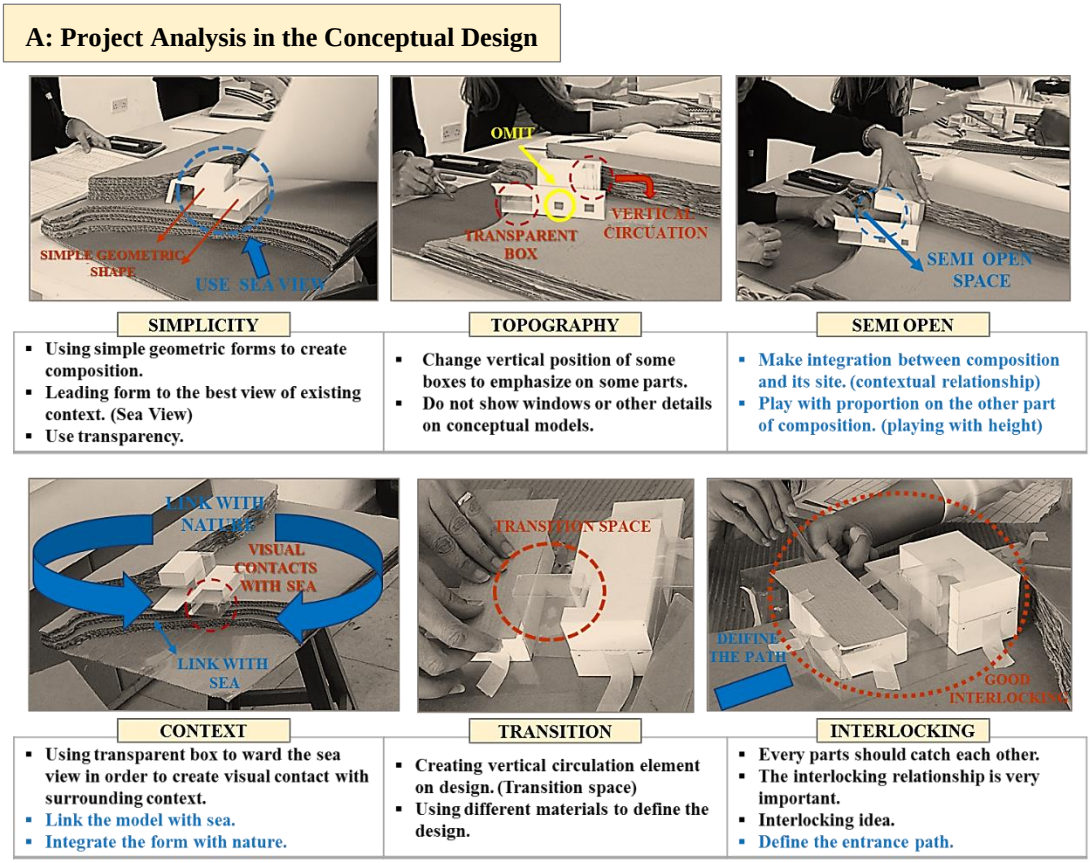


Figure 4.10: A: Analysis of Sample I, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

Figure 4.11 is another example of using simple geometric shapes in the composition with some defining elements for the semi-open spaces. The sense of unity and integrating between masses is quite understandable. Almost same square patterns as well as masses have used to cover the semi-open spaces. The pathway was defined to conduct visitors to the each part. Geometrical expression is understandable in the design and the fragmented masses have been connected to each other through the

pathways which had been designed in a proper way. Topography has been integrated in the design and used to make dominant the main function of the project. All the used shapes have simple forms and have been located in a way to define the overall layout of the design in the meaningful way.

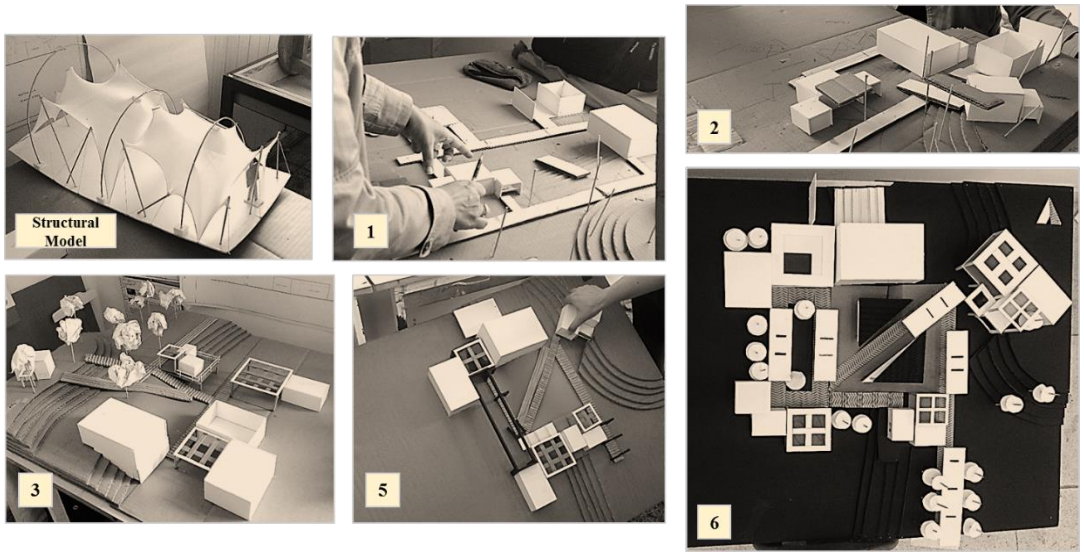


Figure 4.11: Sample 2, FARC 102 Project Design Process

Figure 4.12 displays a project composed of the pure geometric shapes in its design that have been connected with each other by some linear defining elements. Masses are modular and had been repeated in the whole complex. The intersection between two masses creates problems in proposing interior plan solutions for the student. There is a huge open space between the masses at which also creates some difficulties through the design organization and defining the proper in-between relationships be the masses. However, the student has integarted level differences in the design.

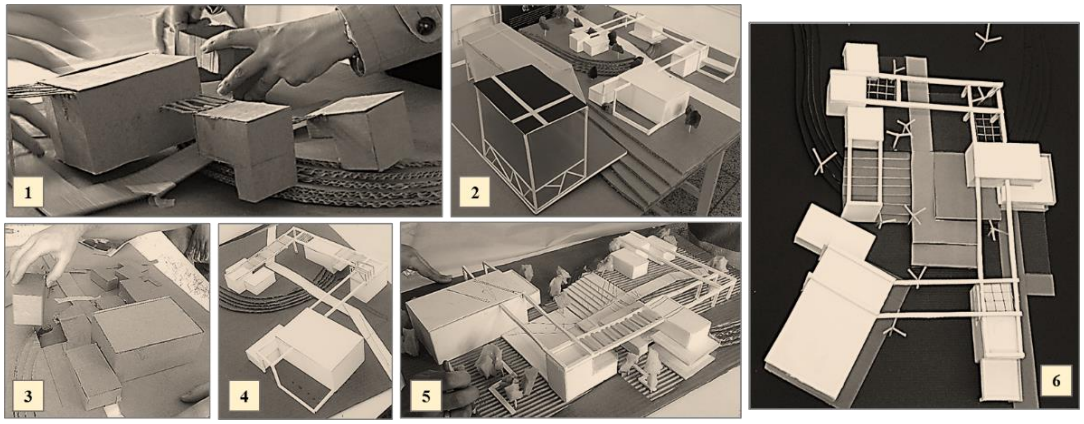


Figure 4.12: Sample 3, FARC 102 Project Design Process

Figure 4.13 shows an example of the contextual relationship between the design and its project site. The concept of the project was “Isolation” which was reflected by the students in a proper way by using only one rectangular shape on the project site. The student tried to present and locate the mass in a way to integrate his design with the existing level differences in the project site in order to define the contextual relationship between one rectangular shape and its surrounding natural context. The mass like a spot in the nature, has properly exhibited the student’s design idea. However, the single shape had created some challenges for the student in the function distribution and plan organization stages.

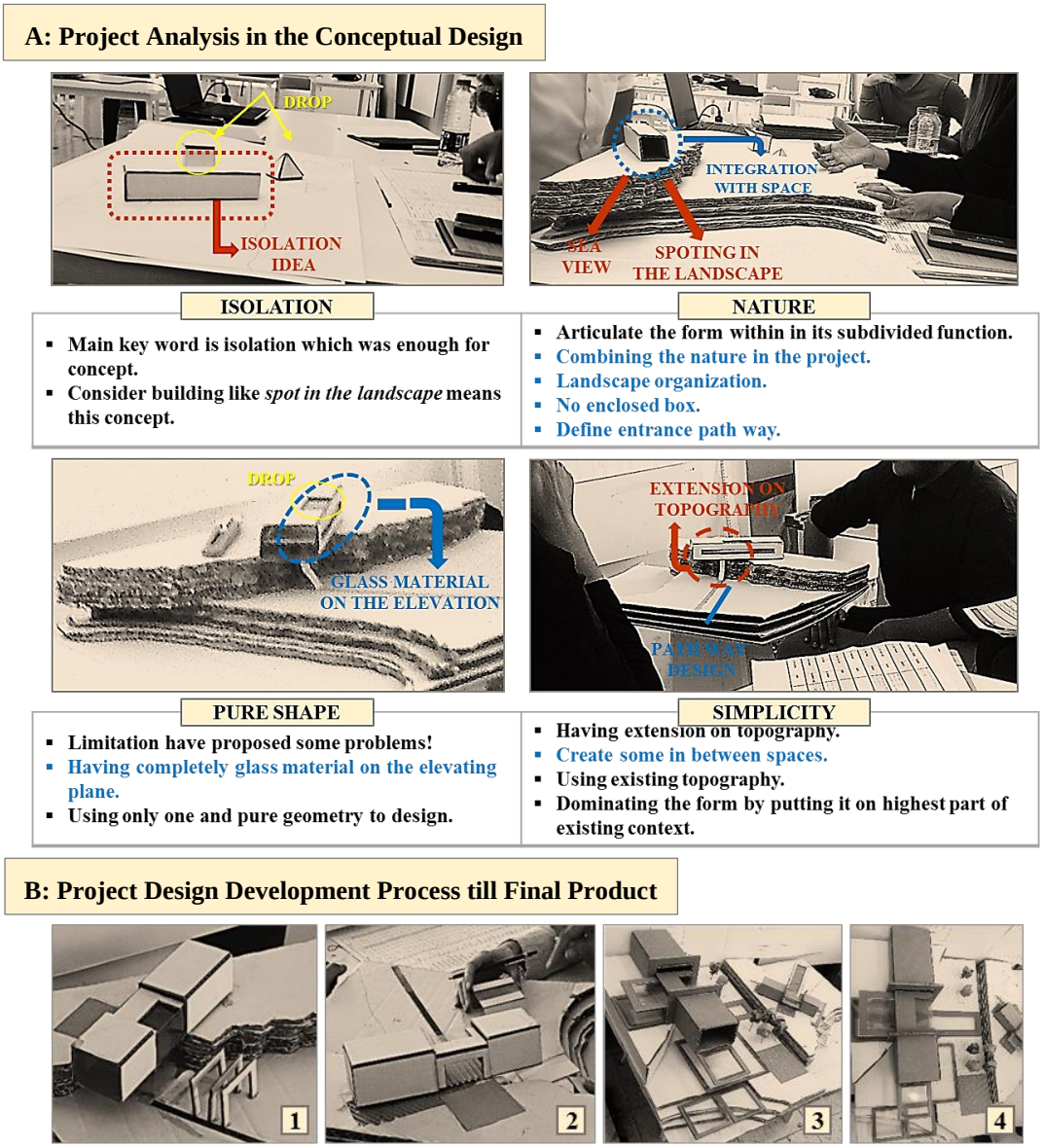


Figure 4.13: A: Analysis of Sample II, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

Putting only one simple geometric shape on the project site was usually observed among the FARC 102 term projects. Students presented some bulky boxes or circular shapes which had been connected with each other through their edges. Instructors tried to convince students to break the regular shapes and play with the masses in order to produce the innovative architectural forms. Figure 4.14 presents a sample project composed of the one form which was spread and divided to three smaller shapes and then, reoriented in the project site. The pathway and entrance parts were not designed and could not be understandable for the user to follow. The extroverted form has the radial organization with one circular shape in the middle. The integration between the masses has not properly defined and they are somehow fragmented and away from each other. The masses have angular edges which might cause some problems in plan organization for the student. The existing topography has not linked to the design. Using same ceiling heights has created a monotone definition for the overall layout of the design (the responsible student for the project had not participated in the studio sessions after the midterm jury).

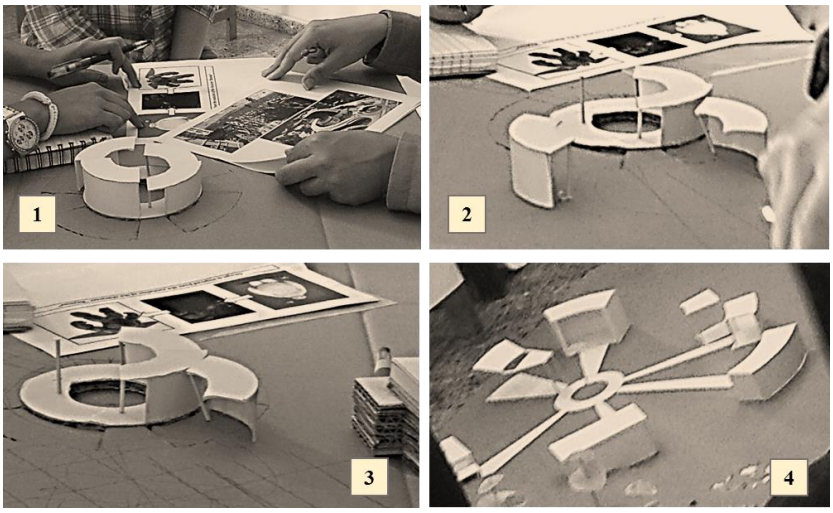


Figure 4.14: Sample 4, FARC 102 Project Design Process

On the other hand Figure 4.15 displays a design project which included three different geometric shapes in the design and each of them has presented a different order and architectural language. The introverted form on top of the topography need to be

divided and spread over the site. Selecting one form among all three proposed shapes should be made by the student and developing that form according to the architectural design instructions were expected to be accomplished throughout the semester. The most desired form suggested by the instructors, was the form on the topography. Trees in compared with mass are huge and out of scale. So, reconsidering the human-scale in design seemed essential. The pathway design was proposed by the student, but have been not too much defined to conduct peoples to the inside. However, the sense of the unity and proportion are somehow comprehensible in the design.

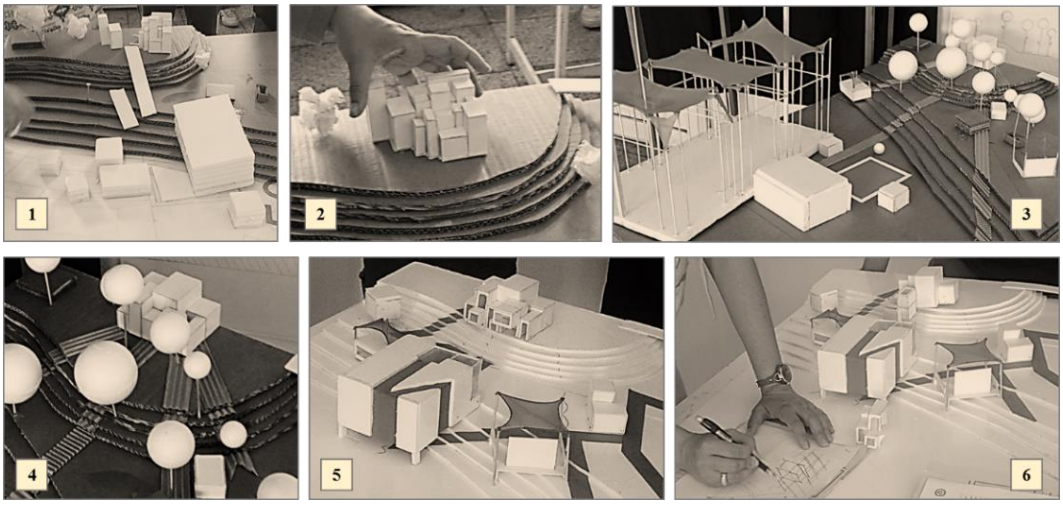
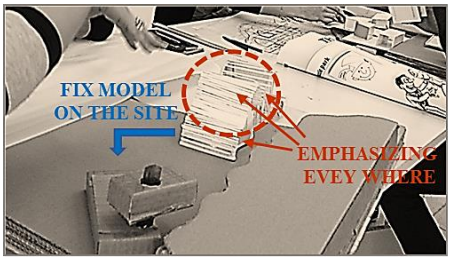
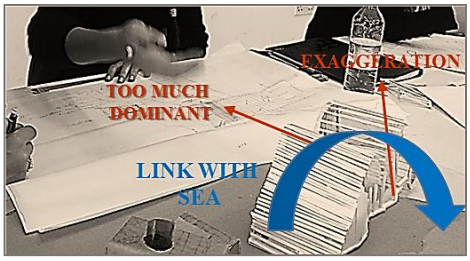


Figure 4.15: Sample 5, FARC 102 Project Design Process

Figure 4.16 reveals too much exaggeration and emphasizing in designing. The concept of the project was “adventurous” and the students has done overmuch exaggeration on the design model for presenting the idea.

A: Project Analysis in the Conceptual Design



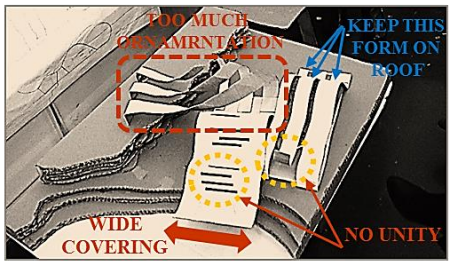


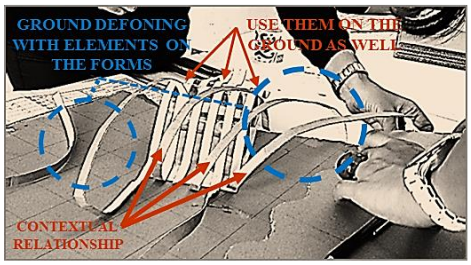
DECORATION

- Multiple emphasizing.
- Using the opportunity of level difference. (topography)
- Attach the model on the site with strong reason.
- *Make design instead of ornamentation.*

EMPHASIZING

- limit enclosure while defining it.
- Link with sea.
- Emphasizing just in single point NOT more!
- Create some semi open spaces.
- Interaction of form with ground is very important.





LESS IS MORE

- Emphasizing every where. (too much)
- Very wide covering martial.
- No unity and harmony in the form.
- Passage were not clear.
- Functional organization?

INTEGRATION

- Using some linear elements on the ground as well as on composition. To make integration with surrounding space. (form and site relationship)
- Defining the entrance part by those linear elements.

B: Project Design Development Process till Final Product

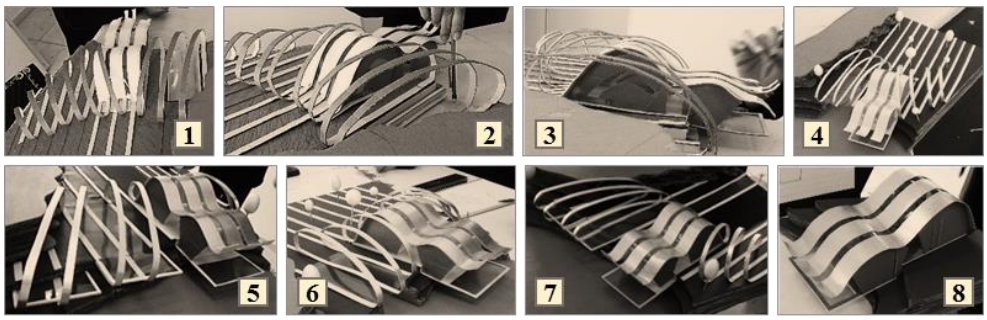


Figure 4.16: A: Analysis of Sample III, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

Figure 4.17 demonstrates a basic design project that has been designed by using the same and not well-defined geometric shapes in its composition. The masses are almost fragmented and bulky. The design has required to define the pathway for connecting the masses and breaking the bulky masses in order to give them an architectural definition. The general design layout shows multiple emphasizes, by ornamenting the

masses with the linear elements at the topes which made the design incomprehensible. Having some openings, on the bulky masses, toward the natural context could create the contextual relationship in the project. In the interior plan solutions and the functions organization stage the student might be faced with difficulties in the design. The entrance parts are weak-defined and not enough recognizable. However, repetition, harmony and symmetry orders are observed in this project.

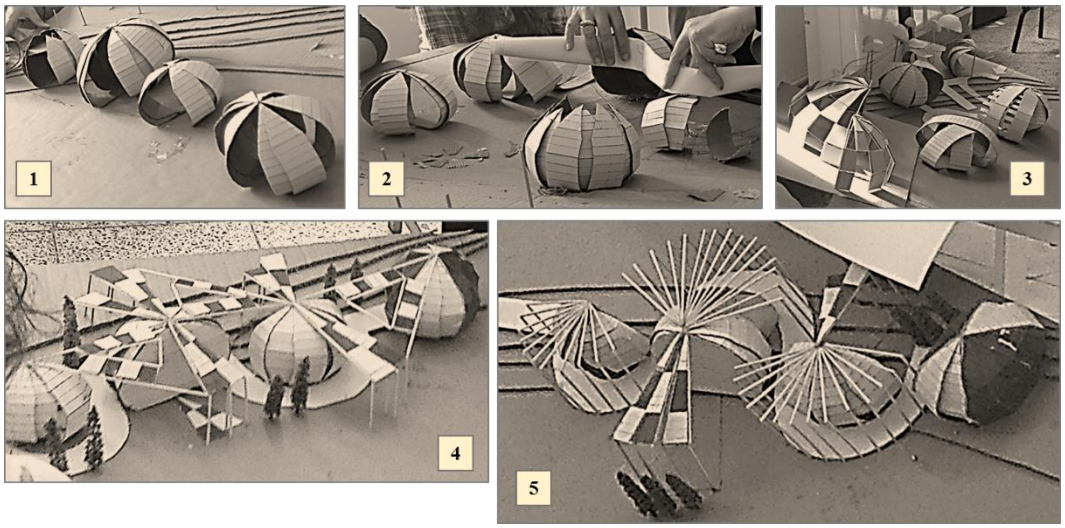


Figure 4.17: Sample 6, FARC 102 Project Design Process

Some students in FARC 102, used simple masses on their designs and tried to define them within the composition by employing some vertical and horizontal linear components as the defining elements in their designs. Figure 4.18 indicates one project that student used some pure circular geometric shapes in her proposal and employed some determinant linear elements in the vertical and horizontal direction to define the semi-open spaces and entrances. The linear elements define the pathway and conduct visitors within the complex. The project has two separated plazas at the middle of the circular shapes. The existing topography was used to dominate and emphasize the huge mass. The radial organization for the functional and non-functional elements was used. The general layout of the project, presents the unity, order, continuity, repetition dynamism and harmony.

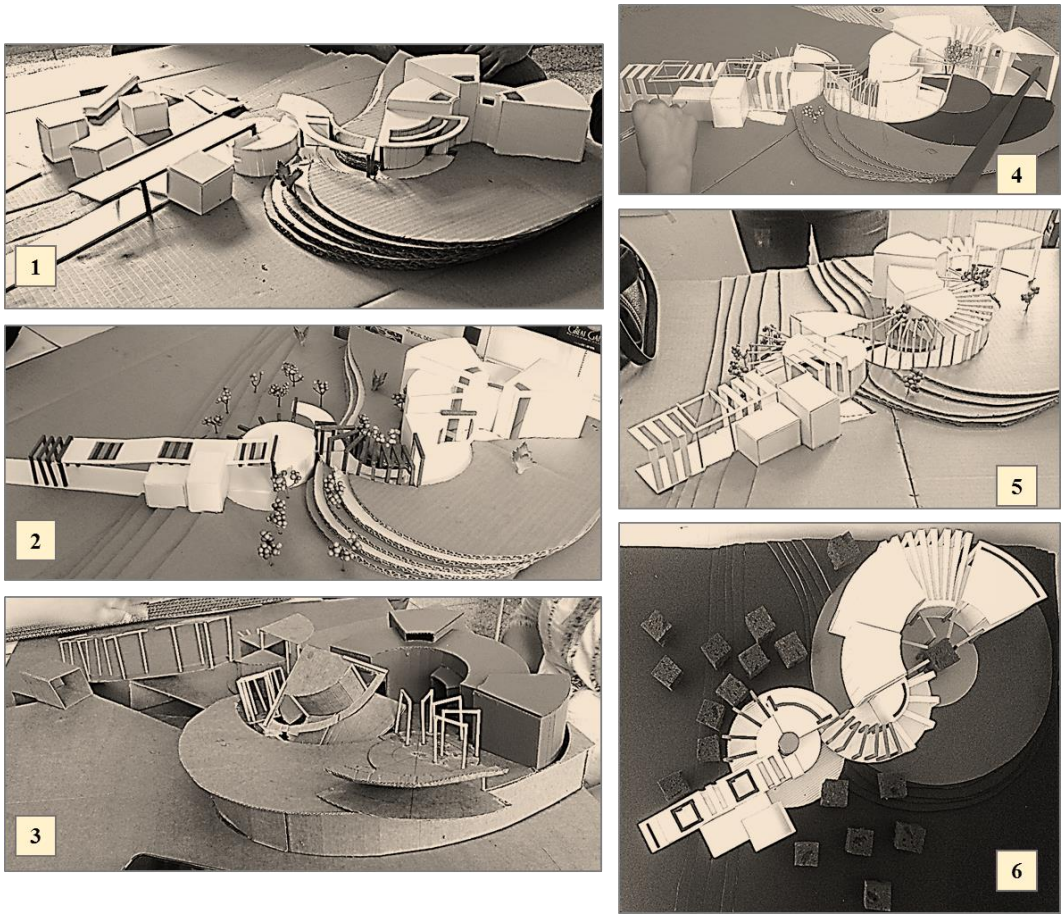


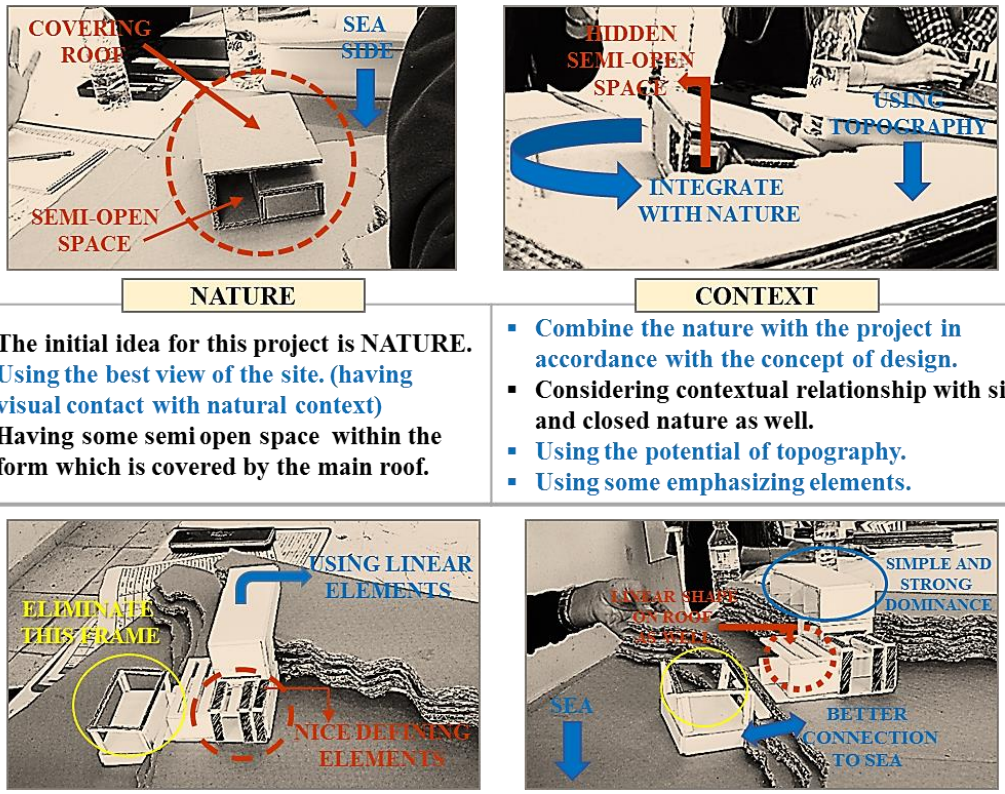
Figure 4.18: Sample 7, FARC 102 Project Design Process

Students' preference to use simple geometric shapes in the design was quite understandable through their design models. Most of the students integrated pure rectangular shapes in their designs, and on the other hand, some students used curvilinear masses in the composition of their proposals. In general, the forms had been kept simple as much as possible, according to the instructors' critiques in order to be closed to the real architectural designs and reduce students' challenges through their design process. Thus, FARC 102 students were suggested to do not make too much decoration on their designs.

Figure 4.19 also demonstrates one of the term projects in FARC 102 design studio, which has been composed of the simple and pure geometric shapes with the proper linear defining elements to create the architectural language for design. Generally, the

design has been generated by employing simple geometric shapes and emphasizing on some parts of the composition with the linear vertical elements.

A: Project Analysis in the Conceptual Design



NATURE

- **The initial idea for this project is NATURE.**
- **Using the best view of the site. (having visual contact with natural context)**
- **Having some semi open space within the form which is covered by the main roof.**

CONTEXT

- **Combine the nature with the project in accordance with the concept of design.**
- **Considering contextual relationship with site and closed nature as well.**
- **Using the potential of topography.**
- **Using some emphasizing elements.**

DEFINING

- **That frame on the roof is better to eliminate.**
- **Having nice vertical elements on entrance part which seems good to use them on the other parts of the composition.(creating unity)**

DOMINANCE

- **Dominating one part by attaching it on existing topography.**
- **Having some linear elements on elevation plane and also on roof create harmony and unity. Enhance this issue on the other parts of the design.**

B: Project Design Development Process till Final Product

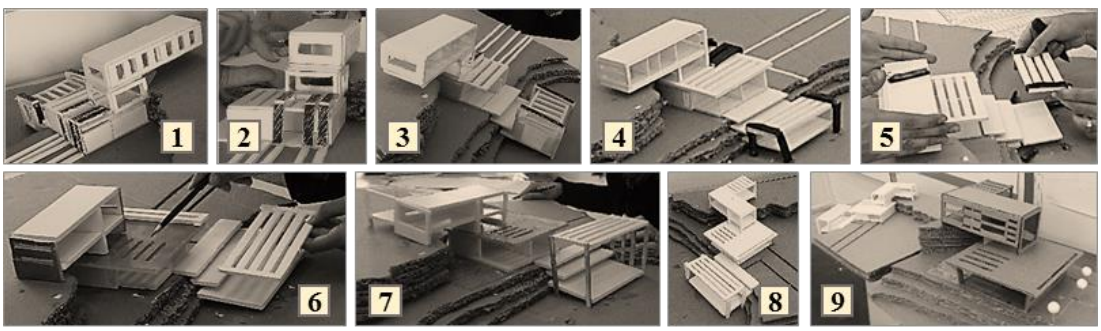


Figure 4.19: A: Analysis of Sample IV, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

FARC 102 term project asked the students to define some semi-open and open spaces in their designs. Students usually designed these spaces by employing some horizontal overhanging planes that were attached to some masses within the composition. They also created some linear shapes as have been used for the defining elements on the planes in order to make harmony and unity throughout their proposed designs. Such an opening in design effects on lighting and sun radiation, which named as the shading devices for the environmental and climatic considerations in architectural designs.

Figure 4.20 reveals another FARC 102 students' design project, which has been designed by using some rectangular masses with almost the same size and linear rectangular planes to cover the project open-spaces. The pathway was defined in such a way to conduct people through the whole complex. The main function was located on top of the topography in order to be dominated in the design. In the final design, the student tried to attach each mass by their edges with each other in order to make integration and harmony between the fragmented masses in the design. However, the overall layout of the project exhibits the linear planes and rectangular shapes, which create somehow unity order in the design.

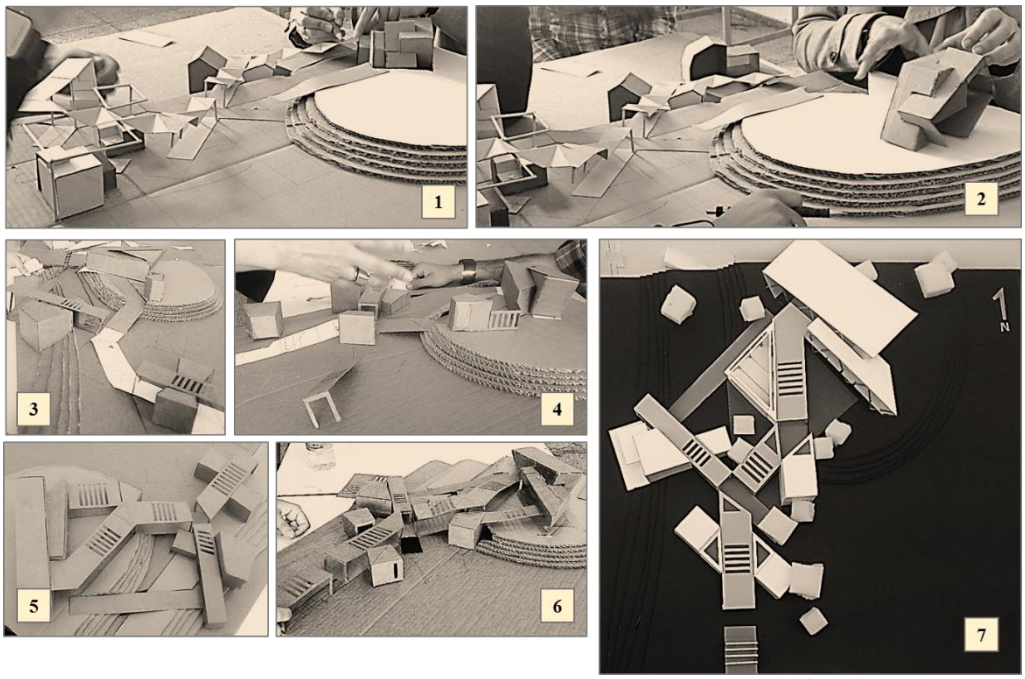


Figure 4.20: Sample 8, FARC 102 Project Design Process

Figure 4.21 displays an example of using circular and rectangular masses with the linear defining elements in the composition. At the beginning stage of the project design process, the responsible student had proposed a conceptual model which was mostly composed by the circular and curvilinear masses in its design. But, in the final jury, the student had submitted something different from her first proposal.

At the first she used circular and curve shapes in her design, but through the design development process until the final product, she was omitting the curvilinear shapes (based upon her own autonomous decision). And surprisingly, used somehow triangular shapes with sharp edges in the design. The four square frames as the overhanging planes had used in the project, which changed the design layout to the linear rectangular shapes and planes. And as the result, the solid and void relationship has been created for the project. The Figure demonstrates variation of the student's design idea between her initial concept and final design product through the design process. However, the intersections of the overhanging square planes create the meaningful architectural language for the design.

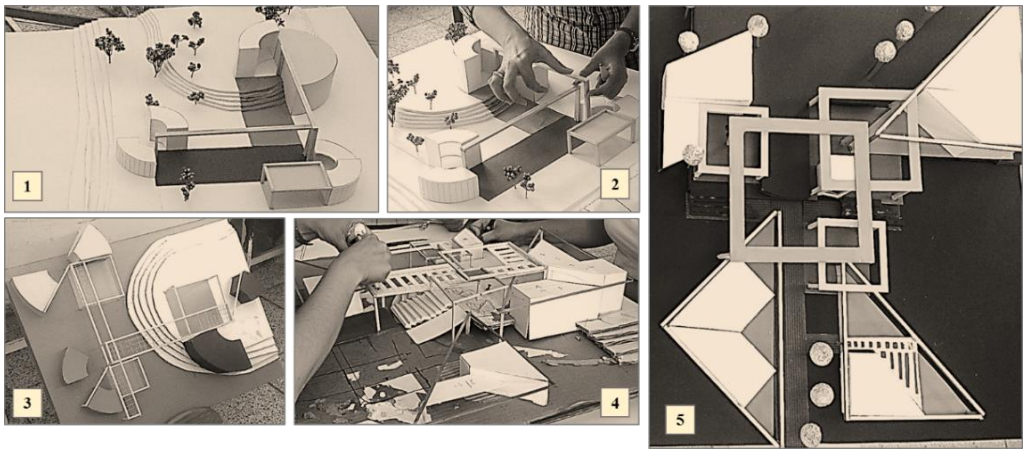


Figure 4.21: Sample 9, FARC 102 Project Design Process

Figure 4.22 shows another example of students' design project composed by combining circular shapes and rectangular overhanging frames in the design. The

project has a simple and almost similar geometric shapes in its design with the square overhanging planes to define the semi-open spaces in the middle of the composition.

Repetition of the form and void pattern on the top of two circular shapes creates unity and similarity in the design. The pathway and entrance parts for masses was not clearly defined, even the main entrance part of the complex was not enough designed to invite people. By some means, student integrate the existing topography in his design.

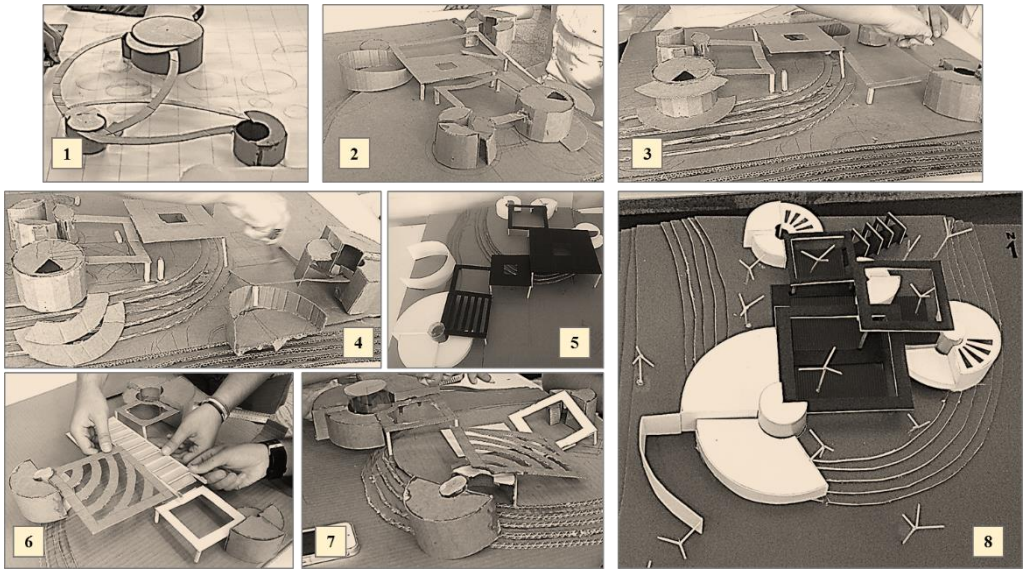


Figure 4.22: Sample 10, FARC 102 Project Design Process

Some of the students considered the central organization and radial organization for their design project by defining one mass in the middle of the project site and organizing other masses around it. Figure 4.23 presents one example of this type of organization in the architectural design in a proper way. The project was composed with a one designed open-space area in the middle and the surrounding masses around it. The student by integrating the existing level differences of the site to his design have obtained a good hierarchy and order in the overall layout of his project.

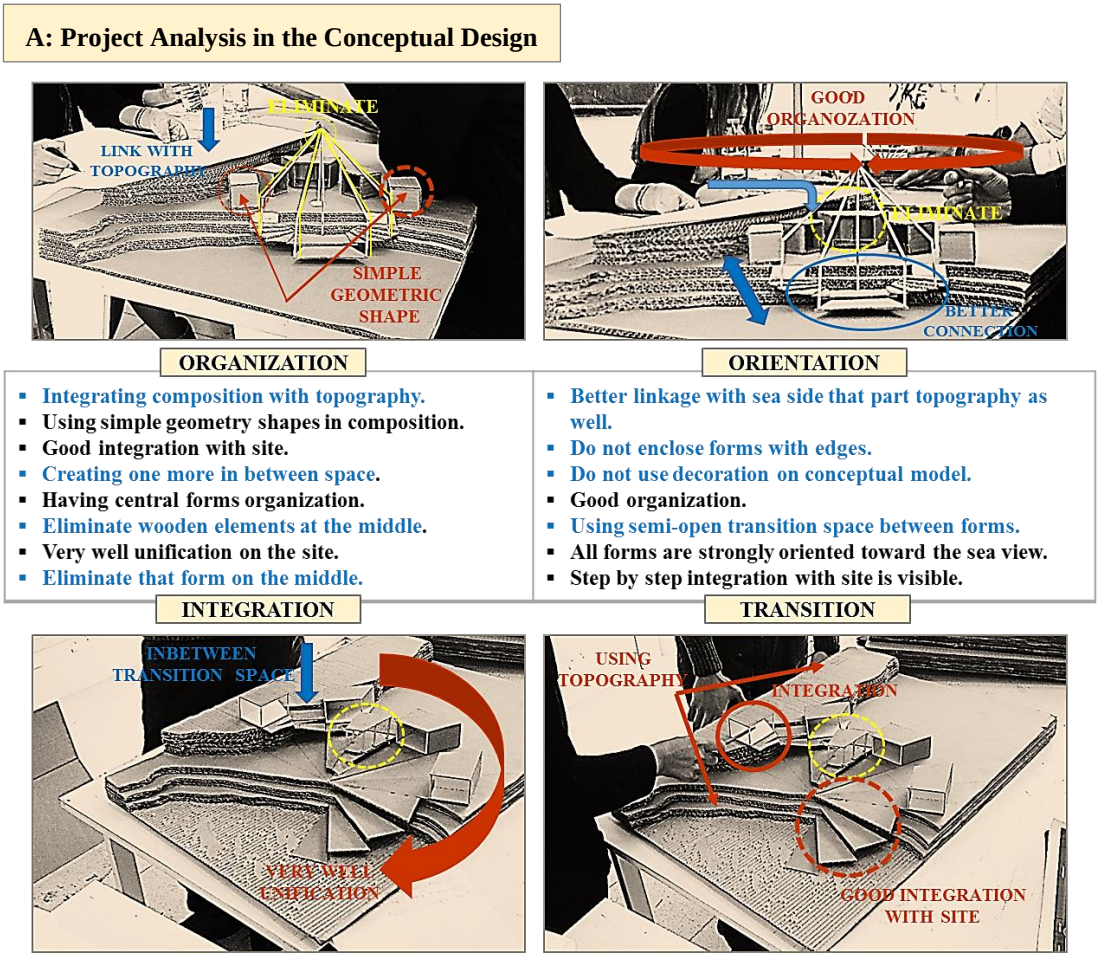


Figure 4.23: A: Analysis of Sample V, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

Figure 4.24 indicates another radial organization applied in the FARC 102 project. The project contains one dominant shape in the middle, which seemed too huge in the overall layout of the design and had been surrounded by the other masses. At the beginning, the student did not employ the natural condition of the site (topography) in

the design, but through the project development process the middle shape was changed and the topography has been integrated in the design.

The surrounding forms interlocked each other and their in-between spaces needed to be larger. Thus, some vertical panels were added between masses according to the instructors' critiques to expand the space between the masses. The project had tensile structure at three parts of the design which were not appropriate for the overall layout of the project. However, considering different roof heights for the masses create dynamism for the design (the project had not been submitted for the final jury).

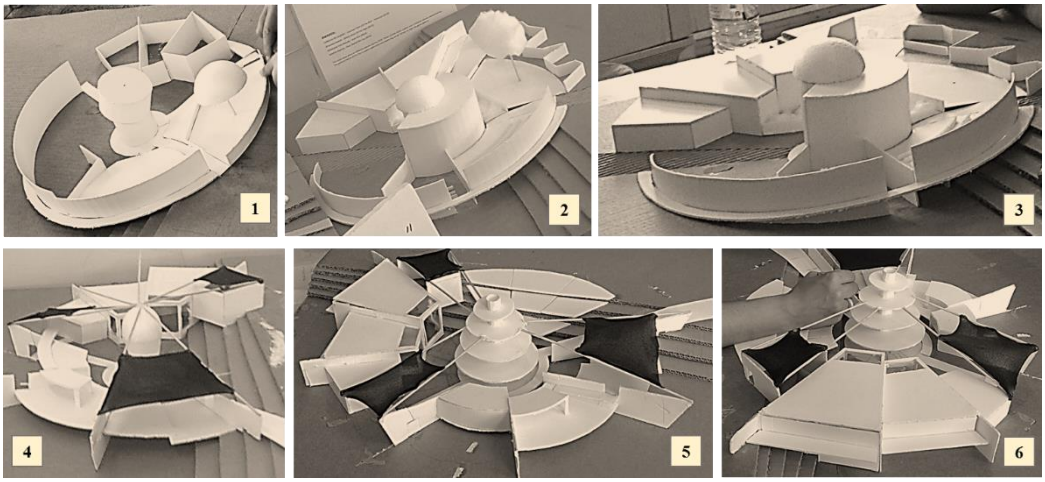


Figure 4.24: Sample 11, FARC 102 Project Design Process

Some of the basic design students preferred to use cracked lines to create shapes for their design projects instead of using basic geometric shapes. Figure 4.25 shows a good example of using cracked lines in designing masses in the composition. The project also presents the well-defined figure ground relationship in its overall layout. The location of the masses in the site creates proper relation between level differences and the designed areas. The student also used the sea views in his design by providing some opening toward that part. The linkage between the design and the seaside was happened through the planes which had been designed with the cracked lines. In general, mass organization and determinant elements in the design were used in a way to catch dynamism and link the natural quality of the site within the composition.

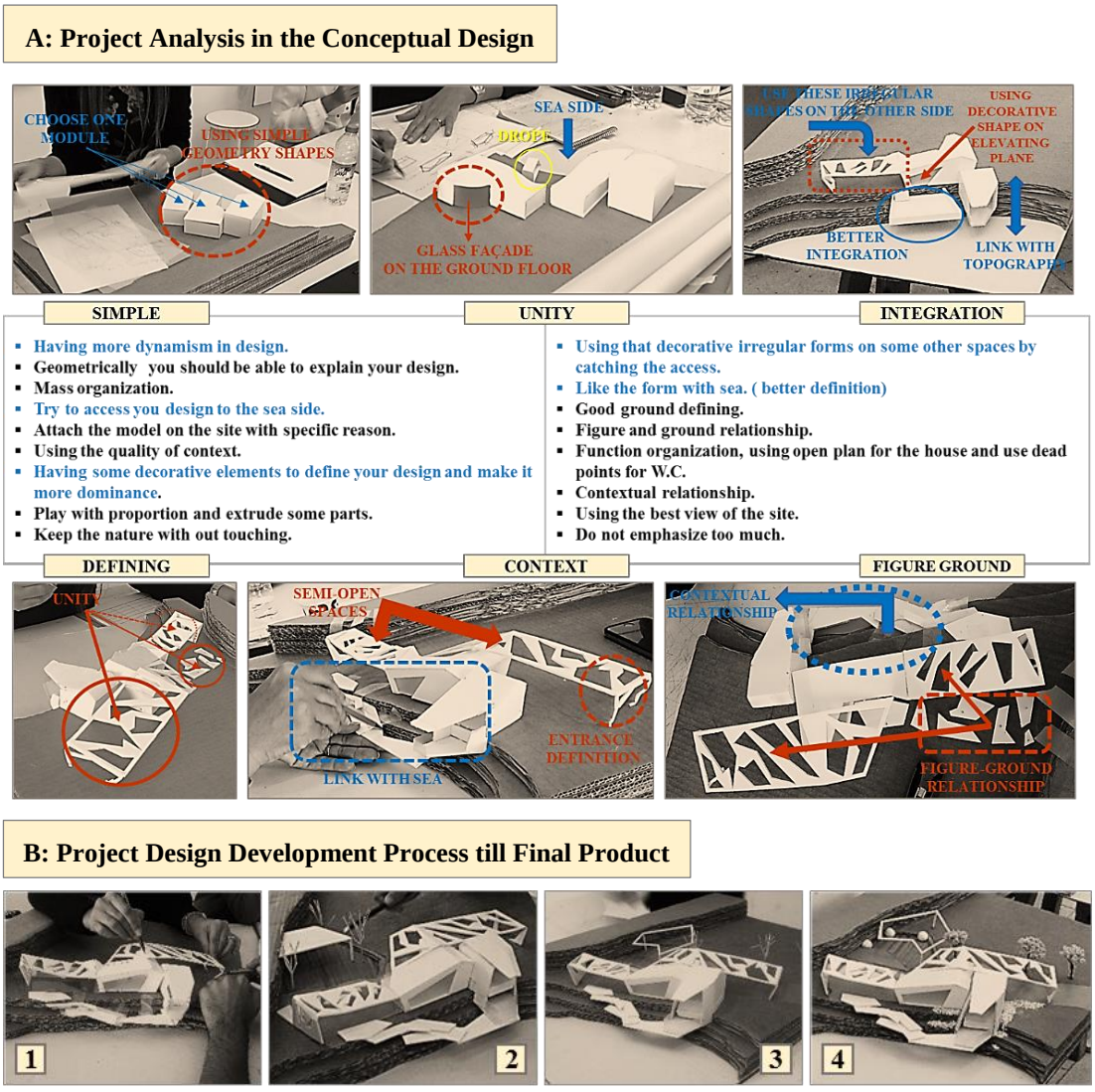


Figure 4.25: A: Analysis of Sample VI, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

Figure 4.26 exhibits the other project of the FARC 102 introductory design studio, which has been composed by the cracked lines and irregular geometric shapes in the design. The project has very long shapes with the angular edges and interlocked masses. The forms almost block each other by their position on the site. A narrow and long pathway in the middle of the design, invites people to walk through the site and visit the whole sides. The angles of shapes might cause some problems for the student in the plan organization and providing proper interior plan solutions. The entrance part had not defined very well. The project needs to have transparency (glass wall) in-between the forms in order to improve the quality of the in-between space. However,

there is a good relation between the student's structural model and the proposed form. Also, some orders like proportion, unity, continuity, harmony and dynamism are comprehensible in the project.

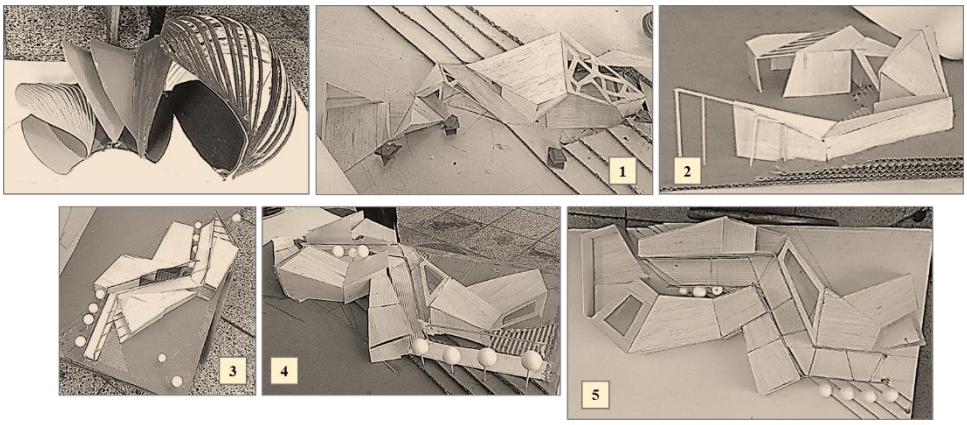
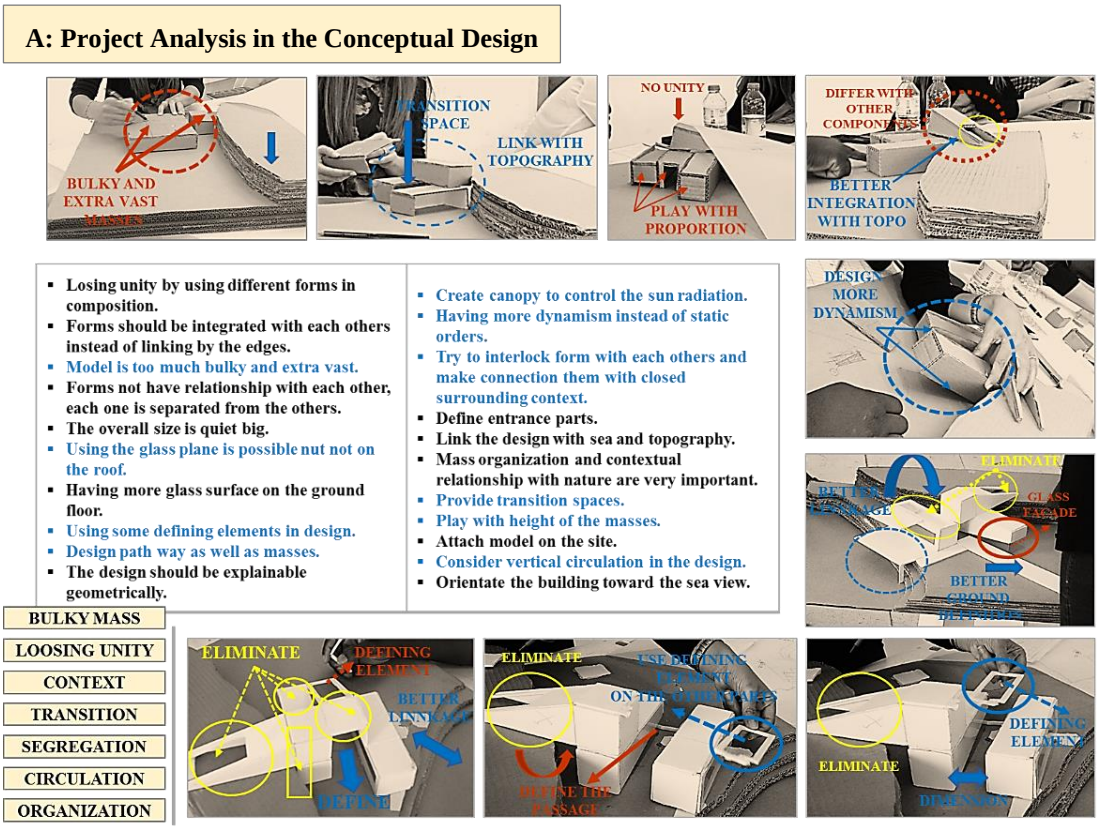


Figure 4.26: Sample 12, FARC 102 Project Design Process

Losing unity in the design was one of the main problems for the students to present and develop their design ideas. Figure 4.27 displays one project that has bulky masses and no integration between the forms. Such problems, make design process longer than usual for the students and also create some dilemmas on their decision-making process.



B: Project Design Development Process till Final Product

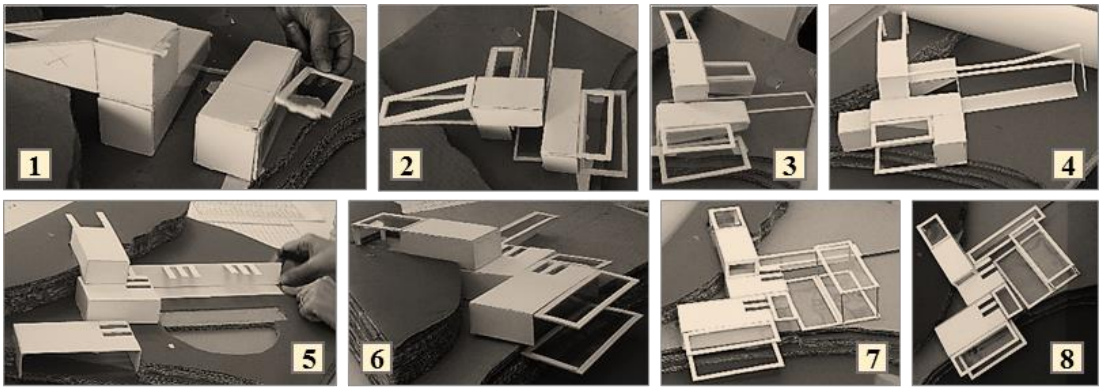


Figure 4.27: A: Analysis of Sample VII, FARC 102 Term Project in the Conceptual Design Stage, B: Project Design Development Process till Final Product

Figure 4.28 indicates the other example of the losing the unity in design. The student used modular shapes in her design and tried to achieve a unity by repetition of the modules, but the overall organization of the project did not present her expectation. Actually, the project shows more repetition instead of unification. The pathway has not defined properly and the entrance parts were not well-designed to invite people. The project has weak workmanship in terms of drawings and design model. However, the solid and void relationship is somehow comprehensible in the design through defining some grid frames in the square shape as the overhanging planes on top of some masses in the composition.

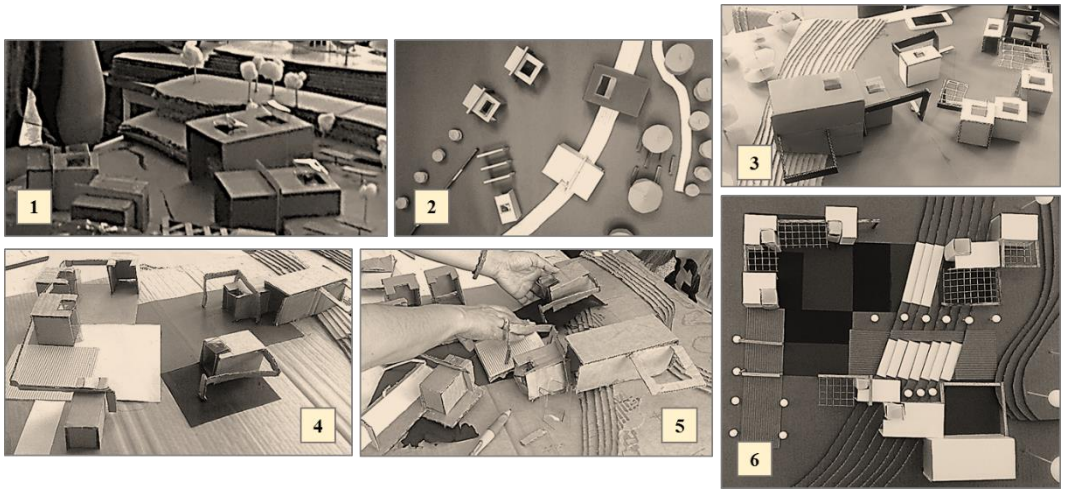


Figure 4.28: Sample 13, FARC 102 Project Design Process

In general, it was obvious that FARC 102 basic design students had some ideas in their minds, but their design models were not promising their abstract design ideas very well. For example, in one project a concept was reflection, but the model did not present any reflective elements and the form was completely rigid with no glass wall or water element in its design. In some projects, students did too much exaggeration (figure 4.16) on their design models, on the other hand, some models were presented with a very simple format of the students' design concept (Figure 4.27). In almost all the cases, instructors changed design models to give some new design ideas to the students. They also, tried to give students some clues to think architecturally and teach them to play with different aspects of the forms (size, height, angle and etc.) in order to achieve formal architectural designs at the end of the semester.

Throughout the semester, FARC 102 students have varied difficulties in their form generation process, design development process and the final design. All the processes have been improved through the instructor's critiques, juries and reviews. During the direct observation of the proposed case study (FARC 102) some common difficulties have been realized such as;

- Having doubts and hesitation to reflect their design ideas on their design models.
- Neglecting topography in the design.
- Having some problems and difficulties in the plan drawing techniques, the way of drawing sections and elevations as well.
- Having trouble with the plan organization and defining functions for the masses.
- Mass organization problems, since most of the form were introverted mass.
- Overlooking to the architectural design principles through the design process.

EMU students in Introductory Design Studio (FARC 102) are trained to transfer their verbal thinking into visual models. Students in these design studios present their design ideas and knowledge within their conceptual drawings and design models which are

the primitive communication tools for them. Actually, students make communication with their design mentors through their externalized model of their design ideas such as sketches and design models. Figure 4.29 indicates the design process of the several FARC 102 term projects in Fall and Spring academic semester 2014-2015 in three different stages of the conceptual design, design development process and the final design outcome, which have been carried out by the EMU basic design students.

Figure 4.29: Samples of FARC 102 Term Projects at Three Different Stages of their Design Process in Fall and Spring Academic Semester 2014-2015 at EMU

Drafting projects at the beginning of the semester, present the miniaturization of a real environment in the smaller scale which sometimes might seem meaningless, but in fact they have significant value in students' professional architectural design. Indeed, these practices organize students' mind in a common way of architectural design. Because, FARC 102 basic design students are doing such practices for the first time, so having some difficulties through their design process is not an unexpected issue in their design process. They commonly are faced with different problems to generate, externalize, materialize, develop and then, to present their abstract design ideas. So, basic design instructors at EMU try to teach the primary design principles and methods to students in order to familiar them with the architectural design vocabulary, rules and elements through their design projects.

In general, introductory design students at EMU learn to present their abstract and intangible design ideas as the tangible and concrete design outcome through their project design process. Moreover, the students might be faced with a dilemma to visualize their mental imaginaries. Thus, this stage is the most problematic level in design education for training the critical-thinker designers and creative decision-makers to design the innovative architectural forms.

4.2.2 Students' Questionnaire Result

During the observation period two times questionnaire (one time in each academic semester; Fall and Spring semester 2014-15) had been distributed totally among the 80 FARC 102 basic design students at EMU. In order to understand students' capability, perceptions and concerns on the transformation of their design ideas to the appropriate architectural design product and also, to realize their difficulties throughout this process (Appendix, D). Totally, 80 basic design students at FARC 102 design studios convinced to participate in the research and answer the questions. The questionnaire contained varied types of questions (open/closed-end, dichotomous, Likert scale, multiple choice and matrix). The corresponding responses for each

question have been visualized in different formats such as bar charts, mean graphs and pie charts and have been contributed to the study.

Figure 4.30 indicates the students' satisfaction level of their design studios condition. It reveals that 68% of the students were positive toward their physical condition and did not feel any negative impact from it. 30% of students were complaining about lack of stools and empty tables and undesired light condition in their design studios. They believed it creates kind of difficulties for them to work in the design studio actively which also decrease their productivity.

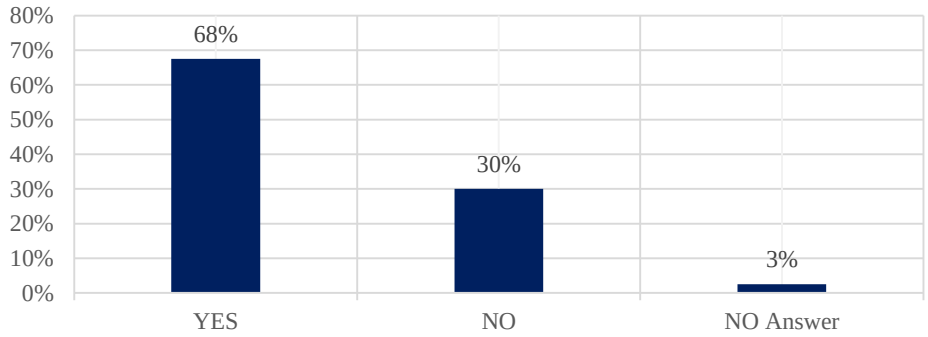


Figure 4.30: Students' Response to the Question "Are you happy with your design studio condition?"

Figure 4.31 demonstrates the students' expectations priority from their instructors. The highest number belongs to "motivating student's creativity" (55%), "teaching related design strategies with the project" (55%) and "letting students to figure out the proper design solution" (50%) which show students' willing to be self-dependence in their design process.

Since the Figure shows 55% of the students were expecting relevant design strategies to be taught to them and to be motivated by their instructors. Moreover, they were looking for support in finding design solutions rather than providing them ready solutions (25%). Interestingly, 35% the students preferred their design concept to be provided by the tutors.

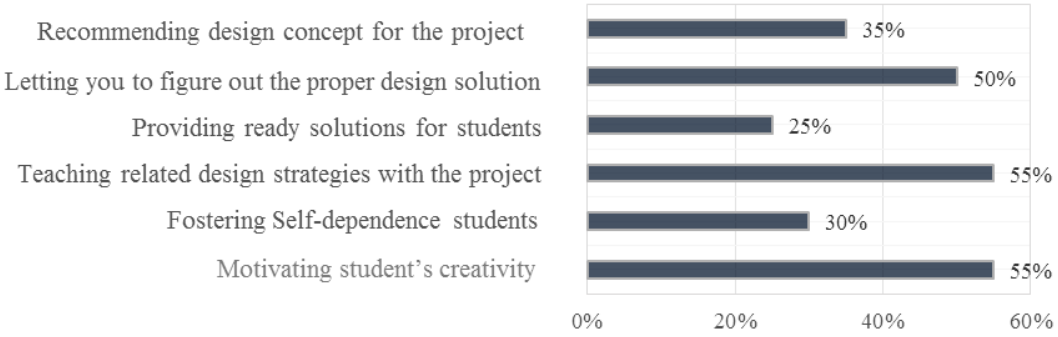


Figure 4.31: Students' Response to the Question "What do you expect from the design instructors through your learning process?"

Figure 4.32 indicates students' desire on finding solutions for the given problems through their design process, as the Figure reveals most of the students valued "Much" for the asked statement which proves the students would like to improve their self-dependence skill within their design process.

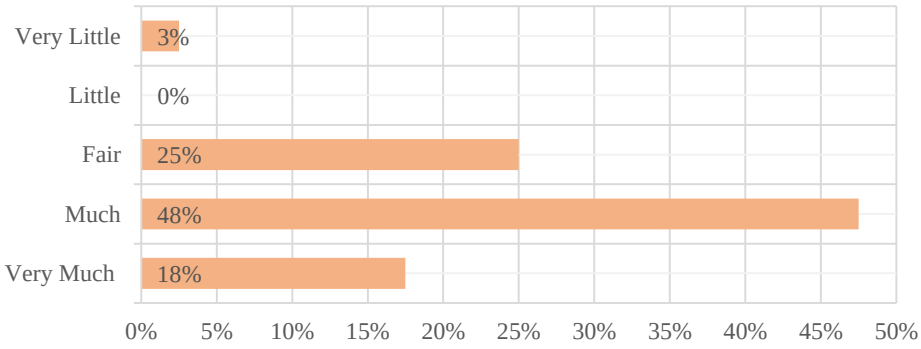


Figure 4.32: Students' Response to the Question, "How do you feel you needed to find your own design solution for existing design problem?"

Students' preference about tutors' contributions through their design process were asked and the results were shown in the Figure 4.33, as displays, most of the students preferred to have maximum contribution of their instructors in conceptual design stage (90%) and design development process (95%). Surprisingly, by getting close to the end of a semester, the students preferred to have less tutors' contributions (65%) at the final design product stage. This proves that students by gaining design knowledge and

receiving critiques during the semester are getting more responsible for their projects and the sense of self-dependence will be increased while parental relation still exists.

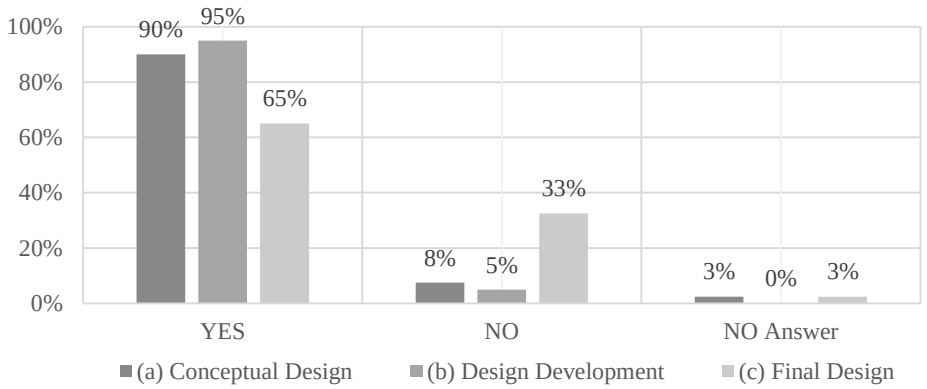


Figure 4.33: Students' Response to the Questions "Do you prefer to contribute with the instructor during the (a) conceptual design/ (b) design development/ (c) final design?"

Figure 4.34 shows, (72%) of the case study students preferred to have "individual-critique" while 16% of the students have chosen "group-critique" and 12% preferred "reviews" in their instructional process through architectural design education.

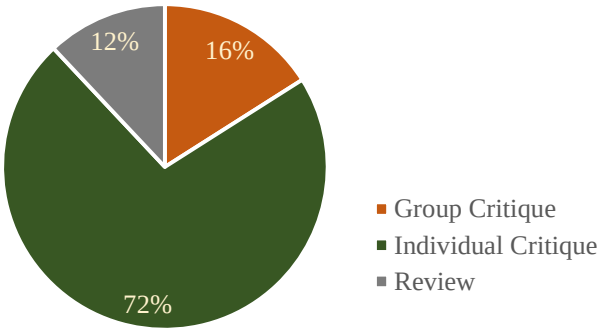


Figure 4.34: Students' Response to the Asked Question

Students' responses to the question "How much balance do you make between your design ideas and instructors' critiques?" have shown that they successfully created this balance from their own perspectives. As Figure 4.35 indicates obtained mean 4.23 out of 5. Of course, even if the students overestimated their abilities, still it shows their desire toward creating such balance which is very much important.

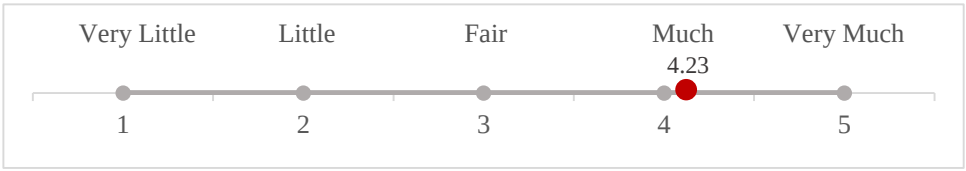


Figure 4.35: Students' Response to the Question, "How much balance do you make between your design ideas and your instructors' critiques?"

Almost half of the students believed their design could fairly (3.23) reach the juries expectations, Figure 4.36 evidences this statement.

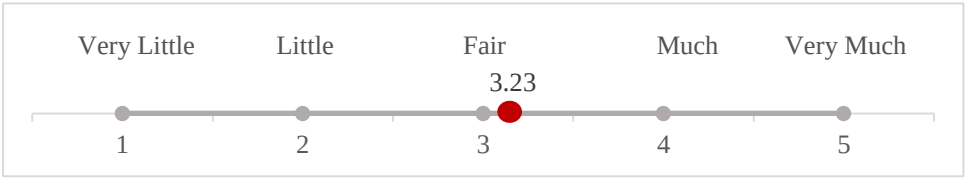


Figure 4.36: Students' Response to the Question, "Had your project reached the juries expectations in the midterm jury?"

As Figure 4.37 demonstrates, 75% of the students considered their final grade as the main indicator of "success" in their design process. The Figure also proves, students' grade obsession in their learning style rooted in their secondary educational system. However, a quarter of the case study students (25%) were not evaluating their success level through their grades, which might be perceived that they would study for learning not just for catching a grade.

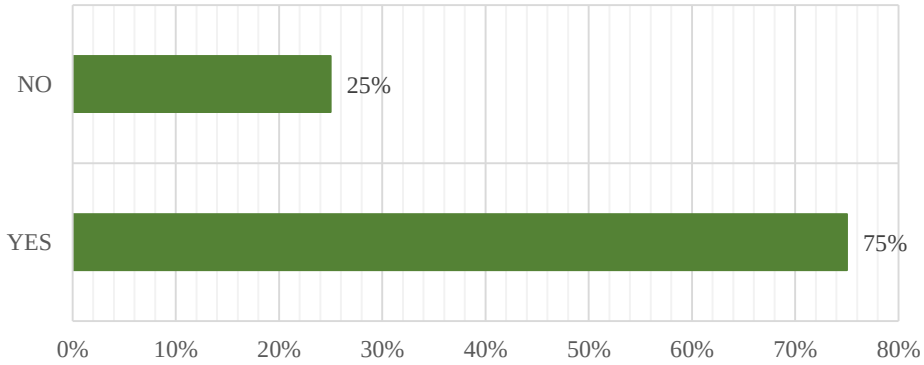
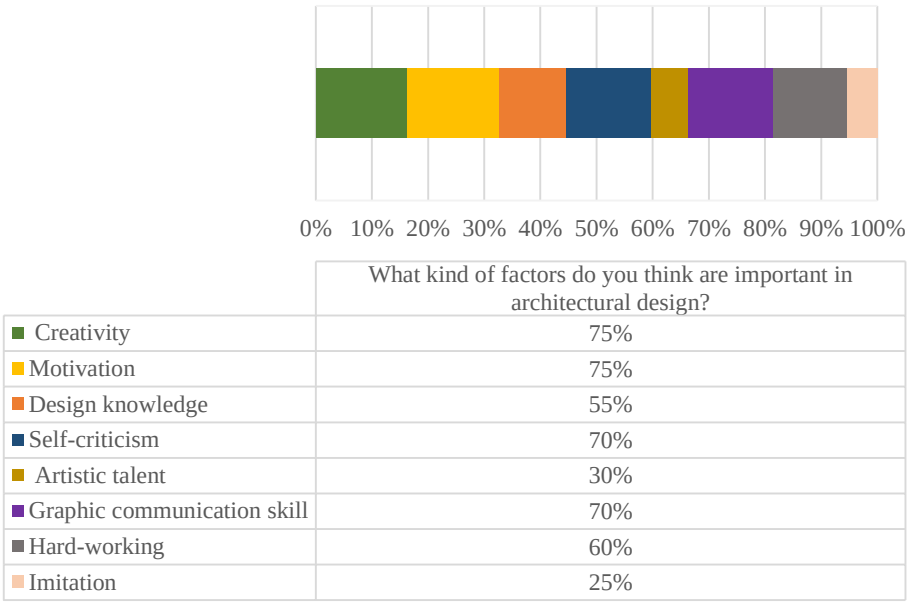


Figure 4.37: Students' Response to the Question "Do you consider your final grade as the main indication of "success" in design course?"

Figure 4.38 reveals, around 75% of the basic design students consider “creativity”, “motivation”, “self-criticism” and “graphic communication skill” as the most important factors in the design instructions. The Figure shows, first-year students’ desires and priorities about the important factors in the architectural designs, and according to their preferences the artistic talent of the designer has less importance than the designer’s creativity (30%). That’s why, designer’s creativity could be enhanced within his/her design learning and teaching style. So, being naturally a talented person is not the main important factor for the innovative architectural designs. The figure also indicates that students by gaining design knowledge at different stages of their design process, discovered having “design knowledge” and “hard-working” characteristics both, play fundamental roles in their formal architectural designs (60%). Interestingly, the students were aware that “imitation” within their design process reduces the unique value and exclusive characteristics of their designs (25%).



	What kind of factors do you think are important in architectural design?
Creativity	75%
Motivation	75%
Design knowledge	55%
Self-criticism	70%
Artistic talent	30%
Graphic communication skill	70%
Hard-working	60%
Imitation	25%

Figure 4.38: Students’ Preferences to the Question, “What kind of factors do you think are important in architectural design?”

In addition, the case study students stated that “creativity” has considerable positive effects on their design projects. Figure 4.39 indicates mean 3.88 out of 5 (Good) for the role of the creativity in the architectural design, from the students’ point of views.

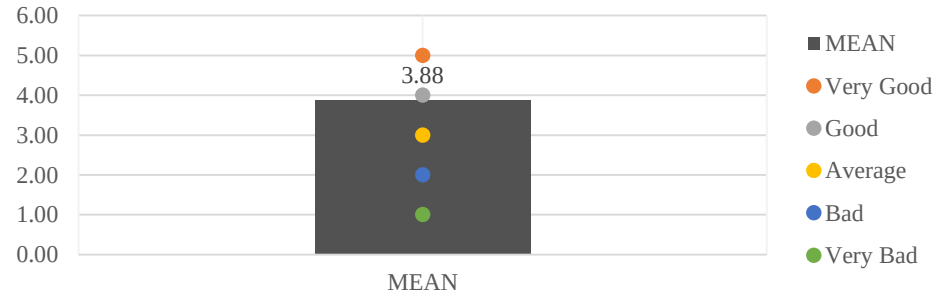


Figure 4.39: Students’ Response to the Question, “How do you rate the influence of your creativity on your design product?”

Most of the case study students believed that they did not have any problem in visualizing (63%) and developing (53%) their initial design ideas, Figure 4.40 reveals this statement. Since, the students throughout their design process have been supported by the instructors’ critiques so, their dilemmas have been solved and their skills to presenting design ideas are improved within their design process.

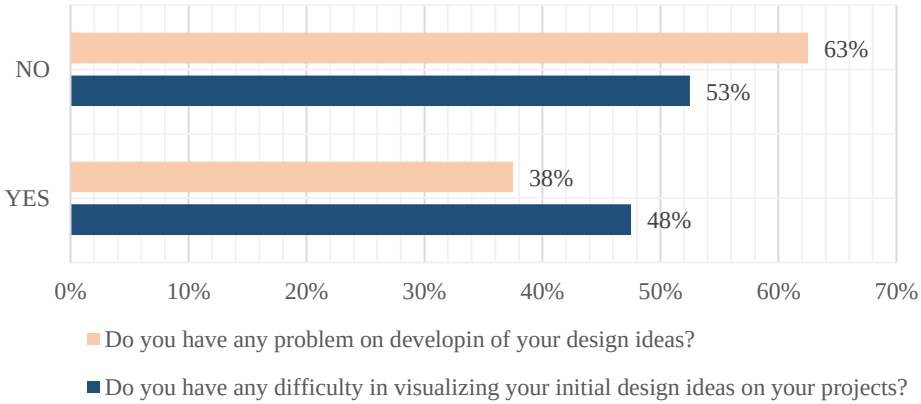


Figure 4.40: Students’ Ideas about Their Visualization Skills

In addition, Table 4.2 indicates that the students believed their design products presented their original ideas according to their own perspectives.

Table 4.2: Students' Given Value to the Question Named Statements

How do you value the following statements?					MEAN
Very Much (5)	Much (4)	Fair (3)	Little (2)	Very Little (1)	
The form is your ideal design product.					3.87
Your design meets your concept.					4.17
You are satisfied with overall quality of your design.					3.9

In general, students believed that they did not have too much difficulty in externalizing their design ideas and were successful (Much) to materialize their design concepts as the concrete outcome. Figure 4.41 shows mean 3.85 out of 5 for the asked question.

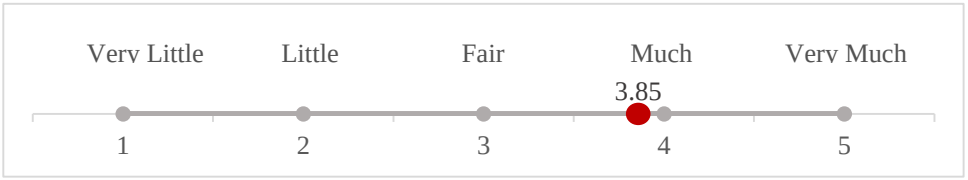


Figure 4.41: Mean Format of Students' Response to the Question, "How much successful you are in materializing your design ideas?"

More than half of the students followed their specific set methods for their proposed design by "making sketches", "model making" and "doing research on the similar examples", Figure 4.42 demonstrates that 58% of students defined the particular methodology for their design process. Also, 38% developed their projects without following their self-principles and were mainly based on the instructors' critiques.

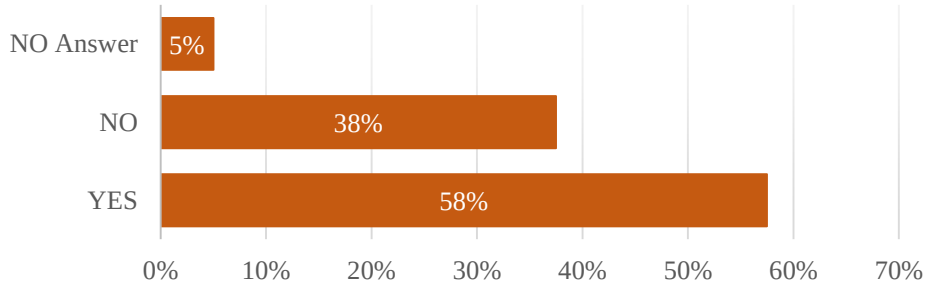


Figure 4.42: Students' Response to the Question "Have you set particular methodology for your design?"

Figure 4.43 demonstrates, almost all the case study students (80%) at the first stages of visualizing their design ideas preferred to use sketches and then, making their design model (50%) due to being better at thinking two-dimensional (sketch) and having little experience in three-dimensional thinking (model making). As the figure indicates students' priorities in perspective, elevation and section drawings are located in their latest preferences. And since, the students were newcomer design students, thus having some design skills leakages like two or three-dimensional drawings, it was expected.

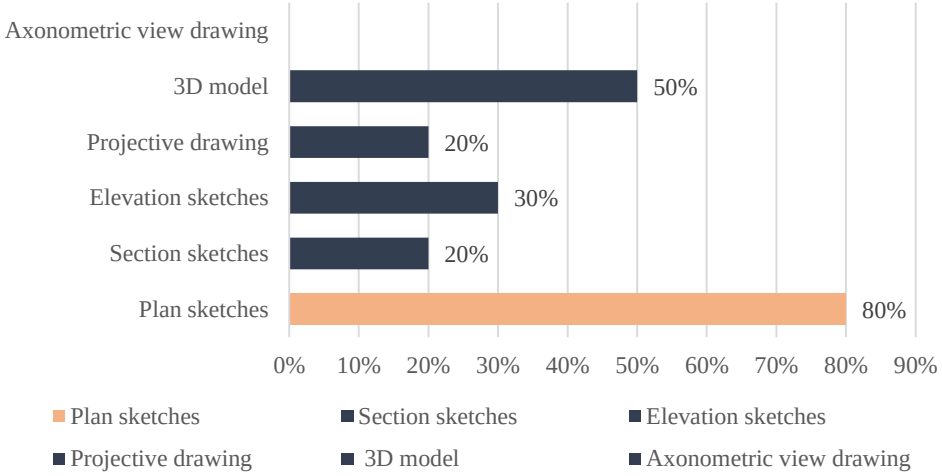


Figure 4.43: Students' Preferences to the Question, "Which method do you prefer to use about first depiction or visualizing your design concept?"

Furthermore, the students believed their drawing skills have "Good" influence on their communications with their instructors, Figure 4.44 presents mean 3.95 out of 5 for the asked question.

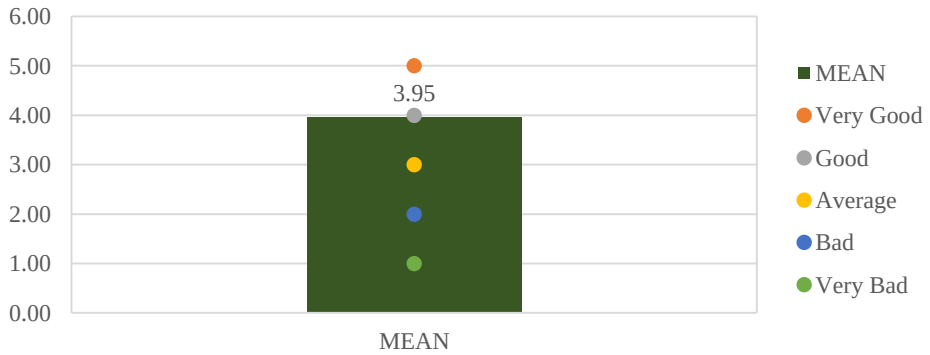


Figure 4.44: Students' Mean Response to the Question, "How do you value the effect of drawing skill to communicate with your instructor?"

As Figure 4.45 presents, most of the students preferred to employ their design skills like “sketches” (70%) and “model making” (60%) in expressing their initial design ideas. They also thought, doing “site analysis” at the beginning of the semester could conduct them to present their initial design ideas in a better way since, 50% of the students preferred to start expressing their design concept with site analysis. In addition, students’ tendency for having a self-dependence skill through their design process was perceived based on their interest to have discussions with their instructors (25%) in order to gain the proper knowledge to act a greater self-reliance and being a responsible student one who relies upon his/her gained design knowledge and skills through the design process.

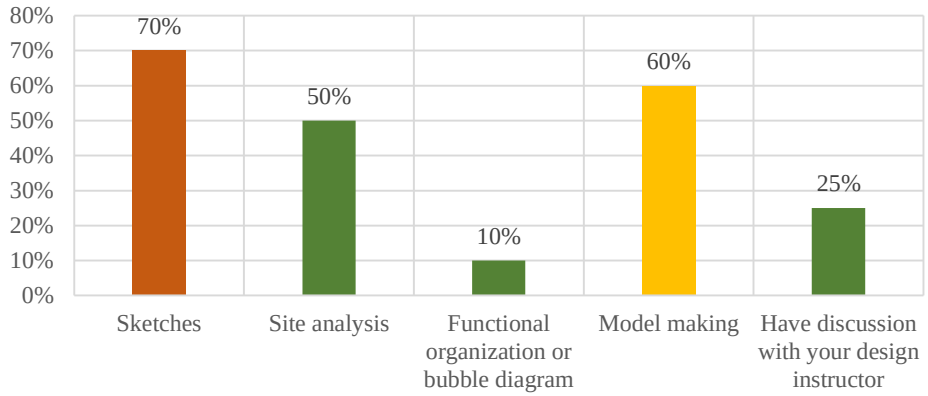


Figure 4.45: Students’ Preferences to the Question, “Which ways do you prefer to start expressing your initial design ideas?”

Figure 4.46 reveals the students’ priorities toward various factors within their design perception. Among all, “functionality of the building” has the highest value (65%) and the lowest one belongs to “conjectural relationship” with 25%, which evidence students through their design process, from the conceptual design stage till the final design product, gradually gain this awareness that functional characteristic of their proposed forms is the main issue to achieve a proper architectural design product. Further, “innovation” (50%) and “aesthetical issues” (45%) encompass on their second priority. Moreover, the students realized that presentation techniques through their

design process have less importance (30%) than the functional organization (65%) and innovation (50%) in the real architectural designs.

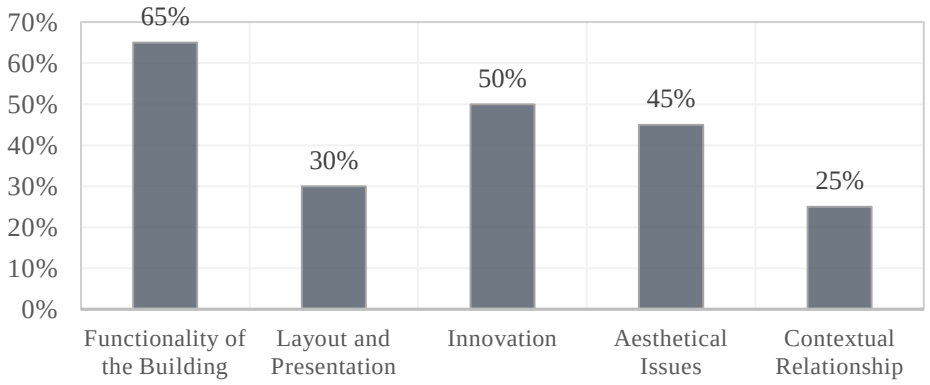


Figure 4.46: Students' Response to the Questions "Which factor is the most important once for you in design perception?"

Figure 4.47 indicates, around half of the students applied "Unity" (60%), "Hierarchy" (50%) and "Balance" (45%) on their design projects. As the Figure reveals 30% of the students chosen "Other Principles" like rhythm, intersection, interlocking, contrast, dominance, repetition, proportion, harmony and symmetry in their designs, based on the students mentioned principles in the questionnaire.

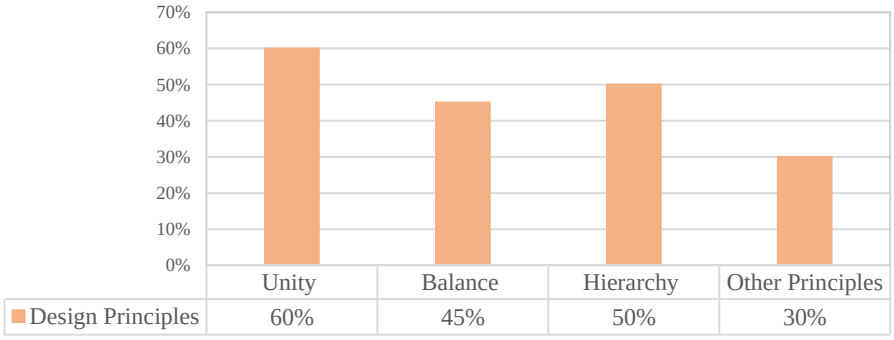


Figure 4.47: Students' Response to the Question "What kind of design principle do you see in your proposed project?"

Most of the students preferred to use “Basic Geometric Shapes” rather than “Irregular Shapes with Cracked Lines” in their design projects, Figure 4.48 shows the students gave mean value 4.18 out of 5 (Much) for the simple geometric shapes and 3.08 out of 5 (Fair) for the irregular shapes. The final design products of the FARC 102 design studio, also evidenced this statement.

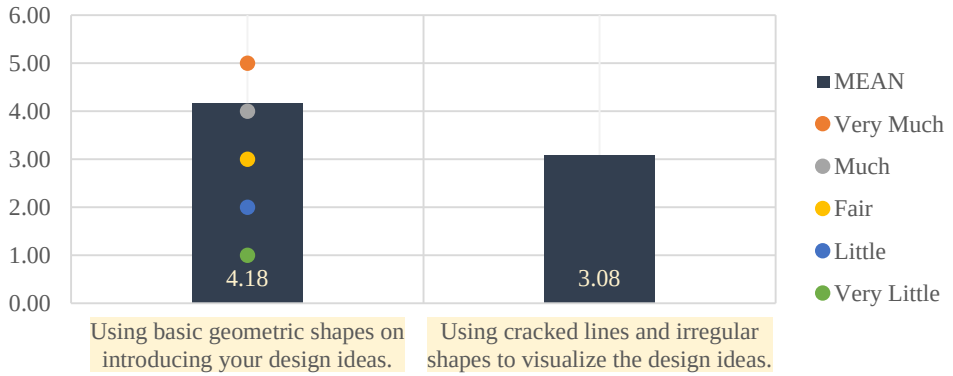


Figure 4.48: Students’ Preferences to Use Basic Geometric Shapes on Their Design

Having some lectures about the general design principles and elements in architectural design through the semester and also, providing relevant examples with the term project could be beneficial for the basic design students to gain and inspire design ideas for their design from various and reliable resources, Table 4.3 proves these statements.

Table 4.3: Mean Format of Students’ Given Value to the Statements

How do you value the following statements?					MEAN
Very Good (5)	Good (4)	Average (3)	Bad (2)	Very Bad (1)	
Impact of theoretical courses of design principles and elements on your form finding process.					3.83
Importance of lecture notes on your design learning process.					3.58
Influence of similar examples in relation to your design project to improve your design.					3.88
Impacts of those examples to transform your design concept into the design product					3.75

Figure 4.49 reveals that 95% of the students would like to take part in some workshops in parallel with their design studios during the semester. Because, along with the applied educational methods in their design studios, they still have some difficulties

with particular methods, tools and techniques through their educational process and also need to overcome their challenges through their own learning styles.

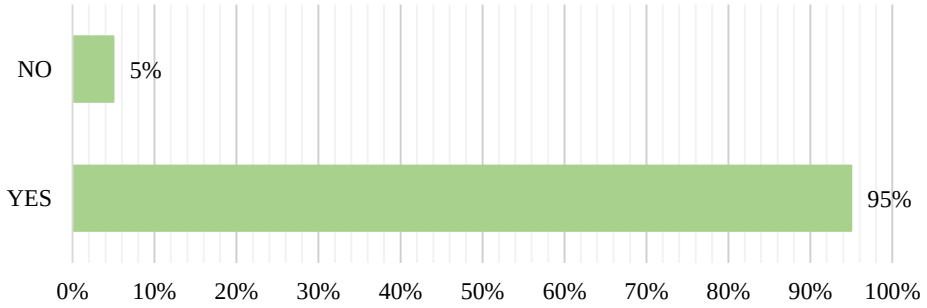


Figure 4.49: Students' Response to the Question "Would you like to participate in some workshops in parallel with your design studio?"

Therefore, it is perceived that the students would like to develop their projects by being involved in different design activities apart from their design studios. Planning some workshops by the means of enhancing students' idea visualization skill has a supportive role in moderating their challenges in the form producing process.

4.2.3 Tutors' Interview Result

Totally, four FARC design instructors had contributed in the conducted tutors' interview in November 2015. The conversations were recorded and transcribed in order to employ in the study, and then have been reviewed by the author to find the common strategies for the asked questions. The brief summation of the whole conversations has been assembled by the author and had exerted in the research material as the impressive components.

In general, the instructors for the current applied educational method of the introductory design studios (FARC 102) in foundation year at EMU have believed that the implementing method of teaching and learning design instructions at EMU has been defined in a way to transform students' two-dimensional design thinking into the three-dimensional format (volume) based on some ground theories in the architectural designs and in respect with the general design principles and elements of design in

architecture. Students are taught to employ their concrete format of their abstract design ideas on their design models in a very basic level through their design process. They are also conducted to perceive the real architectural designs and learn that how those designs have been generated. The conventional method is based on design studio and the students' self-education model for model making and presentation techniques.

- Question: What is your opinion about the applied teaching and learning methods in FARC 102 design studios? What about project type? What kind of projects do you think have more educational value for the first-year design students?

Through the basic design educational process at EMU firstly, students are asked to search about design strategies and applied them on the small-scale design model as the warm-up projects. Students in the warm-up projects feel more comfortable and joyful, such the projects are not directly related to the architectural projects and could have different themes like clip makings or short movies and etc. which do not mainly focus on the form generation and something directly in the architectural designs. The project helps the students to improve their critical-thinking ability and link different disciplines through their design process. The warm-up projects are very helpful in terms of giving students an idea on how to make their ideas more concrete.

Secondly, the students should design something that has a function like a bus stop in relation to whatever they have learned from the structural system. And lastly, students should apply all the things that have learned from their first semester (especially, FARC 101) about design principles and tools (function relationship, circulation management, structure, using topography, man environment relationship, scale and etc.) on their current term project. The FARC 102 projects somehow include everything that have been taught in architectural design just in the awareness level, not with too much detail.

From the last year the method was changed in the EMU introductory design studios, by limiting the amount of the coursework which have been given to the students and leading the students to make more concentrate and focus on the given design problem. Reducing the amount of the assignments and focusing on the major assignments and definite design problem is based on the idea of teaching the basic skills to the students in relation to the design principles and elements in architectural design. Students in the EMU introductory design studios (FARC 102) receive both, the individual and group critiques through the semester but, when the design process is closed to the final stage the number of giving individual critiques are getting raised.

Considering parametric design and algorithmic thinking skill through the basic design projects could lead the students to design formal architectural products. Demanding smaller scale projects with the subjects that students are more familiar with them like a living space which has thematic complementary sub-functions for everybody have more educational values for the basic design students, because through the big-scale projects, students are faced with different challenges and additional problems in the urban design and space organizations, complexity of functions and masses which limit the instructors for spending more time on the architectural design issues more than details. In addition, large-scale project creates a larger base for the drawings and design models that on their own, increase the challenges for the students in the basic level.

Further, giving the students the subjects that are not well-known for them like; research center, museum, institute and etc. has added some problems in design for basic design students. Because, they do not have adequate knowledge about these kind of functions in the architectural designs so, they cannot prompt such projects in proper way. The small sized assignments help the students to learn more and increase the design quality of their products, because through the small-scale projects, students could work on

their designs for the longer period. The smaller and more focused projects lead students to prompt more rational designs with proper space organization and site arrangement.

- Question: What kind of difficulties do you think FARC 102 design students have on transforming their design ideas into concrete outcome? What about design development process? What is your suggestion?

First-year is quite strange level for students, because they are coming from a completely different educational system of the secondary schools. So, there is no a stable cultural background in the introductory design studios. Some students do not have any vision for the architectural designs therefore, communicating with them are hard for the design educators. However, instructors try to put students in the same level to begin teaching the design instructions. The students also, are faced with some challenges and feel overwhelmed to do their tasks through their design process due to being not much familiar with their new educational methods.

Thinking in the abstract way is not a simple issue for the basic design students and also, is controversial because, students' high school educational system has totally differed from their academic educational system. They are faced with a new education methodology for the first time and are introduced to the systematic way of thinking through their learning. The students have challenges within the process because, they do not know how to transform the abstract kind of thinking into the concrete decision. Many of them can express their design ideas in the abstract ways, but when they are asked to write a scenario or externalize their design ideas (presenting the ideas as the conceptual projects) they are faced with dilemma and obstacles in fact, their visualized ideas are totally different from their abstract design ideas.

One of the main problems in the EMU introductory design studio is the low concentration of the students in their design issues. Through the design process, some

of the students do not care and concentrate on the critiques to apply in a proper way for improving their projects. Even when they are asked to do research for the certain subjects or find the similar examples in relation to their projects, they do not pay much attention and care to find out the proper information or examples with the reliable resources. Generally, students' concentration is low as well as their design knowledge backgrounds which are the main problems in the introductory design studios.

Students' lack of the communication skills (verbal/non-verbal) is the other difficulty that instructors are faced through the education process of the basic design students. The students are not much good at sketching or model making and they do not know how to draw conceptually and meaningfully to present their design ideas, some of the students even cannot communicate their ideas with themselves.

The other major problems, through the design educational methods, is the gaps between the theoretical and applied courses. Although, students through the theoretical courses, learn the design principles, but when they come to the studio and need to use those principles in their projects, they usually forget whatever they have learned. This, proves the gap between the theory and the application in design education.

- Question: According to students' response to the relevant question, 72% of FARC 102 students prefer to have individual critiques in their design process (group critique 16% and review 12%) what is your opinion? Which one do you see more beneficial in design learning? And are students following your critiques during their design process? What is your suggestion?

Students usually prefer to receive individual critiques during their design process rather than the group critiques and reviews. The studio context as the learning environment is considered as the ground where socialize design students, but students by eliminating themselves from the studio discussions lose a chance of improving their

critical thinking ability and self-evaluation skill. So, the individual and group critiques should be carried out both together during the semester, and students by participating in the common discussions in the studio and taking benefits from the group critiques have a chance to put their own contributions in their design process. Project improvement only base on the instructors' critiques is not an adequate learning method for the design students actually, the teaching method should not be in a way that the teacher talk about some design issues and students implement without their own contribution through the project design process. Generally, giving individual or group critiques depends on the instructors on how to carry out critiques sessions, if the students are getting involved in the discussions, in order to learn how to think critically and criticize other projects, they could follow the design process in a better way and properly making decisions in different stages of their project design process.

However, this is important to consider that how much the instructors should leave the students free and how much they should force the students to go along the line that they believe is true. Students through the individual critiques and one to one interaction with their instructors by taking notes and photos, follow the critiques in a proper way.

However, in the group critiques, students could contribute in the project design process while listening to the critiques. Group critique allows students to gain experience, expressing themselves in from of the others to improve their confidence, explain their design in the systematical ways and to improve their critical eye and etc. Students by the common discussions and rotational critiques can help to each other as well as learn from their peers. They also, could develop their self-confidence for critically evaluating other design issues and different design problems. Therefore, caring more group critiques for the basic design students could help them to enhance their self-dependence skill and create a chance for them to receive different ideas and viewpoints

on the certain subject along with the interactive following process. However, there is very few students who are brave to talk and state their ideas in the group discussions.

In addition, overpopulation of students within the design studio, forcing the educators in the beginning stages of the design process to go through the group critiques, and later on, the individual critique, when they go through more project oriented and final design process. Sometime remaining in the individual critiques through the design process, makes the students very reliance to their instructors and might cause losing students' confidence and give them a conception that whatever their instructor says is going to take them success so, it is beneficial for them to get stuck in their critiques only for being successful in the course. Being over-reliance on the instructor's oriented system could upset students, but pushing the students to act more independently through their design process.

Some student do not know how to deal with the critiques because it is the first time that they are dealing with such a system. So, following critiques for the students at basic stage is sometime difficult to understand, however the students attempt to follow the critiques. The way of following the critiques depends on the capacity of the students and on how much they understand their instructors' terminologies and language. However, students should be convinced to solve the design problems by themselves, they have to present different alternatives for the given design problems. Generally, putting the students in a position that you are the one who will decide for the project, is the most difficult part in the basic design education which also has the most influence on the students' self-dependence skill.

- Question: 78% of the FARC 102 students believe that they use their "creativity" on their design projects. What is your opinion about this statement?

There are some creative students among the newcomer students, who are interested in architectural design and tend to tender creative and innovative solutions for the given design problems. On the other hand, some students are pushed to use their creativity in their design process. In addition, students' educational backgrounds play an important role on their creative thinking skill through their design process for example, art-based trained students are usually better in presenting creative ideas. In general, one of the important issues in first-year design education is teaching students how to use their creativity through their design process and also in their presentation techniques. Since, the beginner students are not enough good at in the visual communication skills which is the prominent tool in design education. Thus, they may have challenges in visualizing their design thoughts, some students have interesting design ideas, but because they do not know how to turn these ideas into the concrete outcomes or drawings therefore, they scare to deal and initiate their design process based on their own design ideas.

Through the educational process, students' perception of creativity in the design should be asked. Because, they perceive that they are inspiring their ideas based on their creativity, but in fact they are imitating instead of creating, they usually choose such an easy way just for completing the project which does not mean the creative design. Creativity in architectural design is reaching the most unique solutions and being more consistence on design idea. Students' creativity could be inspired by different ways, for instance the coursework and assignments could conduct the students to employ their creativity skills in accomplishing their tasks. However, it can be asserted that students employ their creativity in their projects, but how much they are successful is something controversial. Instructors by the students' learning outcomes could guide them to think more critically and creatively through their design process. Also, doing research helps them to enhance these skills, because creativity does not come suddenly.

- Question: What is your priority in the architectural form creation process?

Students need to look at the various design examples and try to learn how to read those examples and figure out the ideas behind the designs. However, because creativity comes from the students' personal skills and intuitive thinking, so dealing with each of these skills of the individuals requires a lot of standardizations which are unachievable during one academic semester. Therefore, the conventional teaching methods in the introductory design studios do not too much rely on the students creative thoughts, actually, the first priority is teaching the students design principles so, principles in one hand and creativity on the other hand have kind of contravention interaction with each other. However, it is expected from the students to bring creativity through their design process to improve their distinctive design skills and personal capabilities.

- Question: More than half of the FARC 102 students would act independence on their design process and have been allowed to figure out the proper solutions for their design projects (they prefer to receive less critiques and being more self-dependence). What is your opinion about enhancing self-dependence skill among the basic design students? Do you think this stage is a proper starting point to foster independence future designers?

In general, basic design students through their design process are too much dependent on their instructors, they usually prefer to apply their instructors' ideas for their projects instead of their own ideas. Actually, students willing to get the design idea from the instructors. However, it is a normal issue even for the best students in the first-year design studios, because of their leakage of knowledge, experience and etc. Basic design students need to be supported through the instructors' critiques. If instructors expected from students to do whatever they suggested so, there is no other way for the students to be depended on their instructors. So, the instructional method

should be implemented in such a way to inform the students that they are the main decision maker in their design process.

Generally, when the idea of the design belongs to the students they could improve their project in a better and constant way. In fact, the instructor-oriented approach should be becoming less and less in the first year design studio to improve self-dependence skill among the basic design students. The teaching method should not be like input students and expect them to whatever the instructors suggest.

Students through their design learning process, need to gain skill to critically analyze real architectural designs and create innovative designs. Students have to improve their self-confidence and feel free to tender ideas or make comment on their peers' projects while students have the idea they should try to express and share that idea with others which also enhance their criticism skill and critical thinking ability.

In addition, improving students' self-dependence skill could be started from beginning design studios in architecture education. When design students act more independent through their design process some mistakes might be made actually, they need to make mistakes within the process. Creating a condition for the students to make a mistake within their design process is one of the main aim of basic design education, because students through their mistakes will better perceive their proposal and their project design issues which improve their critical thinking ability and self-evaluation skill.

To sum up, through the conversation some challenges and obstacles were mentioned by the FARC instructors in the basic design educational process such as;

- Students' low concentration and care through their learning process to apply and develop their design projects, some of the students even do not concentrate on understanding the instructors' critiques.

- Different educational backgrounds, students are coming from different countries and have varied backgrounds so, students' design knowledge in the introductory design studios is not on the same level. In addition, because, basic design students are dealing with a new educational method which has differed from their systematic educational system on their secondary schools so, they have some challenges through their design learning process.
- Beginner students are not in proper awareness level about the design issues, so they have weakness in employing design tools and means within their learning process.
- Some of the term projects have not the appropriate theme for the newcomer design students and as the result, have less not educational value.
- Students are too much dependent on their instructors and usually looking for the concrete answer for their given design problem.
- Students have not proper the notion of the proper forms in the architectural designs, some shortcomings exist on their skills to organizing the masses and functions within the compositions.
- Leakage of the proper skills and techniques for sharing the design ideas with other is perceived among the basic design students.
- Students' perception of creativity and innovation is not adequate, they sometimes imitate from real projects or their peers' projects instead of employing their own creative skills within the design process.
- Students have low self-confidence to participate and express their ideas within the group critiques and studio discussions.

Within the interviews, the instructors suggested various issues for the basic design educational methods, Table 4.4 demonstrates general suggestions of the participated instructors for the educational method in the introductory design studios.

Table 4.4: FARC Design Instructors Suggestions Participated in the Interviews

EMU FARC Design Instructors' Suggestions
Running some workshops include varied level design students (from first to last design studio) in terms of improving students form producing ability.
Defining parametric design projects for the basic design studios.
Defining small scale with familiar subjects for the first-year design students as the term projects.
Leading students to use their studio time more efficient and keep on the demanding to apply critiques and developing their design projects.
Defining systematic programs or rules for the students to follow throughout the semester with specific deadlines.
Introducing appropriate materials as much as possible to make fluid forms.
Convincing students to do more research for the specific subject and present different alternatives as the design solutions.
Appling some preferential software in the educational process.
Reminding systematic way of architectural designs (design principles and elements of the architectural design) as much as possible throughout the semester for the basic design students.
Keeping on showing the relevant examples during the studio sessions. And explaining the systematic ordering of the examples for the students.
Expecting students to perceived similar designs and try to how those design have been generated from their own perspectives.
Contributing students to the studio discussions as much as possible even mandatory in terms of enhancing students self-confidence.
Providing a condition for the students to be more permanent and consistent on their design ideas throughout their design process.
Keeping the coursework more flexible and small assignments.
Going through the approach that is more process oriented rather than final design product.
Implementing different educational methods for the basic design studios.
Getting used students to receive both individual and group critiques through their design process.
Defining strong tutor-student relationship through the design process.
Giving students the information before applying and teaching course materials in the class or giving them a topic and force them to research it as their homework.
Allowing students to criticize other projects or instructors' critiques in terms of enhancing students self-dependence and critical-thinking skills.

4.2.3 Students' Interview Result

The other interview in this thesis was conducted among the 30 upper design students (ARCH 292, ARCH 391 and ARCH 392) who have passed FARC 102 design studio in the last two years at EMU. In order, to understand how much the students employ

their gained design knowledge from their introductory design studio (FARC 102) in their upper design studios. The interviews were based on a linguistic question which asked students "Dose Your Gained Knowledge in First-Year Design Education (FARC 102) at EMU Have Supportive Role to Overcome Your Current Design Challenges?" Based on the obtained results, 63% of the upper design students do not employ their gained design knowledge from their introductory design studios for their current design projects. While 37% of the students argued they are transforming their learned knowledge from FARC 102 design studio on their current design projects and believed FARC design courses have effects on their overall design skills, especially help them to deal with the topography in design, since learned it in FARC 102 studio for the first time. The students sometimes, remember the particular instructors' critiques about how to integrate level differences or axis lines with their design. In addition, some of the students claimed that their FARC 102 design projects are still their favorite design and look back their design models occasionally. They also, mentioned they have improved their workmanship from their learnt knowledge and applied design skills from their FARC 102 introductory design studio. (Students' Interview)

On the other hand, 63% of the participated students in the inquiry, commented that in their upper design studios they are dealing with the new design problems to solve. And their defined projects are more complicated so, they usually forget to think about their gained design knowledge in their FARC 102 design studio. They prefer to make more focus on their current design projects or seeing the upper design projects to inspire some ideas and improve their own term projects. However, the majority of the students believed that each design studio makes them better to understand the architectural design issues and teaches them the new design skills to improve their architectural way of thinking and designing. (Students' Interview)

Moreover, based on the conducted the research tutor's interview one of the main problem had been mentioned that design students usually forget about what they have learned in the introductory design studio (Tutors' Interview). Students in the upper design studios have completely different form development process compared with their forms in the basic level. Actually, when students come to design more real architectural projects they usually overlook to their dynamic designs that had created on their introductory design studio and prefer to start designing by using simple shapes and boxes. They use rectangular shapes in their designs and pay not adequate attention to the three-dimensional aspects of their proposals. Actually, they could not link first design studios with their current studios. So, it is needed to teach design students how to transfer one information from one level to the others, which also enhances students' form producing skill through the design process (Tutor's Interview).

4.3 Discourses on EMU Findings

In general, discussions focus on the students' responses and expectations toward their educational methods through the design process and the instructors' experiences, expectations and concerns about the implemented educational methods in architecture education for the introductory design studios. Along with, the done literature review and author's conception of the applied learning and teaching method in introductory design studio (FARC 102) which have obtained through one year observation of the research case study.

In the selected case, the majority of the students felt comfortable in their design studios, due to availability of drawing tables and stools for each student (Figure 4.30). This could increase students' productivity in the studio hours, due to the convenient heating-cooling systems in those studios during the observation period (Fall and Spring academic semester 2014-2015). Students were not experiencing stress or any other negative influence on themselves related to overheating or freezing. Availability of these facilities in the studio supported students in a way that believed they are better

performers and more efficient in their design process and development while they are working in the design studio. Being under supervision of instructors is a great chance for students to work with good physical studio's condition on their projects.

According to Yurekli (2014), Basic design students through their educational process meet tangible and intangible aspects of creativity by presenting concrete format of their abstract thoughts. Many scholars consider creativity as an essential and practical skill in architectural designs which also defines students' innovation skill to produce innovative and exclusive designs (Parashar, 2010).

EMU FARC 102 students in 2014-2015 academic year, considered motivation and creativity as the key factors in their design process, while only small number of the students believed artistic talent is a major factor in architectural designs (Figure 4.38). The students also, believed their design products properly present their own creativity (Figure 4.39). Surprisingly, more than half of the case study students were believed instructors need to motivate and inspire their creativity through the process (Figure 4.31). From the students' point of views, hardworking has much more effect on the formal architectural designs rather than designer's natural artistic talent (Figure 4.38).

Based on the conducted interviews in this research, EMU instructors suggested that teaching methods and project types were maneuvering or very well defined techniques and proper scope selection to enable students in understanding their creativity through their design process. Instructors also had a salient attempt in offering the education to their students in a way to come up with the unique and innovative ideas. On the other hand, well-positioned warm-up projects at the early stage of the semester support this intention. Finally, giving awareness to students about the available, possible and trustable sources to inspire and take ideas for their designing is another taken action in these two observed introductory design studios.

Also, according to the instructors' opinions, the case study students through their design process used their creativity, however their level of success could be controversial. Generally, students need to have a correct apprehension about creativity in architectural design and learn how others (experts) would judge their exposed idea. This is a fundamental problem that needs to be worked on in first-year of architecture education (Tutors' Interview). Students' educational backgrounds play the important role on this fact as well, for instance art-based trained students have usually a better perception of creative ideas. According to Haris (1970) "Learning through Experiencing" motivates students to employ their creativity within their design process. Therefore, enriching students' creative thinking and exposing them on their design products could not be taught by the instructors. This skill in the architectural design could be achieved or accomplished just by practicing and looking for varied resources to inspire and arousing designer's creativity. Based on the EMU instructors' suggestions, the most effective way to enhance creativity for basic design students is asking them to do some research on the creative and innovative designs and analyze the examples in order to figure out the idea behind the designs (Tutors' Interview).

In addition, they believed that creativity is located in second priority in the basic design education after the acquisition of the architectural design principles and elements because, it comes from individual touch on the designs. So, dealing with students' creativity within their design process required many standardizations and allowed time which are not included in one academic semester. But, still it is expected from students to bring their creative skill through their design process and produce more innovative and unique design products (Tutors' Interview). Design education through its process and within the design studios makes a balance between creativity and design principles (Demirbas & Demirkan, 2007).

Based on the case study students' perspectives, only a small quantity amount of the students perceived imitation as the key factor in architectural designs (Figure 4.38). However, their performances during the author's observation and content of the instructors' interviews, evidence something in contrast and more than a small amount. In fact, most of the students had misconceptions about the creativity and imitation meaning in their design process (Author's Observation and Tutors' Interview). Some of the students through their design process made imitation from the real architectural designs or their peers' projects without noticing the idea behind those designs. Which proof students' tendency to find out the easiest or ready design solutions just for completing projects (in contrast with the students' responses in Figure 4.31 and Figure 4.32). And also, indicate that students have misconception about the creativity in architectural designs, they sometimes did an imitation instead of inspiration or repeating instead of creating a new and unique idea in their design process.

On the other hand, teaching system sometimes leads students to the same way or might support imitation habit among the students (Tutors' Interview). However, through the design development process and reviews when students are not able to justify the reasons for their proposed solutions architecturally, their designs would be rejected by the instructors or they might have extra difficulties in the future stages of their design.

Based on the obtained results of questionnaire and students' demand from their instructors, it is found that a few of the students preferred to get ready design solutions and ideas for their semester projects (Figure 4.31). While, students' performance through their conceptual design process according to the author's observation has asserted a larger amount. The students preferred to get some design ideas from the instructors on their conceptual design stage, actually they would like to develop instructors design ideas instead of their own (Author's Observation).

In addition, a quarter of the focus students were enthusiastic to have ready solutions for their design projects and also, preferred to have some discussions with their instructor in the process of presenting and design ideas and solution generation (Figure 4.31 & Figure 4.45). Since, basic design students are newcomers, they have some leakages in architectural design techniques, skills and design knowledge. Thus, the majority of the basic design students look for making proposals by the instructors (Tutors' Interview).

On the other hand, the large number of case study students supposed, they need a much to find out solutions for the given problems by themselves (Figure 4.32) however, students' actions were something different by the author's observation. Most of the students did not present their own solutions and mostly preferred to implement their instructors' ready ideas through their problem-solving process (Author's Observation). Design instructors also believed their students usually are waiting to hear critiques and use it as the exact direction in their design development process. While, instructors are in contrast, they willing to train more independent students that will be able to push the ideas, critiques and suggestions even the further (Tutors' Interview).

A few of the case study students desired toward self-dependence expertise within their design process, students' response to the questionnaire evidences this tendency (Figure 4.31). And the majority of the students believed self-criticism skill plays a fundamental role on architectural designs (Figure 4.38). Warm-up projects and group discussions through the semester help students to gain proper critical thinking and evaluation skills to judge the projects. Group critiques and studio discussions have to be carried out in a way to get students involved in the negotiations in order to enrich the students' self-criticism skill and critical thinking capabilities (Tutors' Interview).

Developing critical thinking ability among the basic design students, conducts their products toward the desirable educational outcomes (Farivarsadri, 2001), helps the students to offer more appropriate design solutions (Synder, 2008) and leads them to think out of routine for producing innovative architectural design products. Therefore, enhancing students' critical thinking helps them to improve the architectural quality and terminologies of their designs. However, the conventional design teaching methods mostly focus on form producing and drawing skills rather than critical thinking ability (Salama, 2006).

Based on the author's observation, the students were too much reliance on their instructors' guidance and they did not considerable improvement on their projects without receiving critiques. In reality, the students had trend to do whatever their instructors have suggested through their design process instead of thinking on the given design problems and presenting their own design solutions (Author's Observation). Also, the instructors believed that their students are too much dependent on them, students have higher expectations from tutors rather than themselves. However, it is understandable for the first-year design students because of their leakages on the architectural design knowledge and experiences. According to the instructors' opinions the instructional method should not be implemented in such a way to expect the students to do whatever they have been suggested, students need to have freedom of expression a chance to take responsibilities through their design process in order to develop their projects based on their own ideas. They also claimed, fostering the future architect designers with the self-dependence skill requires within the design educational process (Author's Observation).

Design criticism is known as one of the important tools in architectural design education, students by receiving critiques could diagnose their mistakes also improve their designs in a formal way of architectural design (Heidarian & Ghafourian, 2014).

Criticize in architecture education is accomplished in two ways, individually and in the groups. Scholars have described this process as a mutual communication between instructors and students in design education. The valuable advantage of criticism in design educational process is enhancing the students' self-criticism skill and critical thinking ability on their designs. Accordingly, a distributed questionnaire for this research indicates that students preferred to get more individual critiques rather than group critiques and reviews through the semester (Figure 4.34) which was absolutely comprehensible through the observation periods. Interestingly, the students within their one to one interactions with their instructors paid much more attention and care about the instructor's suggestions on their projects by taking notes and photos during their individual critique's time (Author's Observation).

However, by the individual critique one of the treats that all the time exists, is the students' over-reliance on the instructors and their critiques causes to slow down the project development process by the students (Tutors' Interview). Since, students get used to share their ideas or get the design ideas from instructors, they do not apply their ideas on the projects before getting feedback and receiving criticism on those ideas or perhaps, doing low-level developments.

In general, through the design process, it is expected to carry out both, the individual and group critiques jointly during the semester. Each of them, in a particular situation has its own benefits on the students' design knowledge and skills. For example, based on many done studies students' self-criticism, self- evaluation, self-dependence, self-confidence and critical-thinking abilities are improved while they are contributing in the studio discussions (Gray, 2013). On the other hand, based on the contents of the interviews, students' design development process by the individual-critique has better progressed due to their greater attention on the design issues (Tutors' Interview).

The ways of conducting critiques for the introductory design studios, according to the instructors' explanations in the interviews, were defined to bring more group critiques and studio discussions at the beginning sessions of the semester, in the conceptual design stage. Then, by getting close to the final stages of the project design process the number of giving individual-critiques are getting raised.

In addition, the majority of the participated students in the research have mentioned they could make a good balance between their own ideas and their instructors' critiques (Figure 4.35). Following and applying critiques were also approved by the instructors through the conducted interviews and only a small amount of the students do not pay adequate attention on received critiques. Sometimes students do not know how to deal with the critiques and instructors' terminologies, thus they cannot follow the critiques appropriately. However, the case study students stated their projects could fairly reach the midterm jury expectations (Figure 4.36). Along with, some mistakes like using wrong materials and colors on design models, posters and drawings were commonly observed among the case study students' design projects. In addition, some students felt overwhelmed during their presentation in their jury sessions which distracted jury members from the students' main design ideas (Author's Observation).

However, the jury members were quite aware of such issues for the newcomer students and were not very strict on the problems, they just reminded students to overcome their weaknesses for their upper design studios. Interestingly, based on the students' response to the questionnaire, they did not consider their final grade as the main indicator of success level in their design process (Figure 4.37). Which is a counter argument with the author's perception about the students' tendency toward capturing a score within their design process. It has rooted in the pre-defined, memorizing and learning for a grade in the educational system of secondary schools (Dural, 1999). But, through the higher education system of universities, especially in architecture and

design learning process. Students gradually recognize that their grades do not fully evidence their learning level (Author's Observation). In summary, based on the done studies, architectural design teaching method is totally different from the memorizing learning method of the secondary schools (Serim & et al, 2014). Because, first-year design students are starting to comprehend a new educational methods and initiate to think critically which has different from their adopted learning method based on memorizing and thinking vertically on their secondary schools. Thus, extending some students' learning habits from the secondary educational methods through initial stages of their design learning process at basic design studios is understandable. However, student' learning habits could be modified by implementing a systematic way of learning and teaching methods for them in the secondary schools (Dağli & et al, 2013).

Almost all the case study students preferred to have instructors' contributions through their conceptual design and design development process more than final design (Figure 4.33). Moreover, the formal design educational methods in architecture, require mutual interactions and joint work between the students and instructors and the mutual monitoring and developing the design ideas.

Communication is an important tool in design education which improves students' experiences in designing architecturally. The tool requires mutual interactions between the actors in design studio where considered as the main communication medium for both the students and instructors. Schön (1984) also, described design learning process as the "Reflection-in-Action" process which is a method of contribution between the instructor and student through their mutual reflections. And has referred to the student reflection on instructor action and also, the instructor reflection on student action. Thus, mutual contribution between the actors through the design process is expected. The level of contribution and its extension through the design process play a fundamental role in the students' learning of design skills and techniques.

Surprisingly, when students were getting close to the final stages of their design process and their design knowledge was improved, they gradually become more dominant on their project and sense of belonging to their designs were shaped. They also were more responsible for improving the projects and paid more attention to develop their ideas in the architectural way of designing. Instructors' contributions through the final steps of the design process, focused on the students' technical drawing skills rather than modifying the design models (Author's Observation).

Further, the majority of the case study students, perceived graphic communication skill as one of the prominent factors in architectural designs (Figure 4.38). Students step by step through their design process, were conducted to improve the realty value of their proposals which brought them closer to design the real architectural products. Through the observation, some of the basic design students, made very decorations on their design models or the plans had not been drawn with the appropriate line weight and workmanship thus, such issues created dilemmas for educators to understand students' design ideas. First-year design students are though how to use their creativity through their presentation techniques, they also learn how much decoration required for the basic design projects (Tutors' Interview).

Interestingly, students through the final stages of their design process, were being informed that graphical articulation and presentation techniques have less importance than functional features of the masses for producing rational design products (Figure 4.46). Because, formal design products are the outcomes of a proper problem-solving process, function-organization and interior-plan solutions through their design process. Therefore, basic design studio aims to enhance students' design insights and awareness in the form-function relationship, contextual relationship, human-scale design and etc. in architectural designs for presenting students' design language and terminologies on their design products. And interestingly, a fair amount of the students considered the

contextual relationship as the important factor in their design perception (Figure 4.46) it also was frequently reminded by the instructors throughout the semester (Author's Observation). The appropriate contextual relationship in architectural designs has considerable beneficial impacts on creating the innovative design. Transforming the design ideas into the drawings or models is the main required skill for basic design students (Yurekli, 2014) and expected from the newcomer students to improve these skills within their design process (Yavuz & Çağrı, 2012).

Also, based on the conducted questionnaire, almost half of the case study students asserted they had set specific methodology for their design process (Figure 4.42) by searching for the similar examples, model making and sketches. A few percent of the students, due to being not very mastered in the technical drawings, chose projective drawing, section and elevation drawings to start presenting their ideas. And the majority of the students, externalized their design ideas by drawing the plan sketches (Figure 4.43; Figure 4.45), because, they considered drawing skill as the important factor in their communicating with the instructors (Figure 4.44). And according to Evans (2000), linear perspective drawings and sketches are powerful communication tools for sharing design ideas. Also, many done studies have indicated since, students' conceptual drawings and sketches are the graphic explorations of their ideas, thus these drawings through their conceptual design stage, play a prominent role on their design creativity (Yurekli, 2014). Furthermore, half of the students mentioned 3D-model making as an ideal method for materializing their design ideas (Figure 4.43) which is beneficial for the students due to gaining design knowledge through making the concrete format of their abstract thoughts. The method also reinforces them in Learning-by-Doing which is the main educational method in architectural design education. Briefly, the students according to their self-planned methods; firstly, prefer to make sketches of their initial design ideas and then, make design models through the form producing process. However, the author through the observation of the

students' form generation process, perceived that students did model making rather than drawings for expressing their initial design ideas and producing the concrete format of their thoughts.

In addition, half of the participated students preferred to do a site analysis at the begging stage of proposing their design ideas (Figure 4.45) which also was one of the project requirements. Students by the site visiting were expected to analysis its features as a poster and employ the found site characteristics through their design process. The poster had an effective role in the students' defense of their proposals and helped them to present their design solutions more rational and convenient with the project context (Author's Observation). And only a few percent of the students would like to employ the bubble diagram and have discussions with instructors on their conceptual design stages (Figure 4.45). Drawing bubble diagram in the conceptual design level was not expected from the research case study students. Since, the main focus of the studio at that stage was form producing therefore, students were working on their models rather than the functions organization between the masses (Author's Observation) because, they had not the adequate knowledge to distribute functions between masses properly. However, they are expected to learn this skill gradually and define appropriate the functional relationship between masses in their projects (Tutors' Interview). In general, one of the main objectives of introductory design studios is visualizing students' design ideas with respect to the architectural design principles. Ledewitz (1985) claimed visualization and representation skills are the ground features in architectural design education. Further, Demirbas and Demirkan (2007) noted that students' critical thinking ability makes the acquisition process of these skills easier.

Basic design students are introduced to a systematic way of thinking to express their thoughts through their design process. They start up to think architecturally and giving outward shape to their abstract design ideas. Through this process, students are usually

faced with dilemmas and questions on externalizing their thoughts and presenting them as the concrete decisions to their instructors. Generally, transforming abstract thought into the concrete decisions is not a simple issue for the beginner design students with regards to their educational backgrounds. However, such difficulties by practicing and model making for producing the form could be diminished through the design process.

Also, around half of the case study students mentioned that faced with some difficulties in visualizing their initial design ideas (Figure 4.40). But, on the other hand, almost all the students believed, they were successful in this process and the proposals were their ideal design products which had met their own design concept (Table 4.2; Figure 4.41). They also, stated that they did not have many difficulties in developing their design ideas on their projects (Figure 4.40). Interestingly, students believed similar examples with their projects have good impacts on their transforming skill of their concept into the concrete product and in developing their design ideas on their projects (Table 4.3).

Yavus (2012) argued, students' inadequate skill in transforming the geometric shapes into the rational forms is considered as the main difficulty in design educational process. Therefore, basic design students are trained to employ various geometric shapes and design elements in their form generation process with a notion of design principles, to materialize their abstract thoughts and prepared for designing well-defined products.

Through the idea extrapolation process, some students use simple geometric shapes and some other employ irregular or complex shapes to materialize their design thoughts. In this regard, many of the case study students preferred to use simple and basic geometric shapes rather than irregular shapes composed of clacked lines in visualizing their design ideas (Figure 4.48) which is also approved by the studio productions. Students' projects were mostly composed of the pure and simple

geometric shapes rather than irregular masses. Instructors also suggested the students using simple and pure shapes in their designs and reminded them to avoid doing too much exaggeration and decorations to present your ideas (Author's Observation).

Generally, design studio as the main course in architecture education creates a medium for students to employ their learned knowledge of their fundamental and applied courses in their project perfectly. Through the medium, students also could enhance their insights and perceptions on the real architectural designs. Basic design students gain knowledge to investigate the appropriate relationships and regular arrangements between the geometric shapes to produce rational forms. They also, learn how to apply design principles in geometric shapes to create architectural forms under supervision of the instructors and within the studio environment.

The case study students remarked, they had employed several design principles like unity, balance, hierarchy, contrast and etc. in their design projects (Figure 4.47) which were frequently magnified by the instructors as a key factor of the students' projects (Author's Observation).

Basic design students in their first semester, are taught some ground theories and design principles in the architectural designs. Thus, they have been expected to apply their gained knowledge and principles on their upper design projects. But, based on the conducted interviews in this research with some of the upper design students and also the content of the tutors' interviews, design students usually forget to employ their learned knowledge from their previous design studios in their current design projects. More than half of the participated students in the inquiry (ARCH 292, ARCH 391 and ARCH 392) stated that, they usually forget to employ their acquired knowledge in their basic design studio to improve their current design projects. Actually, they prefer to see upper design projects in developing their current projects. However, the students

were aware of the importance of design principles in architectural design which had gained through the project design process in their introductory design studios, as one of the main educational objectives of the studio (Students' Interview).

Surprisingly, around half of the FARC 102 case study students, considered design knowledge as one of the significant factors in architectural designs (Figure 4.38) and the majority of the students had positive perspective on the impacts of theory courses, lectures, teaching relevant design strategies with their projects and design principles in enhancing their learning process and form finding process (Table 4.3; Figure 4.31). These viewpoints are approved by the students' reactions and concerns to a presentation session, which was done by the instructor at the conceptual design stage. The main content of the presentation focused on the formal way of designing by the inspiration from different resources in respect with design principles. Interestingly, students within their critique time, frequently referred to those examples and tried to explain how did integrate their ideas with their inspired ideas of those examples in their design projects (Author's Observation). However, neglecting to employ learned design knowledge in the design projects is commonly observed among design students, which might have been rooted in a gap the between theory and application in design education (Author's Observation; Tutors' Interview).

Lectures and seminars through the educational program in architectural design, provide constructive comments and discussions and also, improve students' critical thinking capability (Samuel, 2001). Interestingly, almost all the case study students argued, they are interested in participating on some workshops in parallel with their design studios throughout the semester (Figure 4.49). Planning design workshops to support academic programs and students' form producing process could reinforce students' design skills and reduce the incidence of the slips for the students through their design process. In addition, students by getting involved in group discussions and

expressing their ideas among all, could improve their self-confidence and critical thinking ability, resulting from the criticisms, which are required skills for an architect.

The training workshops could be run by involving varied design students from various design studios in different levels (Tutors' Interview). Because, while students observing peers' design process feel more satisfied and could improve their own design process in a better way (Conanan & Pinkard, 2001). They have been placed in a situation that should act independently for following up the programs which has great influences in enhancing students' self-dependence skill through their design process.

4.4 Chapter Summary

This chapter has offered actual data from the applied educational methods at EMU. The introductory design (FARC 102) course material and project requirements had been presented for both Fall and Spring academic semester 2014-2015. And direct observation results were provided by demonstrating the analysis of selected FARC 102 semester projects in their concept generation stage and presenting their design process along with the other chosen projects of the research case study. The analyses have been done based on the instructors' suggestions and students' performances throughout the observation period. Further, students' corresponding responses to the questionnaire were analyzed and presented in format of charts and Mean axes in the research. Then, the content of the conducted interviews with the design instructors and upper design students added to the existing achieved data for improving a reality of the research material. Lastly, comparison of all obtained findings at each phase was discussed and discoursed by the author and with regard to the done literature review in chapter 2.

Chapter 5

RECOMMENDATIONS AND CONCLUSION

5.1 Recommendations

Through the done studies for this thesis, form creation challenge in first-year (second semester) have been realized. This slippery and critical situation could be a result of existence a mismatch between the applied teaching method and the students' learning style. Thus, relevant recommendations have been offered based on the found materials to make the both compatible. The contents of this section are the recommendations for the aforementioned mismatch. Figure 5.1 indicates areas where the recommendations are going to be applied.

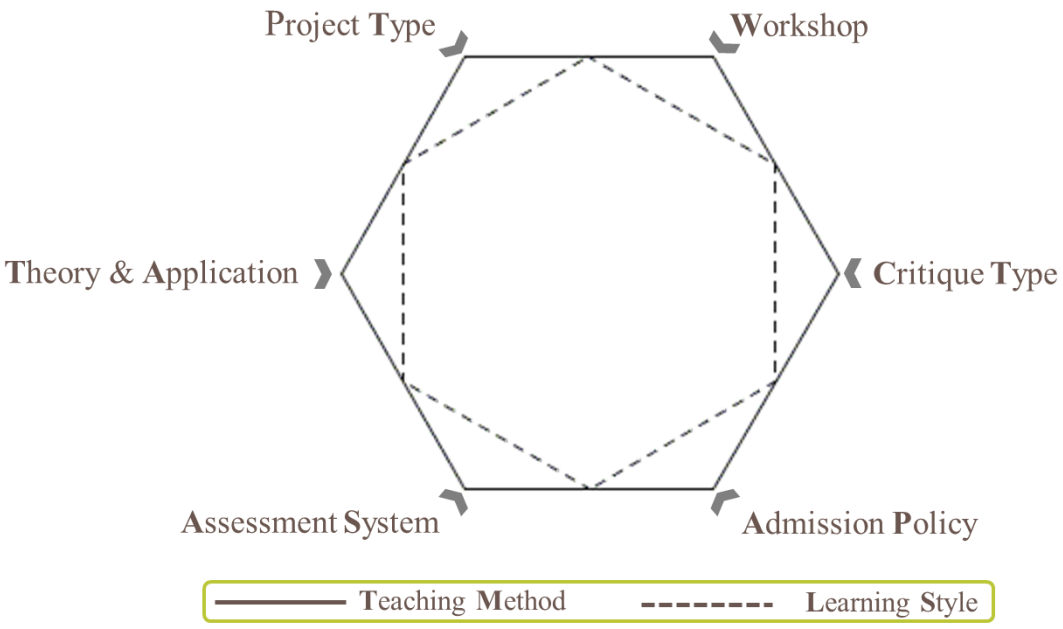


Figure 5.1: Recommendation Areas of the Research

Generally, first-year students who enter department of architecture have different educational background which is based on the memorizing the given lectures that

conducted students to students to think vertically and determines their roles as the passive actors. Complete dependency to tutors and studying for grade capturing are some study habits of students gained through their pre-university educational system. This variety in students' profile and vertical thinking habit could be moderated through the certain educational plans and actions.

■ Admission criteria could be set in a way that the balance between the admitted students achieved within the registration. In this way, the balanced range of the ability, interest and background among the students could be seen. On the other hand, different backgrounds could be taken as an opportunity to provide more group works within the studio time and give a chance to the students for learning from their peers. Instructors may spend more time on the students' interpersonal dynamic skills to employ their capabilities through the design process, which could be approached by structuring different assignments with the aim of arousing students' creativity and interest through their form producing process and in a proper way. In addition, educators could provide a library of experiences for the students by conducting training workshops based on Learning-by-Doing to enhance students' experimental design knowledge and skills.

Based on the direct observation, it was found that the students have low self-confidence due to insufficient either inaccurate design knowledge. Therefore, they are not able to express their ideas and participate in the studio group discussions. This leakage limits the students to gain the expected critical thinking skill and also, reduces their self-criticism and evaluation skills. Although, through the project-based learning method students' critical thinking and criticism skill need to be enhanced by engaging them as much as possible through their design process, the majority of students prefer to receive the individual critique and do not participate in group critiques and studio discussions throughout the semester according to the found materials.

■ Increasing the number of group critiques during the concept generation stage of the design process at the beginning of the semester, with the aim of compelling students to listen and participate in the studio discussions and express their ideas on the topic. Asking students to listen to their peers' individual critiques and express their ideas on the projects. And to achieve this purpose, designating a portion of the total grade on the students' contributions in the discussions and critiques.

Based on this research results, students desire to improve or generate design-solution by the instructors' critiques rather than their own ideas and performances. Therefore, persuading students to take more responsibilities through their design process seems necessary for the basic design students. And design critique as a core of the design studio should be implemented in such a way to give some clues to the students for developing their design ideas, because giving critique for each stage of the design process make students over-reliance to instructors and as a result students are not being self-responsible to develop their projects. Although, applying instructors' critiques is expected from students but, they usually prefer to just do the exact solution by their instructors and have minimum or something zero level of self-improvement and creativity on their design development process, which causes to enrich students' uncertainties and over-reliance to the instructors' comments through the different stages of the design process.

In addition, some students set back from their own design ideas while receiving critiques, having doubt about validity of proposed design solutions is rationally acceptable for the students in basic level. But, it is expected from them to have sense of belonging on their proposals and try to reshape or revise them based on their instructors' guidance. On the other hand, some students prefer to apply their own immature ideas on their projects and ignore their instructors' ideas, they constantly repeat their mistakes and persist in applying their non-working ideas on their projects.

Although, remaining on the ideas is of the expectations from the design students, but sometimes students' wrong ideas misconduct them through their design development process. However, coordinating the design ideas with the proper way of architectural design and instructors' critiques is expected from students in order to enhance their self-dependence skill and approached the proper decision-making process through their project design process.

■ Carrying out three different ways of criticism by Attoe (1978) during the critique sessions as; "Normative Criticism" which is based on some pre-defined standards, "Interpretive Criticism" which has suggestive format and tends to reveal and evoke the essence of the design to make recommendations for improvement without any judgment and evaluation, and "Descriptive Criticism" which is also non-judgmental criticism and has been carried out to uncover the important aspects and context of design without any recommendation and evaluation, could inform the students about various aspects of their designs. But, they are not directly suggested to the proper design-solutions for their projects. Actually, students through these types of criticisms seeing their projects from different perspectives which grows their self-evaluation skill and motivate them to develop their design projects by themselves. Generally, students need to be convinced that they are the main decision maker through their design process, so they are expected to act decisively.

■ Creating more opportunities for the students to express their design ideas and thoughts verbally as well as their sketches and design models, by opening more group and rotational discussions throughout the studio hours and getting students involved in the conversations. And also, expecting the students to criticize both, their own and their peers' projects during the semester, which may enrich their confidence, responsibility and cooperativeness through their design process and project development process.

Basic design students are not familiar with the design tools, means, methodologies, terminologies and techniques in architectural designs, thus design instructors usually have the dominant role on the students learning process to lead them in a formal way of architectural designs. On the other hand, it is expected from the students to learn formal architectural design themes and principles gradually through their learning process. However, most of the basic design students prefer receiving critiques for the given design problems rather than thinking about them to solve.

Actually, students through the design process have more expectations and dependency to their instructors rather than themselves, which have diminished students' responsibility and role in their entire design process and development. Since, in tutor-center teaching method, instructors are mostly selected base of their competencies, thus lack of experience in teaching first-year design students could create the reliance on the self-experience or discovery teaching methods in through the instructional process of introductory design studios and put the students away from the main objective of their design studio.

■ Involving more experienced teaching instructors to these critical studios who have the expectations base on the students' design background, knowledge, skill and experiences rather than their preconception and defined criteria. Further, providing horizontal coordination and more meetings among design instructors' groups for defining same normative standards and expectations for the students to follow, could be a kind of modification for this problem. In addition, students need to be clarified about the role of the instructors as the mentors, by making focus the instructional methods more on the students-center learning method rather than tutor-based teaching method in introductory design studios, which could be accomplished by getting students more involved both verbally and practically through the design process.

The majority of basic design students have a misconception or immature perception about the architectural design process. Moreover, they have low-contribution and low concentration through their design process. In some cases, students do not concentrate and pay not adequate care on the instructor' critiques and studio discussions through their learning process. Although, their knowledge is not sufficient for this stage, but the level of contribution which brings consciousness through the design process is expected. In general, lack of time, the imbalance ratio of students and instructors and also, tutor-based educational method may create such shortcomings in architectural design education which could be modified through some considerations and concerns through the educational method in architectural design.

■ Students' perception about the design, design process and education in architecture could be redefined by holding one studio session composed of a presentation with the content of acquainting students with the meaning of design process and its purpose in the architectural design education, in order to create well-defined definition of the architectural design and design process for newcomer students. Also, diminishing dominant role of design instructors within the studio environment by expecting mutual commitments and expectations from the students and educators, for instance, giving students a chance to criticize their peers' projects.

Expecting greater responsibilities from the students through their project development process and increasing their care and considerations in their projects, by denying giving critiques on the projects while no satisfactory improvement and low-level development observed. Lastly, compelling students to follow didactic principles and allowing more time to motivate students' self-study within the design studio to develop their projects in parallel with the instructors' supervisions. In addition, a portion of grade as a persuasive factor could be designated for these kind of in-class activities.

Exposing basic design students' creativity who start up learning to design recently is not a simple subject in architectural design education, it also seems reasonable with a view to the students' secondary educational system. Being creative through design process is the major competency for students to achieve the successful and innovative architectural design products.

However, some students make imitation instead of creation to express their designs as the own creative ideas. Students usually have a misjudgment about the use of creativity in the architectural designs, thus meaning of the creative and innovative architectural designs need to be changed in students' mind. However, determining a right perception about how to use creativity through the design process is expected from the basic design students.

■ Design mentors might explain the preconditioned conceptions and criteria of creativity and also, its way of applying on designs for the basic students and motivate them to employ their intuitive feelings and creative thoughts within their design process. Removing students' preconceptions of creativity in architectural designs could be accomplished by amending the assignments, defining new warm-up projects in the conceptual design stage, presenting some examples not only from the architectural designs to inspire design ideas and arise students' creative thinking skill. In addition, carrying out less directive critiques in the concept generation stage could also expose students' creative and intuitive thoughts on their proposals.

■ Informing students that creativity span is not limited only in the final design product, it could be engaged through the design process, by expressing creativity criteria in architectural designs and determining how design ideas have been translated into the design products for the students, through some examples or visiting real designs (not only the architectural designs). Instructing students to inspire ideas from other designs

instead of imitating the ideas, by providing certain design practices for students to inspire some design ideas from different sources. And, explaining the notion of creativity for students through the notion of expertise within the particular domains (man-made designs and natural designs; not only architectural designs) like; nature, music, movie, theater, artworks, poetry and etc.

Students' design products as their main learning outcome should exhibit their gained design knowledge through the design process. However, lack of the architectural expression is commonly observed among the basic design projects. Although, projects have been developed and gotten proper formats by the instructors' critiques gradually throughout the semester, but, proposing more rational and functional forms in the conceptual design stage is expected. In general, basic design students have varied challenges and difficulties in their form producing procedure. Providing a particular condition, requirements, practices and training medium for students to enrich their form creation skill is required for the basic design students.

■ Compelling students to explain more about their employed design principles in their designs while defending their projects. And at the beginning of the semester, beside the site analysis, asking students to do research on the design principles for having better perception about the architectural design principles and formal designs. It could be expected from the students to choose and highlight their desired design principles those might be used in their term design projects. After that, based on the findings, students could write a scenario to review their temporary set principles and methods which might have been followed through their design process.

■ Presenting similar examples with the comprehensible design principles for the students in a format of slideshows on the screen (soft-copy) during the studio hours at

the beginning sessions in the concept generation stage, or in a file format (hard-copy; printout) within the semester by the instructors.

■ Conducting design development process based on the disciplines-oriented approach those principles which have been defined by the students at the conceptual design stage. Instructors also could define the theoretical disciplines and crowding time-table with the deadlines for the students and expecting them to develop their design idea base on those set criteria. The defined framework can be distributed among the students in a format of hard-copy beside the course outline at the beginning sessions of the semester, could be played in a format of slideshows on the screen during the studio hours.

■ Structuring thematic framework based on the course objectives as the recipe of the design for students to follow throughout the semester, the proposed framework could be structured with the relevant design theories according to the term project and suggest students in; the material selection for model-making, their presentation techniques and the appropriate workmanship to improve a general quality of the design. In addition, some proper architectural examples based on the instructor expectations and project requirements for each session could be attached to the defined framework to increase student's perception of all requirements of the project.

■ Amending the exercises and defining those projects as the term design projects, which students are more familiar with their theme and subjects in reality like housing, restaurant, coffee shop and etc. Also, miniaturizing the scale of a term project and defining small-scale projects for basic design students to get better design perception through their design process. Structuring small-scale project with the architectural theme for novice design students reduces their challenges (architecturally and no-architecturally) in their designing. Through the projects, students have a minor

concerns through their design process, they could deeply understand their design problems and present more relevant proposals. Further, by overcoming on the obstacles, students feel more confident to take the next stage of their design process.

Design studios and design studies are the two different and also important means in architecture education, which are connected together simultaneously. So, students have to employ them through their design process jointly. However, design students do not usually exert their gained design knowledge from the fundamental courses in their design projects. They mostly develop their projects based on instructors' suggestions and those design knowledge and techniques which have gained in their current design studios (even not their previews design courses). In general, detaching design studios and design studies by the students' performances through their design process is commonly observed in the conventional architectural design studios.

Generally, design students do not employ their acquired knowledge from their theory courses in their applied courses and design projects. Therefore, practicing was being disconnected with the theoretical design knowledge due to students' little attention to the studied materials in developing their design ideas. However, students are expected to fill the gap between theory courses and design studios through their design process in order to achieve rational and innovative architectural design products.

■ More intensive and effective teaching method is required, for adjusting theory and application courses to gather, by defining some warm-up projects based on students' learnt theoretical design knowledge or adding some requirements to the project like a poster which demonstrates students gained design theories and strategies on their fundamental courses. These issues also require more time and instructors' toleration.

■ Allowing more time for theory-oriented study within the design process, and expecting students to define the architectural design principles and proper design strategies at various stages of their design process. In order to make bold a role of the theoretical knowledge and design strategies through the form producing process and in the applied courses.

Eventually, this research offers extra recommendations, which could be beneficial for both, teaching method as well as students learning methods at the basic design stage;

■ The defined assessment system for introductory design studios at EMU focuses on the design process rather than final design product, thus students' design process is considered as the main indicator of success in their design course. Accordingly, other universities which have the same concerns could implement the aforementioned assessment system, by leading design process more based on the process-oriented approach rather than the final product-oriented, and removing the results-oriented assessment system and applying students' performance-based assessment system. Further, by focusing on the students' conceptual design and design development stages rather than their final design products. In addition, designating more portion of grade for two aforementioned stages than final design outcome in order to increase students' efforts and academic performances throughout the design process.

■ Running training workshops with the purpose of improving students' form-creation skill, which could help students to materialize their subjective ideas into the concrete visual decision, with knowledge of geometric transformation of forms, design orders and principles in architectural designs. The workshops might be based on learning-by-doing method as well as design studios. Students could have the second chance to increase their operational skills and design experiences, while giving dimensions to their abstract ideas. And also, students are free to figure out design solutions for the

given design subjects, actually no criticism allowed from instructors. On the other hand, students could be asked to criticize their own and peers' designs with the aim improving their self-criticism and evaluation, self-dependence skills and thinking critically and architecturally as the further designs.

■ Rearranging weekly schedule, to have at least one peer-review every two weeks, which also suggested to enhance students' applied knowledge in their design skill. Giving student some responsibilities makes them more capable to manage his/her design process and make the appropriate decisions within the process.

■ In a case of EMU, reconsidering one of the existing elective course "Modeling with Clay" into a must course and prerequisite course for the first-year design students. The course might have a thematic design program for the newcomer students to enhance their model making and extrapolation thinking skills, by creating their subjective ideas as the objects and through a decision-making process and Learning-by-Doing method.

5.2 Conclusion

At the beginning, architectural education was based on the apprenticeship system (Demirbaş, 2001). In the eighteenth century, studio-based model of teaching was established by the École des Beaux Arts in Paris. Then, the tradition of "Learning-by-Doing" developed toward the "Project-based" and "Problem-based" educational methods (Lackney, 1999). Which have been centered upon the tutor-centered and student-oriented approach and also defined students' role as the main active participants in designing by getting directly involved in their design process.

Actually, Learning-by-Doing method leads students to learn through designing rather than studying. The method creates an opportunity for students to gain design knowledge through their individual experiences in parallel with the implementing teaching method and instructors' guidance. Individual and group critiques, design

problem, lectures and juries, preliminary and final design products are the six well-known elements of architectural design studios.

In general, design studio is a meeting point, where students employ all their theoretical and practical knowledge, those have gained through their educational process in their design projects. In this educational medium, through the project design process, students' applied skill is created to transform their verbal thought into the visual concrete decision. Design studio as the main mean in architectural design education (Little & Cardenas, 2001) has predominant impacts on students' learning process and their interpretation of real architectural designs. Basic design studios introduce the architectural design terminology through design projects to the newcomer students. Actually, basic design students learn how to properly present their subjective ideas in their projects as the solution for the given design problem.

First-year is known as a foundation year in architectural design education, thus introductory design studios are regarded as an important educational stage with specific objectives and required competent instructors in the architectural design education. This level is considered as the enrichment step for students in learning architectural designs and have a strong relation to the further design studios.

Students are coming to a foundation year with minimum ideas, perception, knowledge and skill of design and try to build themselves as an architect, this transformation of course would not be easy and safe. Because, mainstream of the pre-university education focuses on memorizing and vertical thinking rather than critical thinking and perception. While, architectural design education aims to enhance students' creativity, intuitive thinking and giving up students' fixated thinking. Thus, basic design students for the first time, observe the visual format of their subjective thoughts through their design process. Therefore, its first attempt is to make students' mind free from the

established, regular and inflexible patterns and leading them to think critically and intuitively through their design process. Thus, introductory design students are thought to present their abstract thoughts as the well-defined architectural design product with regard to the design principles and instructors' guidance.

Due to different educational backgrounds and design knowledge among basic design students, mentors need to create a coherent learning process for the newcomer students to accomplish their tasks efficiently. And since each student has his/her personal talent therefore, dealing with each students' capabilities and skills in a way to lead them toward the architecture design methodology might create informal teaching methods within the introductory design studios. Therefore, basic design students almost never formally learn what the design process is, actually their perception of the process is defined through their individual gained design experiences in producing the architectural design product. Thus, providing appropriate educational methods and means for the basic design students gives them a proper comprehension of the formal architectural design.

As was mentioned earlier, basic design students are coming from different backgrounds and they would face with challenges and dilemmas through their form-producing, function organizations, interior design solutions, technical drawings, model making, graphic communications and presentation skills. Therefore, implementing operational teaching methods and realizing students' needs and lapses through their design process could diminish students' difficulties in their designing and thinking architecturally. Moreover, several scholars have theorized the existence of lapses in first-year design education, thus basic design studios need extra care and attention, more in-depth studies and challenging discourses to define coherent meaning of the architectural design in the students' mind.

Therefore, to realize how students gain expertise in use of trained material, to examine influential factors in the students' form-creation skill and finally to figure out students' difficulties through their design process at the basic level, this study proposed with defined objectives and scope.

The research has documented theoretical and operational issues in the architectural basic design education, by studying applied educational methods for first-year design studio and examining the implemented teaching methods and students' learning styles through direct observation of a chosen case study (FARC 102; Fall and Spring academic semester 2014-2015) in one year. And distributing questionnaire among the 80 FARC 102 students and conducting interviews with the 4 basic design instructors (FARC Instructor) and also, with the 30 upper design students who had passed the selected design studio (FARC 102) in the last two years to consider the importance and influence of the design knowledge and skills obtained in their FARC 102 design studio in Department of Architecture at EMU.

This study aims to make the implicit connection between students' subjective ideas and their learning outcomes. Thus, the research has suggested factors, which using them through the basic design educational methods might improve students' design skills and insights to think and design architecturally, lead them to demystify their challenges in form producing procedures, help them to exert their creativity through the design process, enhance their self-criticism, confidence and self-dependence skills through their architectural design process. Lastly, this study recommends to give importance to the students' design process as much as their final design products, employing students' interpersonal skills and creativity through their design process. In order to train high-performing students and achieving the innovative design products, as the result of students' performance.

According to the set objectives, this research has highlighted some existing problems in the introductory design studio (FARC 102; first-year second semester) at EMU such as; lack of the motivation and responsibilities among the students, students' design skill deficits and being over-dependence to their instructor which are in contrast with the pedagogical aims and objectives of fostering self-dependence and creative individual future designers. The students have difficulties in creating their desired proposal with inquiry way of gaining knowledge, the admission system offered a high number of students for each semester and as the result, the existing the wide range of different backgrounds in the design studio. Lastly, a questionable assessment and grading system to evaluate the quality of the design projects. Therefore, the suggestions have been made to simplify the recognized problems and improve the existing condition.

Based on the found data in this research, students' dependency to the instructors through their design education could be divided into the three groups; the first group is contained students with moderate dependency on their instructors, which is affirmative for design students through their educational process. The second group is involved the students who are over-dependence on their instructors, which has usually taken place for the newcomer students in introductory design studios. And the third group is related to the students who act independently and do not care about their instructors' guidance, those are insisting on their non-working design ideas and try to keep them through their design process. Also, this undesired approach commonly experienced by instructors in first-year design studios.

The findings of this study determined that the students were eager to act independently in each stage of their design process, but when they began to manage the process, they were faced with dilemmas because of their insufficient design background, knowledge and skills. So, they depended whether or not to their instructors to get success in their

design process and preferred to just apply critiques to develop their projects rather than proposing new design solutions. Therefore, students' dependency to the instructors in the basic design level could be rationally acceptable. However, this study has highlighted that basic design students ought not to be over-dependence on their instructors, in order to be able to create the innovative architectural designs. Intestinally, most of the students preferred to act indecently and solve the design problems by their own solutions, along with receiving individual critiques through their design process. Based on responses to the distributed questionnaire in this research, the case study students hesitated to receive ready solutions and the main idea of the design for their projects. However, they accepted the majority of the instructors' recommendations and attempted to make a balance between their own ideas with their instructors' critiques through their design process.

Students in the conceptual design stage, were facing with dilemmas to externalize their subjective ideas. Thus, they tried to demystify their challenges by defining certain methods to solve their personal problems like; searching the similar examples, making sketches and design models that usually were composed by the basic and pure geometric shapes. Surprisingly, proposing functional forms with respect to the design principles was really important for the students. Therefore, they had the highest level of contribution and inquiry with the instructors, at the beginning stages of their design process in order to approach their desired results. They had willing to have instructors' contributions in their conceptual design and design development stages rather than their final design level. In addition, the majority of the students considered their final grade as the important indicator of their success in their design process. They were keen on getting good grade rather than improving their perceptual learning skill. Moreover, the academic assessment system examined students' final design products to ensure their success in the course.

Further, students considered creativity, motivation, design knowledge, hard-working and graphic communication skill as the factors those have important effects on their design skill to create the innovative architectural design products. Interestingly, they were eager to have the possibility of exposing their creativity and being motivated by their instructors through their design process. They believed hard working and equipping with the applied design skills lead them to enhance their design knowledge and improve the architectural quality of their proposed forms.

It is interesting to note that, almost all the students believed; offering theories and applied courses by contents of the basic design principles and strategies in architectural designs, presenting relevant design examples with the term projects and running some training design workshops in parallel with their design studios have positive impacts on their form producing process to create appropriate architectural design products.

The interpretation of this research results concludes that, notwithstanding the applied teaching method in the introductory design studios at EMU for sort of reasons such as; students' different educational backgrounds and methods in their secondary schools, so the extension of their prior learning habits into the design studios, is acceptable to the certain extent. Because over continuing those habits have unexpected negative impacts on the basic design students' knowledge and skill acquisition and expected course objective would not be met completely. This negativity could be a result of the found mismatch risk between the implemented teaching method and its desired learning outcomes, which consequently misleads the students in approaching productive forms and expressive architectural designs. Thus, the result of this study could be supportive not only for EMU, but also for the majority of other architecture programs which have the same concerns.

5.3 Future Work

This thesis provided a strong basis of the findings about the conventional teaching and learning methods and students' form creation difficulties in first-year design studio (second semester) at EMU. However, still possibilities of other researches remain. The carried out research, provides the basis for further studies and future works in several relevant areas.

Based on this thesis findings, providing various numbers of examples for the students, especially in their form generation stage is essential and would be very supportive to the educational objectives. This research proposes a study on geometry transformation relation to the design principles to support students throughout their form producing process. It should be noted that since new generation is mainly studying and living digitally, thus this auxiliary tool needs to be introduced in the same format and used during studio sessions.

Of course, selection of those cases, the method and manner of analyzing, criticizing and presenting them for first-year design studios would be a proper future work.

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APPENDICES

Appendix A: FARC 102 Course Outline in Fall and Spring Academic Semesters 2014-2015.

- FARC 102 Course Outline; Fall Academic Semester 2014-2015 at EMU.

EASTERN MEDITERRANEAN UNIVERSITY
COURSE OUTLINE TEMPLATE

COURSE CODE	*FARC 102* **COURSE LEVEL** 1st year 2nd semester
COURSE TITLE	*Introductory Design Studio*
COURSE TYPE	*Faculty Core*
LECTURER(S)	*Assoc.Prof.Dr.Nil P.Şahin(gr.1), Assist.Prof.Dr.Nevter Z. Cömert(gr.2), Makbule Oktay (M.Arch, gr.3) Ali Tanrıkul (M.Arch-gr.4),Gaye Şenyaşa (gr.5), Sevil Aydınlık (M.Arch, g.6),*
CREDIT VALUE	*6* **ECTS VALUE**
PREREQUISITES	Farc 101
COREQUISITES	-
DURATION OF COURSE	*Monday and Thurdsay-08:30-12:20-8 hours*
WEB LINK	
OFFICE NO/OFFICE HOURS	

CATALOGUE DESCRIPTION
This course put an emphasis on design process, exercises on three dimensional forms, space, function, material, structure, role of context, human dimension and scale, transition from abstract problems to concrete ones.

AIMS & OBJECTIVES
Course is designed to introduce the students to the production of architectural design projects. The approach involves developing an awareness of relationship of concepts such as: structures, architectural form and space, natural light and light control, building materials, vertical circulation as well as horizontal to be solved within real-case (function), human dimensions and scale, the idea of context (site/the physical one-topography, access, land utilization, climate, sun orientation, simple and landscaping). Emphasis continues to be on integration of basic design principles with 3-D organization while improving graphic communication skills. Moving from transitional projects to more concrete architectural design exercises with different stages of the projects. Scenario preparation to describe activities leading to architectural programming.

Also it aims to familiarize students of Architecture, Interior Architecture and Industrial Design with the basic issues of Design and introduce these issues with the help of a small scaled introductory design project.

GENERAL LEARNING OUTCOMES (COMPETENCES)
On successful completion of the course, the student is expected to develop **knowledge** and **understanding** of:

- Design elements and principles at understanding level.
- Form-function-space-structure relationships at understanding level
- Formal ordering systems at understanding level
- Structural awareness
- Environmental issues at awareness level
- Contextual properties at awareness level (topography, access, land utilization, sun orientation, simple landscaping)
- Context-design relationship (accessibility, indoor-outdoor interactions, etc) at understanding level
- Collection, analysis, synthesis of data regarding to design problem at awareness level
- Human dimensions and scale at awareness level
- Natural light & light control at awareness level

On successful completion of this course, all students will have developed their **skills** in:

- Problem solving with low complexity
- Fundamental Design (abstraction and conceptualisation, model making, visual communication and presentation) at understanding level

- Collaboration (group work) at awareness level

On successful completion of the course, the student is expected to develop **abilities** of:

- Verbal, visual communication and writing
- Time management
- Decision making

On successful completion of this course, the student is expected to develop **appreciation** of (and/or **respect for values** of)

- Studio culture in design education
- Uniqueness in design
- Relationship of different design scales

GRADING CRITERIA

The letter grades have the following meanings:

(A)(A-): exceeded expectations, work above what is required, superior!
(B+)(B)(B-): met all expectations as specified for the class in a professional manner: Student's work demonstrates above average understanding of the issues embodied in the program / course outline.
(C+)(C)(C-): met minimum class requirements: Student's work meets the minimum requirements of objective criteria, without contributing new knowledge to the studio.
(D+)(D): did not meet minimum requirements but shows evidence of being able to complete next level / next semester's project: Student's work demonstrates limited understanding and/or effort
(D-)(F): did not meet minimum requirements and must repeat with a new team at a later semester: Student's work is unresolved, incomplete and/or unclear.

RELATIONSHIP WITH OTHER COURSES

This course is the prerequisite of Arch 291-Architectural Design I, INAR 291-Interior Design Studio I and IDES 291

LEARNING / TEACHING METHOD

There are lectures for different topics, general discussions and one to one critics as a general teaching method. Interactive teaching method based on one-to one communication through creative problem solving exercises to develop critical thinking ability is applied. Individual project development (learning by doing) alongside group works (learning from friends) besides learning through experiences (making research, learn from guest designers or jury members) helps students to learn through different methods.

ASSIGNMENTS

There are 2 warm up projects and 1 Architectural Design Project which is composed of 2 parts. Part 1 is an Architectural Design project and common for all students from 3 different departments. And Part 2 is the continuation of Part one but will be a design which will be shaped according to students field of study.

METHOD OF ASSESSMENT

Mainly the process & progress takes the priority of assessment during the semester. Continuous and regular improvement, taking regular critics, developing independent & unique ideas, attending class regularly, working in the studio during the course hours, getting well prepared both for individual critics and to the juries (in-term-midterm-final) possess significance in the assessment. Please take into consideration that it is mainly the process which is evaluated more than the final outcome of each stage and project.

- **Warm-up project 1 (%5)**
- **Design Project Part 1 (%40-a+b+c)**
  a. Site Analysis + Scenario Development + Concept development (%10)
  b. Pre-Midterm evaluation (10%)

c. Midterm Evaluation (20%)

- **Design Project Part2 (%40-a+b+c)**
  a. In-term evaluation (10%)
  b. Pre-Final evaluation (10%)
  c. Final Evaluation (20%)
- **Warm-up project 2 (%5)**
- **Process and Progress (%10)**

ATTENDANCE
Student should attend %80 of the lectures. Otherwise, the student will get NG grade.

TEXTBOOK/S
-

INDICATIVE BASIC READING LIST
None

EXTENDED READING LIST
None

SEMESTER OFFERRED
2014-15 Fall Semester.

CONTENT & SCHEDULE
Lectures will be held on A14-A16-A24. The lecture topics within the semester are as in the following schedule:

Week	Lectures-Discussions	Task
W1 13-16 oct	Group and individual Discussions on warm-up project: "Which Music style?", "Which architectural style?", "how this two style tuned into a video clip?", "Which application?",	• Introduction and arrangement of groups • Introduction of Warm-up project: **"ARCHITECTURAL STYLE IN FAMAGUSTA MUSIC FESTIVAL-"** • Downloading application for video clip making • First ideas developed about warm-up project. • Poster presentation on Music style and Architecture style. • Scenario Development
W2 20- 23oct	Group and individual Discussions on warm-up project: -What is your music style? -"Which architectural style reflect your music -What is your scenario? -How do you relate music and architectural style in the city?	• Continue Warm-up project • Submission of Warm-up project- on Thursday. • Introduction to Term Project Part A: **"MUSIC PARK"** **"composed of living, working and performing"**
W3 27-30oct	• Architectural Design project "Scenario" development methods • Site analysis techniques • Site Visit	• Individual Scenario development • Site trip • Silhoutte drawing + first idea sketches
W4 3-6nov	• Site organization • Building-context relationship -orientation -access -entrance definition -view	• Site analysis / Synthesis • Project development-Individual Table critics • 1/100 plan-section-elevation-model-silhoutte-site section
W5	• Architectural form and space	• Interm Jury

10-13nov	organization • Indoor-outdoor relationship • Horizaontal veritcal circulation • Ergonomy • Antropometry	• Project development-Individual Table critics • 1/100 plan-section-elevation-model-silhoutte-site section
W6 17-20nov	• Architectural form and space organization • Indoor-outdoor relationship • Horizontal vertical circulation • Ergonomy • Antropometry	• Project development-Individual Table critics • 1/100 plan-section-elevation-model-silhoutte-site section
W7 24-27 nov	• Architectural form and space organization • Indoor-outdoor relationship • Horizontal vertical circulation • Ergonomy • Antropometry • Presentation techniques	• Project development-Individual Table critics • 1/100 plan-section-elevation-model-silhoutte-site section • Presentation of the project for Midterm Jury
	28 November 2014-Friday Farc 102 Midterm Jury	
W8 1-4 dec	**Midterm Exam week**	
W9 8-11 dec	**Midterm Jury Week**	
W10 15-18 dec	• Structure Systems	• Warm up 2: Structure Systems+Xmas tree design • Review after jury and Introction to Part B
W11 22-225 dec	• Structure Systems- Tectonics-form – space and structure relationship • Interior Space Organization and architectural styles	• Project development-Individual Table critics • 1/100 site plan - silhoutte-site section • 1/50 plan-section-elevation-model
W12 29-	• Structure Systems- Tectonics-form – space and structure relationship • Interior Space Organization and architectural styles	• Project development-Individual Table critics • 1/100 site plan - silhoutte-site section • 1/50 plan-section-elevation-model
	New Years Eve	
W13 5 -8 jan	• Structure Systems- Tectonics-form – space and structure relationship • Interior Space Organization and architectural styles	• Pre-final Jury • Project development-Individual Table critics • 1/100 site plan - silhoutte-site section • 1/50 plan-section-elevation-model
W14 12-15jan	• Presentation Techniques	• Presentation of the project
	16 January 2015-Friday Farc 102 Final Jury	
W15 19-22 jan	**Final Exam Week & Final Juries**	
W16 26-29 jan	**Final Exam Week & Final Juries**	
W17 27-31 jan	**Final Exam Week & Final Juries**	
10 feb	**Last day of subbitting letter grades to the registration office**	

PLAGIARISM

SITE TRIPS

There are site trips for different projects to various locations.

- **FARC 102 Course Outline; Spring Academic Semester 2014-2015 at EMU**

EASTERN MEDITERRANEAN UNIVERSITY
COURSE OUTLINE

COURSE CODE	FARC102	**COURSE LEVEL**	1/2 - Spring 2014-2015
COURSE TITLE	Introductory Design Studio		
COURSE TYPE	Faculty Core		
LECTURER(S)	Nazife Özay, Guita Farivarsadri, Resmiye Alpar Atun, Bahar Uluçay, Defne Feridun, Cenk Atun, Öznem Sahali, Mustafa Batıbeniz, Zafer Cafer Volkan, Zeref Birsel, Kemal Kasapoğlu, Ghazal Farjami Ardakani		
CREDIT VALUE	6	**ECTS VALUE**	
PREREQUISITES	None		
COREQUISITES	None		
DURATION OF COURSE	8 Hours, Monday 08:30-12:20 & Thursday 08:30-12:20		
WEB LINK			

CATALOGUE DESCRIPTION

This course put an emphasis on design process, exercises on three dimensional forms, space, function, material, structure, role of context, human dimension and scale, transition from abstract problems to concrete ones.

AIMS & OBJECTIVES

Course is designed to introduce the students to the production of architectural design projects. The approach involves developing an awareness of relationship of concepts such as: structures, architectural form and space, natural light and light control, building materials, vertical circulation as well as horizontal to be solved within real-case (function), human dimensions and scale, the idea of context (site/the physical one-topography, access, land utilization, climate, sun orientation, simple and landscaping). Emphasis continues to be on integration of basic design principles with 3-D organization while improving graphic communication skills. Moving from transitional projects to more concrete architectural design exercises with different stages of the projects. Scenario preparation to describe activities leading to architectural programming.

Also it aims to familiarize students of Architecture and Interior Architecture with the basic issues of Design and introduce these issues with the help of a small scaled introductory design project.

GENERAL LEARNING OUTCOMES (COMPETENCES)

On successful completion of the course, the student is expected to develop knowledge and understanding of:

- Design elements and principles at understanding level.
- Form-function-space-structure relationships at understanding level
- Formal ordering systems at understanding level
- Structural awareness
- Environmental issues at awareness level
- Contextual properties at awareness level (topography, access, land utilization, sun orientation, simple landscaping)
- Context-design relationship (accessibility, indoor-outdoor interactions, etc) at understanding level
- Collection, analysis, synthesis of data regarding to design problem at awareness level
- Human dimensions and scale at awareness level
- Natural light & light control at awareness level

On successful completion of this course, all students will have developed their skills in:

- Problem solving with low complexity
- Fundamental Design (abstraction and conceptualisation, model making, visual communication and presentation) at understanding level
- Collaboration (group work) at awareness level

On successful completion of the course, the student is expected to develop abilities of:

- Verbal, visual communication and writing
- Time management
- Decision making

On successful completion of this course, the student is expected to develop appreciation of (and/or respect for values of)

- Studio culture in design education
- Uniqueness in design
- Relationship of different design scales

GRADING CRITERIA

(A)(A-): exceeded expectations, work above what is required, superior
(B+)(B)(B-): met all expectations as specified for the class in a professional manner
(C+)(C)(C-):met minimum class requirements
(D+)(D): Did not meet minimum requirements but shows evidence of being able to complete next level/next semester's project
(D-)(F): did not meet minimum requirements and must repeat with a new team at a later semester

RELATIONSHIP WITH OTHER COURSES

This course is supported by FARC113, FARC103/104 and FARC 142 courses. These courses provide theoretical background for the complex conceptual requirements of the design studio, and equip students with necessary skills and knowledge in presenting their design works and communicating it to the others.

LEARNING / TEACHING METHOD

This is a studio course where learning by doing pedagogical approach is used. Students learn about design process by involving directly in the process. The practical studio work is supported by lectures and audio-visual presentations in various subjects related to design. General and individual critiques are the main medium for teaching design.

ASSIGNMENTS

A series of projects with different emphases are offered in this course. Assignment one includes two stages; a research project on the main structural systems and design of a creative shelter. Besides, there is a term project that is Themed Film Park Design.

METHOD OF ASSESSMENT

Assessment of students is based on their overall performance or progress during the semester since the process is deemed at least as important as the product of design. Thus, active participation (regular attendance, taking regular critics, submissions on time, active participation in group discussions) has a %5 weight in the total semester's grade. The first assignment which consists of Stage A; Research Project has a %5 and Stage B; A Creative Shelter Design has a %10 percent weight. The term project's first part that will continue until the mid-term has %20 and the second part that will continue until final has %60 percent of the semester's grade.
There might be frequent pop-up sketch exams during the semester. So always be ready and come to the studio prepared (with your drawing and model making tools)!

ATTENDANCE

Attendance in studio is vital in being able to follow the course content. Students who miss more than 20% of the class hours will be failed with an NG grade.

TEXTBOOK/S

None

INDICATIVE BASIC READING LIST

None

EXTENDED READING LIST

- Ching, Francis (2007) **Architecture: form, space & order**, Hoboken: J. Wiley & Sons
- Ching, F. (1995) **A visual dictionary of architecture**, New York: Van Nostrand Reinhold
- Ching, F.(1998) **Design drawing**, New York: Van Nostrand Reinhold
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- Von Meiss, P. (1990) **Elements of architecture: from form to place**, New York: Van Nostrand Reinhold
- Wallschlaeger, C.(1992) **Basic visual concepts and principles for artists, architects, and designers**, Dubuque, Iowa: Wm. C. Brown Publishers

SEMESTER OFFERRED
2014– 2015 Spring Semester

PLAGIARISM
Using design works or ideas of any one else (published or unpublished) without giving reference is accepted as cheating and is a disciplinary offence and will be dealt with accordingly.

ANY OTHER USEFUL INFORMATION :
To be able to get critics and work effectively in the studio, students should bring the requirements of the given project (drawings and models), their drawing and model making tools (T-square, triangles, model-making knife, glue, etc.) to studio every session.

CONTENT & SCHEDULE
Lectures will be held on Mondays (08:30-12:20 pm) and Thursdays (08:30-12:20 pm) in Studio E04, E05, E06, E07, E08 and 09.
ACTIVE PARTICIPATION TO THE STUDIO IS A MUST.

WEEK	DATE	CLASS WORK	HOME WORK	Reminder
1.	09.03.2015	INTRODUCTION OF THE ASSIGNMENT 1 - STAGE A :: Research Project on the Main Structural Systems Choose your groups, Table critics	Bring your initial researches to the studio	**Bring Model making and drawing materials to all the sessions.**
	12.03.2015	INTRODUCTION OF THE ASSIGNMENT 1 - STAGE A :: Research Project on the Main Structural Systems Discussion on research findings	Bring your Research Project to the studio	Bring research documents, sketch book and pencil to studio.
2.	16.03. 2015	SUBMISSION AND PRESENTATION OF THE ASSIGNMENT 1 - STAGE A:: Research Project on the Main Structural Systems INTRODUCTION OF THE ASSIGNMENT 1 - STAGE B:: Creative Shelter	Bring your initial design ideas to the studio (both sketches, drawings, models)	Bring sketch paper, drawing and model making materials
	19.03. 2015	THE ASSIGNMENT 1 - STAGE B:: A Creative Shelter Critiques on your work		Bring sketch paper, drawing and model making materials
3.	23.03. 2015	THE ASSIGNMENT 1 - STAGE B:: A Creative Shelter Critiques on your work		Bring sketch paper, drawing and model making materials
	26.03. 2015	THE ASSIGNMENT 1 - STAGE B:: A Creative Shelter Critiques on your work		Bring sketch paper, drawing and model making materials
4.	30.03. 2015	SUBMISSION OF THE ASSIGNMENT 1 - STAGE B:: A Creative Shelter INTRODUCTION OF THE TERM ROJECT PART A **FILM WATCHING and CRITICISM**	Bring your initial studies to the studio	
	02.04. 2015	THE TERM PROJECT - PART A **Site trip** for Term Project	Working on your design	Bring sketch paper and camera
5.	06.04. 2015	THE TERM PROJECT - PART A Initial studies on the selected film	Working on your design	Bring sketch paper, drawing and model making materials
	09.04. 2015	THE TERM PROJECT - PART A Selected Films' Presentation	Working on your design	
6.	13.04. 2015	THE TERM PROJECT - PART A Critics on synthesis and proposal development		

	16.04. 2015	THE TERM PROJECT - PART A Critics on synthesis and proposal development	Working on your design	
7.	20.04. 2015	THE TERM PROJECT - PART A **Last touches before the Mid-term Jury**		
	22.04. 2015	**FARC MID-TERM JURIES**		
	23.04. 2015	**NATIONAL HOLIDAY**		
	24.04. 2015	**FARC MID-TERM JURIES**		
8.	27.04. 2015	**MID-TERM EXAMS WEEK**		
	30.04. 2015	**MID-TERM EXAMS WEEK**		
9.	04.05. 2015	**MID-TERM JURY WEEK**		
	07.05. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
10.	11.05. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
	14.05. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
11.	18.05. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
	21.05. 2015	**Spring Fest, Design Week** THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
12.	25.05. 2015	THE TERM PROJECT - PART B **Interim Jury**	Working on your design	
	28.05. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
13.	01.06. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics		
	04.06. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
14.	08.06. 2015	THE TERM PROJECT - PART B **Interim Jury**	Working on your design	
	11.06. 2015	THE TERM PROJECT - PART B Project development-Individual Table critics	Working on your design	
15.	15.06. 2015	THE TERM PROJECT - PART B **Last touches before the Final Jury**	Working on your design	
	18 – 19. 06. 2015	**FARC FINAL JURIES ::** Submission and the presentation of the Term Project		

Appendix B: Recorded Photos from the FARC 102 Design Studios throughout the Two Academic Semesters 2014-2015 at EMU.

- FARC 102 Design Studio; Fall Academic Semester 2014-2015 at EMU.

All photos have been taken by the author throughout her observation sessions of the chosen case study, which describe varied stages of FARC 102 design process at EMU.

- FARC 102 Design Studio; Spring Academic Semester 2014-2015 at EMU.

Photos have been selected by the author and proposed for appendices of the thesis. The selection of photos was based on demonstrating students and instructors performances through the FARC 102 design process as narrative in 2014-2015 academic year.

Appendix C: Taken Notes during the Direct Observation in Fall and Spring Academic Semester 2014-2015.

📋 Fall Academic Semester 2014-2015

The paper explains the initial notes of author's direct observation as a descriptive information which have been structured according to the factual data, conversations, behaviors and actions of FARC 102 design students and instructors in the Preliminary Design Studio at EMU in fall academic semester 2014-2015. The observations were accomplished in A14 design studio on Monday and Thursday at 8:00 AM till 12:30 PM in EMU architecture department.

Students at the proposed design studio (FARC 102) should design a personal living, working and performing space for musician and write a scenario about their desired design strategies for the semester project.

The studio includes 36 design students that were sat at tables individually and in some cases two persons seated at on the table. Some of them were working on their own design project and some other were talking to each other. Numbers of sites models could be easily seen on the students' table. The design instructors usually came at 8:30 AM. Student attendance was taken with the design assistance and then the instructor explained the programs of the session. The critiques have been given to the students on their design projects one by one (table-critique). Students were supposed to have their first proposal in term of model and sketches, site model, some keywords which show their perception of the "musician" and the case study poster. They also, should work on their design projects and make site section of their projects while instructors giving critiques to other students. During these activities some examples from architectural building, art and some sketches were showing on the screen for students to take some ideas in a term of form relationship and formal organization.

Students sat in front of the instructors' table and receiving critiques from them. They should bring all the requirements for their critique session. Taking notes and photos by the author while observing the instructors and students' communication were done throughout the observation sessions. Students and instructors were communicating with each other through the students' design models and sketches.

The main ideas behind the conception was very important for the instructor. And the student's concept poster was the main component in communication between them and instructors. Instructors would like to see a connection between students' proposed forms and their case study posters. But in some cases, the concepts and the form do not have any relationship with each other. For example, in one project the concept was "reflection" but the model did not present any reflective elements the form was completely rigid with no glass wall or water element in the design. Students were asked to design a building on topography for the first time, but they paid not much attention to it. Most of the students even did not fix the location of their models on the site model because they were not sure about the proper location for designing on their project site.

Here some positive or negative aspects of the FARC 102 design projects in accordance with the instructors' suggestions have been explained by the authors.

Most of the students were using just simple geometric shapes which were more rectangular and square shapes in their initial drawing and for presenting in a three dimensional format, some of them just extruded these shapes without any addition or subtracting. Some forms had not any relation to each other within the composition or have been too much integrated with two or three geometric shapes. Some forms were put on the site without any definition and connection on the site model. On the other hand, some student had come up with too complicated forms that distinguishing the shapes were not easily understandable. Students had some basic shapes in their

drawing, but while transforming them into three-dimensional models they usually lost their initial design ideas. They added or subtracted too much from the basic forms (initial drawings). The instructor advised them that by making three dimensional forms the nature of forms should not be changed. Extruding and subtracting of basic geometric should not be too much or little.

Most of the conversations between students and instructors were about the students' perception of their case studies and contribution of it on their proposed forms. The conversations had been started with instructor questions like: How did you come up with this form? What are your keywords about the musician? What did you find from your case study? And some questions like this which were related to student's initial decision making of their design process. After some critiques, students had 10 minutes break. However, students were asked to work on their project during the break time.

During the conceptual design period at the beginning of the semester the course coordinator presented some pictures which were being shown on the screen during the class hours. Students were coming close to the screen to see and hear better. And they were supposed to take note during the presentation

The instructor tried to explain the pictures in a simple way and clarify the initial ideas behind the each design. She suggested the students to play with forms and tried to give some clues to the students for starting their design like:

- Use simple geometric forms and try to make integration between them.
- Use more dynamism in your design.
- Define your entrance parts to invite people to your project.
- Have some vertical and horizontal elements in your projects.
- Play with color, materials and texture to have a better definition for your projects.
- Use linear elements to create texture.

- Use different types of line to texture your surface.
- Combine transparent material in your design to see the reflection.
- Create indoor and outdoor relationship by defining open and semi-open spaces.
- Design outdoor space as well as indoor space.
- Define the entrance part to invite people inside the composition.
- Getting benefit by site, using all the features of the site can develop your projects.
- Pay attention to site view and lighting.
- Have some vertical balancing element in your design.
- Play with heights and test the height of a human being and test the height of your designed space.
- Create cantilever and visual continuity in the composition.
- Attention to the ceiling design.
- Bring additional quality to the space by emphasizing some keywords like lighting, repetition and flexibility.
- Notice to the sun direction and integrate it into your design.
- Try to create proximity in design you have to link all spaces very strongly.
- Use enclosing elements in your forms.
- Your design should have a formal relationship with its site.
- Do not have a static order try to shape dynamic forms.
- Do not scare of using different types of articulation.
- Play with the angles of the box in order to have angle organization.
- Get ideas not only from buildings, paying attention to any type of design.
- Be brave and creative in the process of design.
- Create different segment and put them on a horizontal level.

Instructor claimed that design is an experiential issue and presented some example to give students inspiration for the dynamic form organization. And also emphasized that

your design should express your ideas very simply. It should be comprehensible for people in accordance with the architectural design principles.

During the critique sessions students were called according to the list to receive the critique. Through the semester some students brought forms with flat surface and same ceiling height, no dominant part, no contrast and no texture. And in some cases hidden entrance part. The instructor suggested them to change the height dimension of forms for abandoning of these static organizations. In some projects, students put some basic geometric shape side by side with no meaningful relations with each other. Also in some projects attention had not been paid to the functional organization in accordance with the site location, scale and material selection for model making.

Most of the models had usual flat surface. Using glassing wall had been seen in only two or three cases. Throughout the semester critique sessions were started with the same questions, like: How did you come up with this usual form? How did you decide to put the form here? How did you come up with these keywords? Why this shape? And students tried to define their ideas on their forms. In almost all cases, instructors changed the student models to give some new ideas. And tried to learn them playing with forms. They also tried to give important clues to the students for thinking architecturally. As has been mentioned before, students were forced to design on topography for the first time. Hence, instructors tried to lead forms on topography. They emphasized on the importance of level difference on form finding and as a result achieving the active organization. Many Projects were put on the site without any relation with the context. Therefore, instructors suggested students to more inspiration with nature and link their design with it and use some elements of nature in their design in order to show the contextual relationship between form and site.

Now one project by the concept of “isolation” will be explained. The student had put only one rectangular cubic box and one pyramid on the site by the means of spot in the landscape. And according to the instructor’s critique the pyramid shape was eliminated in order to presenting the isolation concept on the overall layout of the design. This project, according to the instructor showed the connection between proposed form and the student’s concept of design.

In conclusion, my first direct observation of FARC 102 design studio has given some clues for this research process especially on the architectural form-making. For example, most of the students in this process lose their initial ideas of the design. They have something in mind, but they are presenting something else on their models. In some cases, they do too much exaggerates on their design models and in some other, models were presented very simple format of the students' design concepts. There were many usual cubical forms in-between students’ projects that had same proportions and only were enclosed with their edges. Most of them did not have any semi-open or open space in their composition. The contextual relationship between form and function was not enough clear. But in most of the project we could see the relationship between students key-words perception of musician with their proposed forms like: isolation, affection, minimalism and etc. The studio’s masters motivated students to use pure geometry with different proportion to materialize their design ideas and combining some transparent areas and semi open spaces in their design. They told to student that you are designing for users, therefore it is important to invite people to your design and it should be comprehensive at the same time. Instructors also tried to show the importance of the orientation in the overall layout of the design. And they also asked the student to put forms in different level of the site in order to have active organization. They denied static organization and lead students to catch dynamic organization on their designs. And also, suggested students to divide public and private spaces and integrate open and semi open space by using the nature in their design.

Using different materials, color and texture in terms of different articulation in order to combine the forms and ignoring monotonous repetitions. Use vertical and horizontal elements in space and some semi open space in composition to redefine the space were suggested by the instructors. They also advised students to make integration between forms by passing through the each other (no directly). And many other suggestions which were really helpful for the FARC 102 design students in their design process of form creation which following them throughout the semester have great influences on the ease of the form generation process and the final architectural design outcomes.

Observer Name: Shima Nikanjam

Student NO: 135279

Date: 10th November 2014

The following table indicates the course material and academic details of FARC 102 Introductory Design Studio in Fall semester at EMU.

Direct Observation Form – Fall Semester 2014-15					
Course Code	FARC 102		**Corequisites**	None	
Course Title	Introductory Design Studio		**Course Type**	Faculty Core	
Course Level	1st Year 2nd Semester		**Credit Value**	6 ECTS Value	
Semester Offered	Fall Academic Semester 214-15				
Duration of Course	Monday & Thursday- 08:30 AM- 12:30PM, 8hours per Week				
Prerequisites	ARCH 291- Architectural Design I, INAR 291- Interior Design Studio I and IDES 291- Industrial Design.				
Lecture(s)	GROUP 1, Assoc.Prof.Dr. Nil P. Sahin (Course Coordinator), Sevil Aydinlik (M.Arch, g.6), Teaching Assistant: Banafsheh Abd Alsamadi and Ata Chokhachian.				
Aims and Objectives	Introducing Students to the Production of Architectural Design Projects. Developing an Students Awareness of Relationship of Concepts and some Components like: Form and Space, Structure, Building Material, Natural Light, Scale, Landscaping, Climatic Issues. Emphasizing on Function Organization, Integration of Basic Design Principles with 3D Organization while Improving Graphic Communication Skills. Familiarizing all Students with Basic Issues of Design and Transformation of Basic Geometric Shapes to Architectural Forms.				
Assignment	Two Warm-Up projects for All Students From 3 Different Departments and One Architectural Design Which Will be Shaped According to Students Field Of Study. Students are asked to Design Personal Living, Performing and Working Space for a Musician. (MUSIC PARK)				
Assessment System	Based on Jury, Students Attendance to Class, Progress, Development of their Design Process and Final Design Product.				
Grading Criteria	**(A)(A-):** Exceeded Expectation	**(B+)(B)(B-):** Average Expectation		**(C+)(C)(C-):** Minimum Expectation	
	(D+)(D): Did Not Meet Minimum Requirements but be able to Complete Next Semester's Projects		**(D-)(F):** Did Not Meet Minimum Requirements and Must Repeat Semester with a New Team at a Later Semester		
Name of Observer	Shima Nikanjam	**Date**	10 November-16 January, 2014	**Time**	08:30 AM 12:45PM
Supplemental Information	Students From 3 Different Departments (Architecture, Interior Design and Industrial Design) are Combined Together.				

Spring Academic Semester 2014-2015

At the fist observation session in April 2015, following issues were recorded by the authors which indicate the general activities and design performances by the students and instructors. The course (FARC 102) was carried between 6 groups at the EMU University in studios part of architecture department (Known as ESTUDIOS). The Author had recorded one group of six which was carried by the course coordinator at E.06 Studio on Monday and Thursday, 8.00 AM- 12.00 PM, on spring 2014-15. At the first session of observation (April 20th, 2015), FARC 102 design students like other design students in upper or lower classes, were standing behind their table and looking to their proposed design concepts. Some of them just sat and were waiting for coming the instructor, some others, were working on their projects and tried to add or eliminate some part of their model. At 8.00 AM their instructor came to the class and perceived that most of the students are not ready to begin the class so she announce that, the class will begin at sharp 9:00 AM.

At the beginning of the session, the instructor took a glimpse of the student design models and gave them very short critiques. Then, each student has been called to give individual table critique from the course instructor and two assistances deeply. Instructor, first was listening to the students' design ideas and defenses for their proposed models and then, gave them some critiques and suggested them to develop their design ideas in an architectural way by touching their models to present her concept. At the end, students should take photos of their new design models, for making most proper and closed models in accordance with their latest critiques. Students also, should show their taken photos on the next session for reminding and assessing their workmanship.

Each student has permission to give one table-critique in a session and by working through the class hours, she or he could make discussion about their projects at the end

of the class. In some cases, those students who received critiques from the assistances, tried to take critiques from the course instructor as well.

Through the table-critique some students took note from their instructor's suggestion on their project. A few of the students are also standing around the instructor's table and listening to her critiques while she is talking and touching other student's project. In some case, one student was writing instructor critiques and took notes for his friend whom giving critique. Generally, most of the FARC 102 students in the class paid considerable attention to their instructors' suggestions for their peers' projects through the class hours. Actually, most of the time, during the design critique around 5-6 students were standing around the instructor's table and tried to give some clues from their fellow students and instructor's suggestions. Also, some students participated to the discussion and expressed their design ideas for their friend's design project. In addition, some students had made small groups with their friends in the class and were talking about their projects and shared their gotten critiques with their friends. They also made recommendations for their friends about their projects by the means of project development.

These issues and activities were almost same until the end of the semester which have been recorded by the author. So, to avoid restating issues the further paragraphs describes varied instructor's critiques and student's performance through their semester to propose, develop and present their final design models for FARC 102 design course.

- Have structural considerations for your design.
- Integrate and link the level differences (topography) to your design.
- Apply your ideas on the models in the abstract ways.
- Make dynamism between the masses in your project.
- Keep the alignment and pay attention to the angles.

- Create different qualities in your design.
- Arrange the appropriate size for each mass in your complex (Not Flat).
- Use different materials, textures and elements to materialize your design ideas.
- Play with the height of the masses, extrude some part to define the space.
- Define the function for each mass and spaces in your project.
- Have similarity and continuity between masses within your composition.
- Avoid to have intersection between the masses within the composition.
- Define the spaces according to their functions such as main space and sub-space.
- Notice to the functional organization definition in your design.
- Do not show details on your models (it is conceptual models).
- Invite people inside the complex by your design.
- Use time efficacy to develop your project.
- Pay attention to material selection in process of materializing your design ideas.
- Dominate main cinema in the complex by adding some design element to it.
- Provide some group of activities on the open spaces.
- Create circulation accesses in the design and send people through them.
- Try to enrich the quality of the space.
- Create proportion and order in your design by playing with size.
- Create contrast within the composition (avoid symmetrical order).
- Pay attention to integrating and intersecting between masses.
- Consider human scale in the architectural design.
- Geometrical expression is needed in the project.
- Consider some facilities for disable peoples.
- Attention to the global standard size in architectural design (refer to Neufert).
- Use some decorative and defining elements in your project.
- Have specific meaning and logic for each element in your design.
- Use some showing and guiding elements to define the different parts.
- Define the function for any open and closed space in the complex.

- Attention to the functional organization while drawing the plans.
- Masses should be clearly understandable and well-defined (geometrical orders).
- Simplify the forms and give meaning to them.
- Create integration between each module, combine them meaningfully.
- Geometry is important and pay more attention to it because it could create the meaningful space and function as well.
- Do not wait for getting accredited for your design ideas, continue your work, develop your ideas, make changes and apply them on your design project.
- Have some kind of variation on your design in order to create unity and integrate them with other masses.
- Define the relationship between open, semi-open and closed spaces.
- Do not use same defining elements for all parts of the composition.
- Come up to the solutions rationally.
- Consider geometrical proportion in your design.
- Support some part of the composition and the masses with semi-open spaces.

And, here are some FARC 102 student's difficulties though their semester to propose, develop and present their design ideas as and architectural design product:

- Having problem (afraid) to put the model on the topography.
- Most of the forms were introverted masses.
- Having doubt and hesitate to reflect their design ideas on their design models.
- Having some problem and difficulties in the plan drawing techniques, the way of drawing section and elevation as well.
- Having trouble with the plan and functional organizations, according to the architectural design instructions.
- Necessity to define the specific architectural language for your project.

Through the semester following issues were happened within the design learning and teaching process by students and design mentors which have been concerned by the

author as an observer. FARC 102 design students in spring 2014-15 academic semester were expected to design a feeling park with some well-defined open and semi-open spaces and manipulate the project by some areas like: cinema, shop, cafe, gathering area and exhibition in Famagusta. Students also, watched a movie in order to give some clues and ideas to start the design and them also, should integrate and relate their selected movie with their design ideas and present a keyword extracted from the movie as the design concept. Students presented their perception and design concepts on some A4 paper as the poster and explain their ideas with the help of those papers though their design juries.

At the beginning of the critique time, instructors opened the discussion by asking some question from the student, like:

- How were you planning your design?
- Which tendency did you reflect on your project?
- What did you change?
- What is the general keyword of your design?
- How are you reflecting it on your project?
- What kind of activities are done in your design?

The FARC 102 design mentor through the discussion with her students tried to reshape the masses to achieve more appropriate form with sign of architectural language. She, also, made some sketches of her design ideas while talking to them on their critiques time in order, to give a better perception of her concept to students. Through the critique time a very short discussion was been happened between design mentor and author which prove that students (FARC 102) do not know how to reflect their design ideas on their design projects. And it was obvious that instructor tried to teach their students to how to transfer and materialize their design ideas on their design models.

Students had defined presentation format for their juries, which should be followed. The instructor suggested students to use their paper in balance, write function, level difference and north direction on each sheet and create same frame for all sheets. And also she reminded that, there is no necessary to show all the details on your design models in introductory design studio's course. But, showing the north direction and model scale on the design models are needed. The instructor explained the general presentation format to the students for their midterm and final jury's submissions. Actually, students should have same paper format, size and presentation technique for their design jury. Before any juries (interim, midterm and final) students were hanging their projects on the panels and walls. And then, prepared themselves for their 10 minutes juries. They also were suggested to take note from the peer critique.

The jury focused on the student's proposed form, drawings, functional organization, interior solution, project layout organization, concept and presentation techniques. And students were expected to apply their critiques on their midterm juries and develop their project for their first session class after the midterm on 11th of May. But, many projects were untouched without any changes from their midterm submission or in some cases very low development. As the result, the instructor made students forced to work on their project during the class hours an then come to give critiques. Until the midterm jury, one of the unexpected issues that has been perceived by the author was that one of the students has not seen the project site until the midterm session. However, after midterm juries the course had more focus on plan organization and drawings. Actually, the proper way of plan drawing was taught by the instructor.

Many of the FARC 102 students have some question and problems on the proper way of drawing site section. The lack of the drawing skills was observed by the author through the students' inquiry. So, the instructor explained the proper way plan drawing with correct manner of showing wall thickness and line darkness on the architectural

plans. She advised her students to what to draw and what not to draw. For few of students, she also suggested them to follow grid line method for their plan drawing and made it clear for their students by drawing one part of their design as an example.

During the semester, the mentor reminded the importance of the geometry in architectural forms for her students because she believed that meaningful geometrical forms could create meaningful architectural forms and functions through the architectural design instruction. In addition, at the beginning of the semester students were expected to do research about their structural system that might be appropriate for the project. As the result, some structural models were made by the students which represented their perception and desired constructional system for their proposed design models. In addition, writing a scenario for the design project and making a concept poster according to the students' inspiration of the selected movie and also, the site analysis poster referring to the students' perceptions of the site features were expected from the students at the beginning session of the FARC 102 design course.

In summary, through the whole semester observation, student's enthusiasm for learning design instruction was quite clear to the author. Also the sense of the friendship among the students and their desire to develop their projects could be easily understood by the students' performances during the class hours. Furthermore, the course instructor tried to use this tendency in the best way to conduct and manage her design students in a way to achieve appropriate architectural design outcomes.

Observer Name: Shima Nikanjam

Student NO: 135279

Date: 8th June 2015

The following table presents the course material and academic details of FARC 102 Introductory Design Studio in Spring semester at EMU.

Direct Observation Form - Spring Semester 2014-15					
Course Code	FARC 102		**Corequisites**	None	
Course Title	Introductory Design Studio		**Course Type**	Faculty Core	
Course Level	1st Year 2nd Semester		**Credit Value**	6 ECTS Value	
Semester Offered	Spring Academic Semester 214-15				
Duration of Course	Monday & Thursday- 08:30 AM- 12:30PM, 8hours per Week				
Prerequisites	ARCH 291- Architectural Design I, INAR 291- Interior Design Studio I and IDES 291- Industrial Design.				
Lecture(s)	GROUP 1, Assist.Prof.Dr. Nazife Ozay (Course Coordinator), Teaching Assistant: Gökhan Varol and Mustafa Batibeniz.				
Aims and Objectives	FARC 102 Course defines the methods and means of architectural design production for design students with approach of improving the relationship between design concept with proper architectural form, structure and space. in addition, course highlights selection of appropriate building materials, vertical and horizontal circulation, human scale design, considering site characteristic, accessibilities, environmental and climatic considerations, sun and wind orientation, special organization, natural context and existing landscaping, for the students in order to propose high quality architectural products, all in parallel with general basic design principles. Students also, are expected to defense of their design ideas through the design development with their rational design scenarios. Generally, course attempts to clarify the basic design issues and principles for students with helping of small scaled basic design project.				
Assignment	Firstly, developing concept and improve it through according to the existing context and site characteristics. Then, designing the selected part of the complex in 1/50 scale. (Movie Themed Park Design)				
Assessment System	Based on Jury, Students Attendance to Class, Progress, Development of their Design Process and Final Design Product.				
Grading Criteria	**(A)(A-):** Exceeded Expectation		**(B+)(B)(B-):** Average Expectation		**(C+)(C)(C-):** Minimum Expectation
	(D+)(D): Did Not Meet Minimum Requirements but be able to Complete Next Semester's Projects		**(D-)(F):** Did Not Meet Minimum Requirements and Must Repeat Semester with a New Team at a Later Semester		
Name of Observer	Shima Nikanjam	**Date**	25 May- 14 July, 2014	**Time**	08:30 AM- 12:45PM
Supplemental Information	Students From 3 Different Departments (Architecture, Interior Design and Industrial Design) are Combined Together.				

Appendix D: Students' Questionnaire Survey.

Questionnaire Survey

Dear FARC 102 friends this questionnaire was prepared for my master research. Which is related to the design process in preliminary architectural design studios at EMU University (Your design studio). Therefore, your responses will give me some clues about the topic. I will be much appreciated to see your response. This questionnaire contains of three sections, such as:

A. **Section One:** Personal Information.

B. **Section Two:** Personal Preference Rating About the Architectural Design Product.

C. **Section Three:** Comments or Expectations.

Thank You in Advance for Your Time and Help. ☺

A. Section One:

Personal Information:

I. Gender: ☐ Male ☐ Female

II. What is your age group?

☐18 to 20 ☐ 21 to 25 ☐ 26 to 30 ☐ more than 30

III. Country: _____ Nationality: _____.

IV. Department:

☐ Architecture ☐ Interior Design ☐ Industrial Design

V. What was your basic concept to begin the design? _____ .

VI. How many times do you spend on your design project during the week? (*approximately*) _____ .

B. Section Two:

Personal Preference Rating About the Architectural Design Product.

B. I. Which Comment Is The Best Representation Of Your Answer? In Order to Answer, Please Put A Mark (✖) In the Table below For Each Question.

	Very Much	Much	Fair	Little	Very Little
	5	**4**	**3**	**2**	**1**

	5	**4**	**3**	**2**	**1**
The form is your ideal design product.					
My project had reached the expectations of the jury members in the midterm jury.					
You are generally happy with my design performance.					
Your design meets my concept idea.					
You are satisfied with my overall quality of your design.					
The fragment masses in my design have strong relationships with each other. (if exist)					
Needed to find your own solution for existing design problem.					
Having the specific framework for the design activity in order to find a solution for the design problem.					
Using basic geometric shapes on introducing your design ideas.					
Using cracked lines and irregular shapes to visualize the design ideas.					
You are successful to materialize your design ideas.					
Your proposed form displays my original design thinking and creativity.					
Good balance achieved between your design idea and your instructor critique.					

B. II. Put A Mark (✖) To Your Corresponding Answer.

	YES	NO
Would you like to participate in some workshops in parallel with your design studio?		
Do you like form finding practices in process of architectural design learning?		
Are you enjoying with form making?		
Are you happy with your design studio condition?		
Do you prefer to communicate with the instructor during the conceptual design?		
Do you prefer to communicate with the instructor during the design development?		
Do you prefer to communicate with the instructor during the final design?		
Do you consider your design “successful” in this design course?		
Do you consider your final grade as the main indication of “success” in design course?		
Are you satisfied with the assessment system in your design course?		
Do you consider your own “creativity” in your proposed design?		
Have you set a particular methodology for your design?		
Are you satisfied with your midterm grade?		
Are you happy with your design outcome?		
Do you have any difficulty in visualizing your initial design ideas on your projects?		
Do you have any problem on development of your design ideas?		
Would you prefer to involve the design instructor in process of presenting your first conceptual model or initial design?		
Do you accept your proposed design model as the externalized form of your design first design ideas, Are they same?		

B. III. Rank The Following Questions On Scale Of 1-5.

	Very Good	Good	Average	Bad	Very Bad
	5	**4**	**3**	**2**	**1**

	5	**4**	**3**	**2**	**1**
Influence of the instructor's characteristic in your learning process.					
Your skill and ability in progress of your design product.					
Influence of your creativity on your design product.					
Impact of theoretical courses of design principles and elements on your form finding process.					
Influence of similar examples in relation to your design project to improve your design.					
Impacts those examples to transform your design concept into the design product.					
Usefulness of referring to other similar examples.					
Influence of some theories in accordance with your design projects requirements to develop your design ideas.					
Applying all your design ideas to your first draft project (conceptual design).					
Importance of lecture notes on your design learning process.					
Effect of drawing skill to communicate with your instructor.					
Making balance between your design idea and your instructors' critiques.					
Identification of the jury members on your design objectives.					
Influence of design workshops with the aim of improving students form finding.					
Rate your design according to the project requirements.					

B. IV. Please Circle The Corresponding Answer.

Which kind of critique methods do you prefer to have in your design crit session?	Individual Critique	Group Critique	Review	Other Methods

✎If other, what kind do you prefer?

_____

_____ .

Where do you define architecture?	In Art	In Science

What kind of design principle do you see in your proposed project?	Unity	Balance	Hierarchy	Other Principles

✎If other, what principles do you use?

_____

_____ .

What grade did you get from your midterm jury?	A, A-	B+, B, B-	C+, C, C-	D+, D, D-	F

B. V. Please Answer The Following Questions According To Your Idea.

✎What is your preference toward the architectural design education?

_____

_____ .

✎What is your individual design methodology to present and develop your design ideas?

_____ .

✎How did you look for first design concept?

_____ .

✎What kind of knowledge and skills do you think are necessary in architectural design?

_____ .

✎How did you externalize your first design idea? (*Drawing, sketches and etc*.)

_____ .

✎What was the main problem that you were facing in order to visualize the concept of your design?

_____

_____ .

✎What is your suggestion for improving the quality of students proposed forms in preliminary architectural design studios?

_____

_____ .

B. VI. Put A Check Mark (✓) To Your Corresponding Answers.

■ Which one do you prefer **?** (*more than one answer would be acceptable*.)

- ☐ Going from abstract understanding toward more concretely physical products.
- ☐ Enjoy from concrete physically toward more abstraction. (Abudayyeh. N)
- ☐ Introducing some design issues of the built projects through the slide show. (Pourdeyhimi. S)

■ What kind of factors do you think are important in architectural design?

- ☐ Creativity.
- ☐ Motivation.
- ☐ Design knowledge.
- ☐ Self-criticism.
- ☐ Artistic talent.
- ☐ Graphic communication skill.
- ☐ Hard-working.
- ☐ Imitation.
- ☐ Others.

✎If others, please mention: _____.

■ Which method do you prefer to use about depiction or visualize your design concept?

- ☐ Plan sketches.
- ☐ Section sketches.
- ☐ Elevation sketches.
- ☐ Projective drawing.
- ☐ 3D model.
- ☐ Axonometric view drawing.
- ☐ Other methods.

✎If others, please mention: _____.

■ What expectations do you have from your proposed from?

- ☐ Reflect the functions.
- ☐ Be original.
- ☐ Be innovative.
- ☐ Reflect the context.
- ☐ Be aesthetic.
- ☐ Be controversial.
- ☐ Others.

✎If others, please mention: _____.

■ Which ways do you prefer to start expressing your initial design ideas?

- ☐ Sketches.
- ☐ Site analysis.
- ☐ Functional organization or bubble diagram.
- ☐ Model making.
- ☐ Have discussion with your design instructor.
- ☐ Others.

✎If others, please mention_____.

■ Which factors did you consider to develop your design project?

- ☐ Creativity.
- ☐ Aesthetic value.
- ☐ Technical correctness and building construction system.
- ☐ Innovative value.
- ☐ Layout.
- ☐ Unique and clarity of the concept.
- ☐ Innovative scenario and design strategy.
- ☐ Design in accordance with other controversial architectural design.

- ☐ Climate and nature.
- ☐ Efficient use of the space.
- ☐ Others.

✎If others, please mention: _____.

■ Which factor is the most important once for you in design perception?

- ☐ Functionality of the building.
- ☐ Aesthetical issues.
- ☐ Layout and presentation.
- ☐ Innovation.
- ☐ Contextual relationship.

■ What do you expect from the design instructors through your learning process?

- ☐ Motivate student's creativity.
- ☐ Fostering Self-dependence students.
- ☐ Teaching related design strategies with the project.
- ☐ Providing ready solutions for students.
- ☐ Letting you to figure out the proper design solution.
- ☐ Recommend the concept for the project.
- ☐ Others.

✎If others, please mention: _____.

C. Section Three:

Comments or Expectations

_____

_____

_____

_____ .

Thank you for your assistance with this questionnaire.

Sincerely,

Shima Nikanjam

15 December 2014 / 8 June 2015. ☺

Appendix E: Letter Requesting an Interview and Asked Questions.

Dear Associate/ Assistant Professor Dr. .....

Greetings,

My name is Shima Nikanjam, I am working on my master thesis. And my research procedure requires to have in-depth interviews with a number of faculty members for involving their ideas, concerns and experiences on my research focus which is Students' Difficulties on Architectural Form Creation in First-Year Design Education (in Case of EMU-Introductory Design Studio; FARC 102).

From your Curriculum Vitae we believe that you are interested in the topic and hope you would be willing to spend a few minutes to have a conversation about the issue. We aim to hold this interview for noticing your experiences, ideas and concerns about the applied design Teaching and Learning Methods in Basic Design Studios and also, the influential factors on students' skills to create Architectural Forms.

First, would you be willing to participate in my study as an anonymous participant? If so, I wonder about your schedule in November ….th till ….th.
Second, I will promise to take approximately 15 minutes for the interview depending on your thoughts and the general flow of the discussion.

I appreciate your time and look forward hearing from you at your earliest convenience. Thanks so much again for your time.

Sincerely,

Shima Nikanjam
E-mail Address: shima.nikanjam@gmail.com
Phone Number:

Interview Questions

I. What is your opinion about the applied teaching and learning methods in FARC 102 design studios? What about project type? What kind of projects do you think have more educational value for the first-year design students?

II. What kind of difficulties do you think FARC 102 design students have on transforming their design ideas into concrete outcome? What about design development process? What is your suggestion?

III. According to students' response to the relevant question, 72% of FARC 102 students prefer to have individual critiques in their design process (group critique 16% and review 12%) what is your opinion? Which one do you see more beneficial in design learning? And are students following your critiques during their design process? What is your suggestion?

IV. 78% of the FARC 102 students believe that they use their "creativity" on their design projects. What is your opinion about this statement?

V. What is your priority in the architectural form creation process?

VI. More than half of the FARC 102 students would act independence on their design process and have been allowed to figure out the proper solutions for their design projects (they prefer to receive less critiques and being more self-dependence). What is your opinion about enhancing self-dependence skill among the basic design students? Do you think this stage is a proper starting point to foster independence future designers?

Appendix F: Instructors' CV.

12 NOV 2015

Nevter Zafer Cömert

Title	Asst. Prof. Dr.
Studied Programs	- B.A Landscape Architecture and Urban Design Bilkent University - M.Arch Architecture_Urban DesignEastern Mediterranean University - PhD.Architecture_Urban Design Eastern Mediterranean University
Research Area	Urban Morphology, Urban Design, Urban Landscape, Urban Gentrification

Instructor's CV link: http://arch.emu.edu.tr/images/STAFF/CV/Nevter_Zafer_Comert_CV_eng_updated.pdf

17 NOV 2015

Nil Paşaoğluları Şahin

Title	Assoc. Prof. Dr.
Studied Programs	B.Arch 1997 Eastern Mediterranean University, Faculty of Architecture, North Cyprus M.Arch 1999 Eastern Mediterranean University, Faculty of Architecture, North Cyprus Ph.D. 2004 Eastern Mediterranean University, Faculty of Architecture, North Cyprus
Research Area	- First Year Design Education - Design Principles - Basic Design - Public Open Spaces - Interior Remodelling - Quality of Space

Instructor's CV link: http://inar.emu.edu.tr/images/CVs/FULL_CURRICULUM_nil_p_sahin_2012.pdf

26 NOV 2015

Guita Farivarsadri

Title	Asst. Prof. Dr.
Studied Programs	BArch. 1989-Middle East Technical University -Dep. of Industrial Design MFArch. 1992-Bilkent University-Interior Architecture and Environmental Design PHD. 1998-Bilkent University-PhD inArt,Design and Architecture
Research Area	-Architectural Design Education -Interior Design -Human Behavior in Interior Space

Instructor's CV link: http://inar.emu.edu.tr/images/CVs/Guita-nov.2013-.pdf

30 NOV 2015

Pınar Uluçay

Title	Asst. Prof. Dr.
Studied Programs	- BSc in Architectural Studies (1993) - University of Strathclyde, Glasgow, UK - MArch (2002) - Eastern Mediterranean University, Gazimagusa, North Cyprus - PhD (2013) - Eastern Mediterranean University, Gazimagusa, North Cyprus
Research Area	Architectural & Urban Design Education, Sustainabilty in Architecture, Spatial Planning and Policy in Europe

Instructor's CV link: http://arch.emu.edu.tr/images/STAFF/CV/Pinar_Ulucay_eng_yok_2013.pdf