Assessment of Conceptual Efforts in Architectural Design Education through Studio-Related Experiences

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ABSTRACT
Architectural education involves a complex process, where those whose goal is to become a designer have to learn many different subjects. The art of designing is supported by many disciplines, which over time shape designers' perspectives as they mature. The discussion, comprehension and conceptualization of the subjects constituting the preliminary stages of design in studios are a significant part of architectural education.

The aim of this study was to ensure that the architectural students in this study learn how the designs are transformed into solutions for designing problems by generating concepts through creativity and by experiencing the whole process, and that they gain interpretation skills through spatial production process. Students were asked to generate new descriptions for the designing process by considering the concepts and readings and to explain how this process was managed. Special attention was given to how each student created differences in solving designing problems. This study also examined the effects that studio projects, which involved a focus on spatial data and physical and socio-cultural concepts, on spatial belonging/space-free context in assessing the current environment, and on creating designs through concepts in constructing buildings, had on architectural students.

The designing studio in this study included four basic stages, namely, comprehension, interpretation, data generation and data transformation, which allowed for the same subject to be evaluated from different aspects. The architectural students who participated went through a 16-week education program. The final design projects revealed that the students who had generated designs through conceptual reasoning were more successful compared to those who had not, and that studying with the concepts yielded more instructive results for students and made them more knowledgeable and prepared for their professional careers.

Keywords: Architectural design education, design studios, context, theme, conceptualization, creativity

INTRODUCTION

Architectural education involves a complex process, where those who aspire to be designers are faced with many different subjects. Studios occupy an important place in architectural education, insofar as they are the first setting where students are introduced to the reality of the profession. Studio studies are known to be critical for architectural students in terms of developing their designing skills and creativity. Architectural students exchange information with instructors while solving problems, and they learn to bring multiple solutions to a problem and to evaluate specific situations with different perspectives. In addition, the discussion, comprehension and conceptualization of the subjects constituting the preliminary stages of designing in studios are a significant part of architectural education. The art of designing is a multi-dimensional process that is supported by many disciplines, which over time shape designers' perspectives as they mature and yield artistic works. Besides the physical (climate, geographical characteristics, immediate environment etc.), socio-cultural and psychological factors that direct the designer in the architectural designing processes, there are other points to

be considered, such as the creative use of materials and technology. When designers have to generate a design in a certain field, they prepare a project that involves collecting as much data as possible and then reflect these data on to the designs in the most efficient way and in a way specifically suited to the context of the area hosting the designed building. Onat stated that the most important clue for designers in terms of generating a design is provided by the space, particularly the physical and socio-cultural structure of the space. Onat (2010) also noted that these spatial characteristics have multi-dimensional relationships with the lived experiences, and that the issues of how indoor areas will be related to outdoor areas and how outdoor areas will be related to the immediate environment are highly significant. Moneo, reflecting on the importance of space as the first stage of designing, made the following statement: "I believe that learning the whispers of a space is one of the most necessary experiences for an architectural student." (Onat 2010). The separation of design into related concepts, the focus on these concepts, and the design of an architectural project studio on the basis of these concepts is a relatively new approach (Uz 2012).

This study examines how architectural students transform their designs into solutions for designing problems by generating concepts through creativity, focusing particularly on their motivations governing the presentation of designing problems in the region of Diyarbakır and aims to understand how the designing process was managed through the creation of new descriptions based on conceptual studies and readings. In addition, the study reviews how the conceptualization of each student created differences in solving the designing problem and looks at the effects of studio projects, in terms of *spatial data*, *spatial characteristics*, and the *socio-cultural infrastructure* – all of which are the basis components of project designs – on architectural students. Finally, this study conducts an institutional evaluation of certain concepts, like *spatial belonging*, that the students applied in assessing the current environment and investigates the students' ability to *perform designs through concepts* in constructing buildings. The general terms related to the subject were provided to the students. As part of the study, particular attention was given to ensuring that students questioned the concept of public space with different descriptions, solved the potential spatial problems associated with a space they discovered, internalized theoretical and conceptual subjects by virtue of the designing process, and gained interpretation skills in the process of carrying out spatial production.

IMPORTANCE OF STUDIOS IN ARCHITECTURAL EDUCATION

Studios hold a very important place in architectural education, in that they serve as a setting where architectural students learn all aspects of project areas in the pre-designing stage, determine the spatial characteristics and limitations of a project, think and discuss with instructors about the problems that emerge in the process of the transition to designing, and present designs after they have been subjected to constructive criticisms.

The difficult aspects of projects function to bring students to another level in terms of generating designs. Studio instructors mainly aim to guide students in finding their own styles and directing them on how to arrive at the correct solution rather than directly prescribing styles to them or solving their problems. Essentially, architectural students are expected to apply their own architectural concepts when making their interpretations. Therefore, it is highly important for architectural students to actively participate in the architectural studio classes and to adopt an investigative attitude.

Design Education, Creativity and Conceptual Thinking

As already mentioned above, there are data-related factors in architectural designing. Creativity is a significant stage of designing. The concepts of designing and creativity, which combine art and architecture, have been developed over time within this stage. Today, art plays a significant role in supporting all aspects of architecture and helps to give meaning to designing. Designers deal with topics according to their own perceptions in the process of transition from abstract ideas to concrete objects, and they create

substantial designs using various methods. The methods that facilitate designing in this way include *learning by doing* and *learning by building*. With these methods, students direct the course of their projects by doing and experiencing the actions and feeling the objects in the studio. The primary place to apply the method of learning by doing is the studio. In addition, creative thinking drives students to think, to use the data effectively, to establish relationships with the environment and to synthesize the analyses they perform. In this way, the information continuously improves and changes. "Creativity is the designing concept that directs and alters imagination, ideas, perceptions, experiences and emotions with designing." (Bekdaş and Yıldız 2018). The architectural students who participated in this study added their creative ideas to the concepts formed within different contexts in the designing studio (Figure 1), determined a designing style for themselves, and reflected abstract ideas on to concrete results.

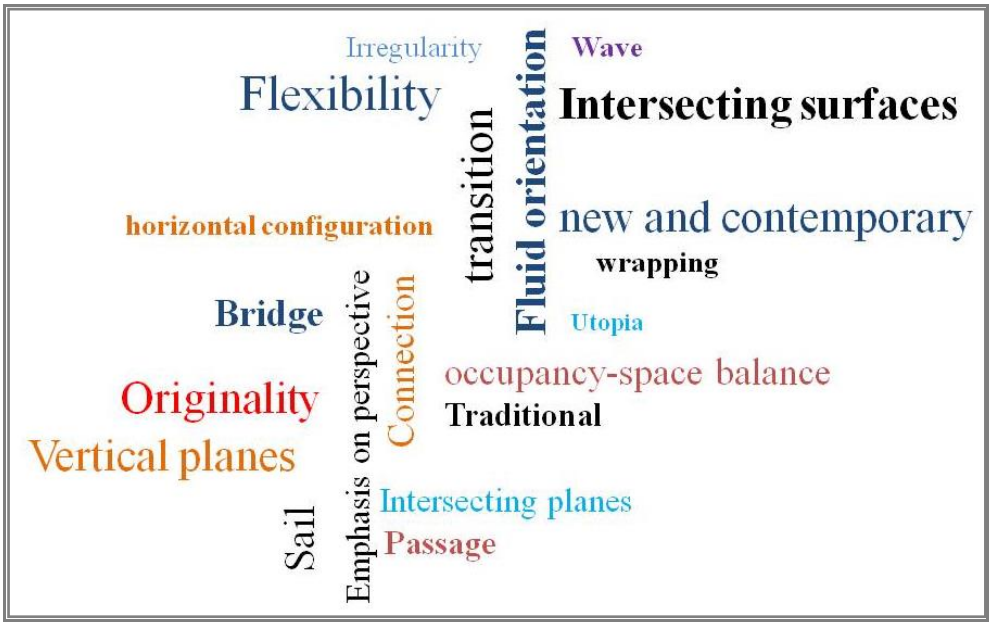

Figure 1: Conceptualization in designing.

According to Goldschmidt (1991, 1998), designing consists of three stages, namely information, interpretation and expression, all of which gain a multi-dimensional form with the dynamics and adaptation of the interaction between knowing, interpreting and doing. This statement by Goldschmidt indicates that instructors of designing studios are expected to convey information, other instructors are expected to interpret, while the architect is expected to create. Within such a hierarchy, designing goes through certain processes and transformations before achieving its final form.

METHOD

This qualitative study was conducted with 32 students studying in the Department of Architecture at Dicle University during the third semester of the academic year with the aim of determining how and the degree to which they reflected the related concepts to their projects in studio studies. During the qualitative assessment, the effects of obtaining data, performing observations and meetings, and the exchange of information between instructors and students on the project were examined. The conceptual test learning model (Stefani Ledewitz 1985) was used in this study. According to this model, the designing criteria include generating schematic designing alternatives, examining the alternatives and developing form trials and designing solutions (Özdemir 2013). The data from the present study indicated that during the designing phase the architectural students, who faced difficulties interpreting many of the abstract ideas and transforming them into concrete expressions, eventually developed a certain degree of comfortability with the related concepts. The part of the studio process involving the function of

creativity that was taught in the Architectural Project 3 course and lectured in the Department of Architecture at Dicle University during the Fall Semester of 2018-2019 Academic Year was reviewed. During the studio study, which covered a period of 16 weeks, the students' designs were examined, analyses and observations were performed, and ideas were shared in the studio; the manner in which they applied the concepts in achieving the results was also evaluated. The architectural design studio was organized around the idea that designing problems are addressed in four main stages (comprehension, interpretation, data generation and data transformation) in order to enable the same subject to be evaluated from different aspects (Chart 1). The fact that the experience of designing started to be discussed in terms of diversity was considered to be a strategy that allowed students to gain creative thinking skills. Critical thinking, multi-dimensional reviewing, generating different solutions to the same problems and following the principle of approaching different disciplines with different mindsets, all of which are indivisible parts of creativity, constituted the basic objectives of the studio structure and process. This study aimed to contribute to the concept of "designing education" in regard to gaining perception and conveyance skills by considering the designing and environmental contexts and using conceptual thinking. No limitations were set for the starting points and methods used by the students in the ateliers, and the study setting and how they established a relationship between their own ideas and designs were closely observed.

Table 1: Evaluation of Architectural Project Studio

<table>
<tr><td colspan="6" rowspan="2">COMPREHENSION</td><td colspan="10">INTERPRETATION/DATA GENERATION</td></tr>
<tr><td colspan="4"></td><td colspan="6">DATA TRANSFORMATION</td></tr>
<tr><td colspan="6">Determination of Public Space</td><td colspan="4">Conceptualization</td><td colspan="6">Transition from Abstract to Concrete Thinking</td></tr>
<tr><td colspan="3">Investigation of the Subject through Various Samples Determination of Study Field</td><td colspan="3">Environmental Analysis Sheets</td><td colspan="4">Abstract Thinking Theme Generation Stain-Related Activities</td><td colspan="2">Building Spatial Relationships with Contexts</td><td colspan="4">Process of Project Generation</td></tr>
<tr><td>Week 1</td><td>Week 2</td><td>Week 3</td><td>Week 4</td><td>Week 5</td><td>Week 6</td><td>Week 7</td><td>Week 8</td><td>Week 9</td><td>Week 10</td><td>Week 11</td><td>Week 12</td><td>Week 13</td><td>Week 14</td><td>Week 15</td><td>Week 16</td></tr>
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STUDIO EXPERIENCE OF DIVERSITY THROUGH CONCEPTS

Designing by using concepts is a method that is more understandable for students and that makes the designing process easier. It is known that this method, which is beneficial for the future professional lives of architectural students, supports students in regard to architectural designing skills. Accordingly, students were asked to examine the public spaces in different sections of the city for the purpose of determining the places where they would design their own projects. Students were reminded about the importance of environmental contexts for determining these places. They were also asked to design a book café that would be located in Diyarbakır and to not disrupt the general urban structure. The concepts considered by the students were extensively discussed during the first weeks. These concepts are related to the current environmental characteristics and the responses given to the context, the reason being that the study setting included new sections of the city, and therefore, the desire that the design reflect the urban identity/culture was present. Students were then asked to think about the contexts related to the project topics by taking into consideration the concepts they had learned and to determine themes from this. They were expected to reflect the abstract concepts

formed through these themes to the projects physically. Two different approaches were determined for the conceptual study, the first being related to the spatial concept and the concepts and themes involving spatial samples. Regarding the second approach, themes are formed with concepts that are independent from the spatial context. In this sense, since the projects conducted are independent from the space, they can be performed in different project areas. Concepts, themes and projects within and outside of the spatial context were generated in the Architectural Project 3 course, and their impacts were discussed with the students (Chart 2).

Table 2: Adopted from a Conceptual Structure (Akalın 2018) (Özkan Yazgan and Akalın 2018).

Spatial elements (local/regional) Those that establish relationship with the context	Superficial characteristics	Those that establish relationship with the context/concept
		Object/Identified organization of the elements
	Main objective/ Semantic	Urban structure/The state of being unable to be in a different place that is related to the spatial characteristics/Inclusion of specific spatial characteristics to designing
Those that are independent from the space (in general) Those that form their own contexts	Superficial characteristics	The state of being unable to be in any places/Spontaneous or short-term states/Those that do not have a relationship with the context and thus form their own contexts
		State of being in any places in a different structure/identified elements could be anywhere or organized in a different manner
	Main objective / Semantic	A different structure example/ Related to other examples……

A studio study of Book Café designing was conducted with the third-semester students studying in the Faculty of Architecture at Dicle University. This studio study, which covered a period of 16 weeks, consisted of four steps.

- Students were asked to determine the places where they would create their own projects and to examine the public areas in the city as the first step. Students were then expected to determine the public spaces at different urban areas where the project would be conducted for the purpose of ***understanding*** the spatial characteristics and units of the project that were needed in this regard. In addition, the topic was extensively reviewed by looking at different examples, and necessary environmental analyses were performed in the study settings. Information exchange was performed with spatial characteristics in the presentations in the atelier environment following the environmental analyses conducted (Figure 2).

Figure 2: Environmental Analysis Sheets

- Regarding the second step of the study, architectural students conducted stain-related activities for their projects within the settings they determined and they transformed the abstract concepts and themes into a physical form for the purpose of ***interpreting*** the data obtained.
- Two different approaches were followed in the third step. First, students were divided into two groups based on preferences, with one of the groups assigned to work on ***the spatial context, related concepts and themes***, and the other assigned to work on ***the concepts and themes outside the context***.

Instructors supported and advised students in reaching the further steps once they discovered that the students managed to achieve concepts or themes related to or independent from the spatial context. The stage of ***data generation*** was reached following the relevant activities, and the transformation of abstract ideas into concrete expressions continued to evolve until the final products were created.

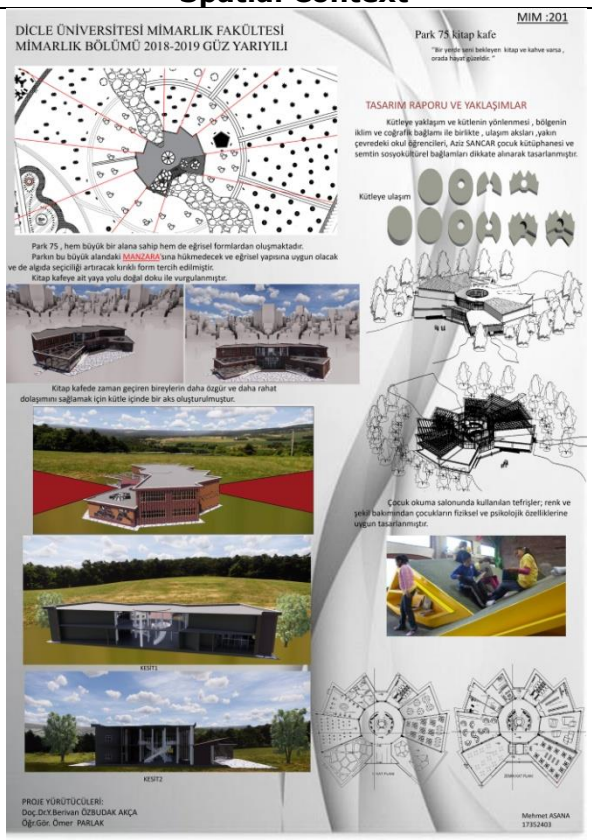
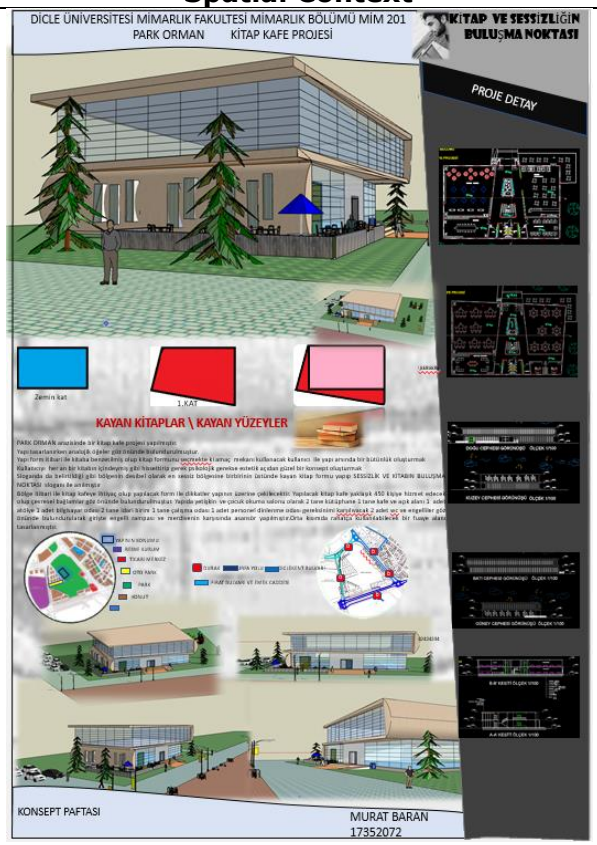
Concepts and Themes Related to the Spatial Context	**Concepts and Themes Outside of the Spatial Context**
	

Figure 3: Concept Sheet Samples Prepared on the basis of Themes

- All of the information, abstract concepts and ideas were given concrete expressions for the purpose of ***data transformation*** in the fourth step of the study. Following the 16-week studio study, projects that had different ideas reflected in drawings emerged within the context of spatial belonging (10 projects) and outside of this context (12 projects).

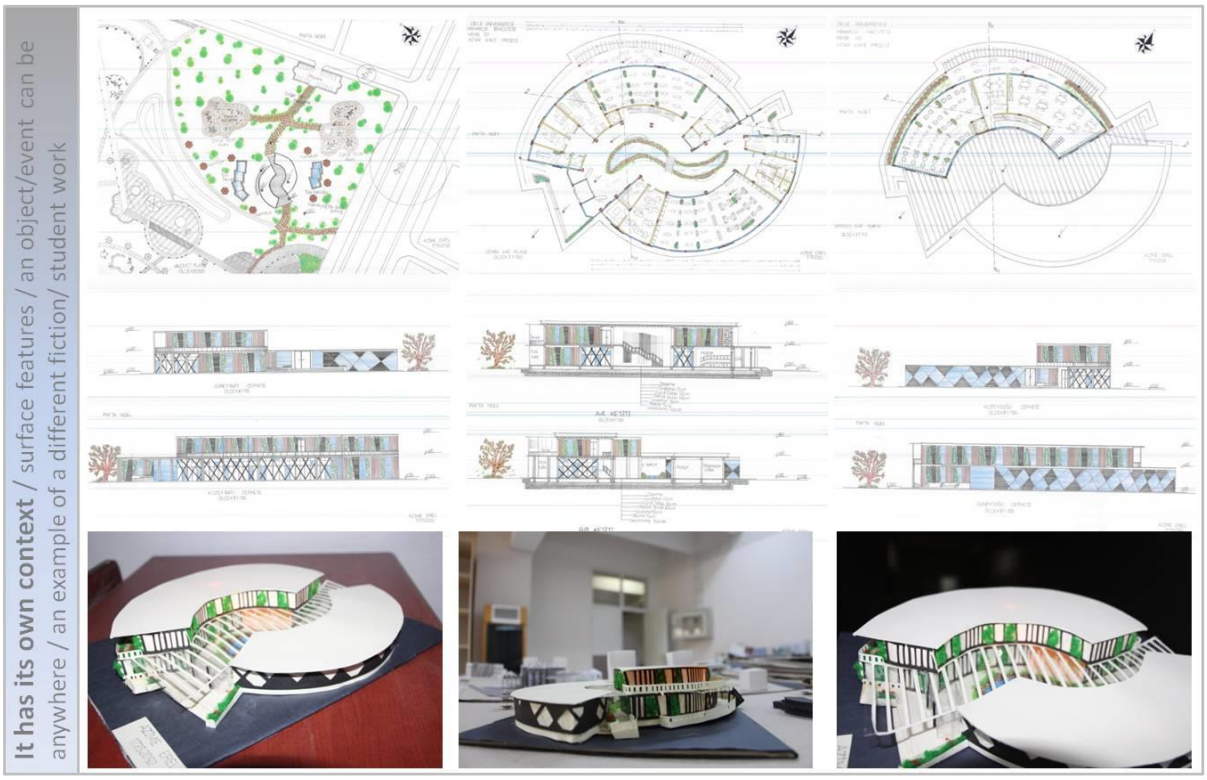


Figure 4: End-of-term individual project example

A *FLUIDIZED DIRECTION* theme was considered while designing the project. Considering the richness of the field of view in the project area, the aim was to create a design that was spatially distinctive and dominated the landscape in every direction spatially (Figure 4).

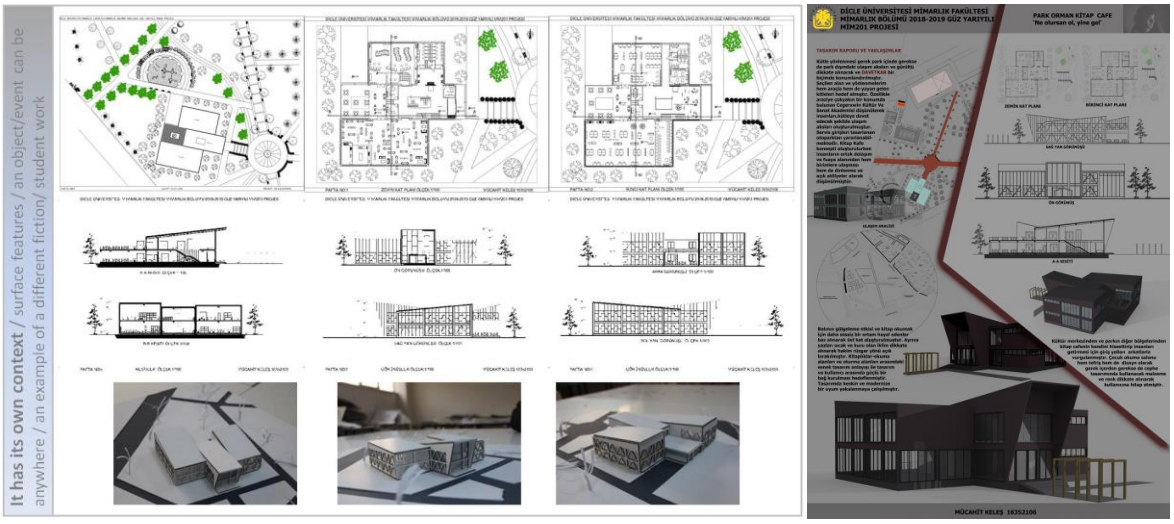


Figure 5: End-of-term individual project example

The orientation of the structure was positioned in an *INVITING* manner by taking into account the noise created by the transportation network within and outside the park. Taking into consideration the Cegerxwin Culture and Art Academy present on the project land, transportation networks were formed in such a way as to draw people to the structure (Figure 5).

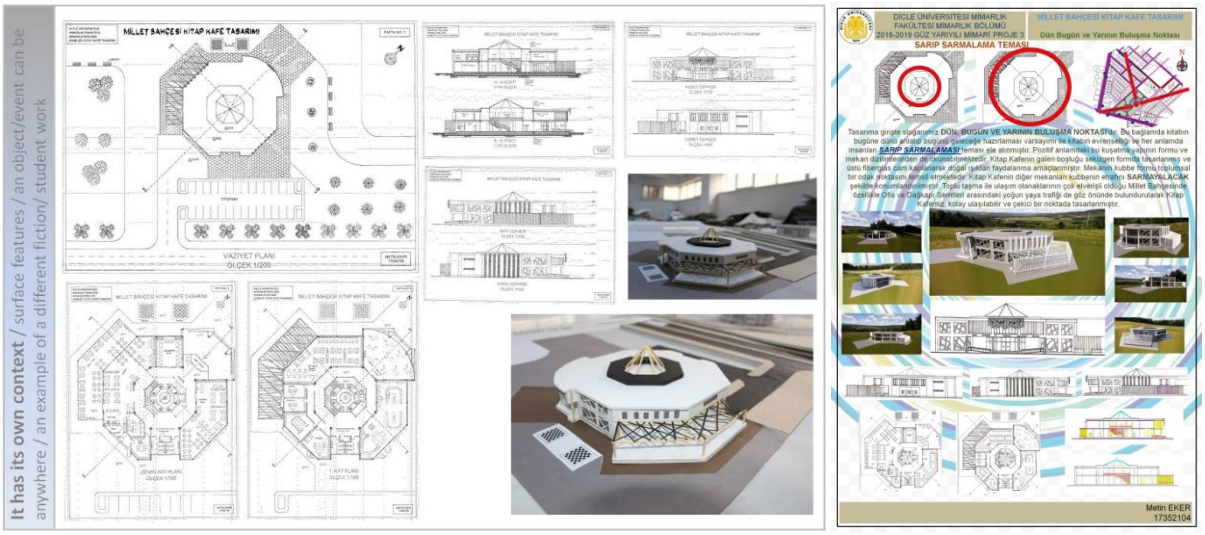


Figure 6: End-of-term individual project example

The motto of the preliminary stage of the design was *Meeting Point for Yesterday, Today and Tomorrow*. The theme of *EMBRACING* people with universality was reviewed under the assumption of reflecting yesterday to today and preparing today for the future (Figure 6).

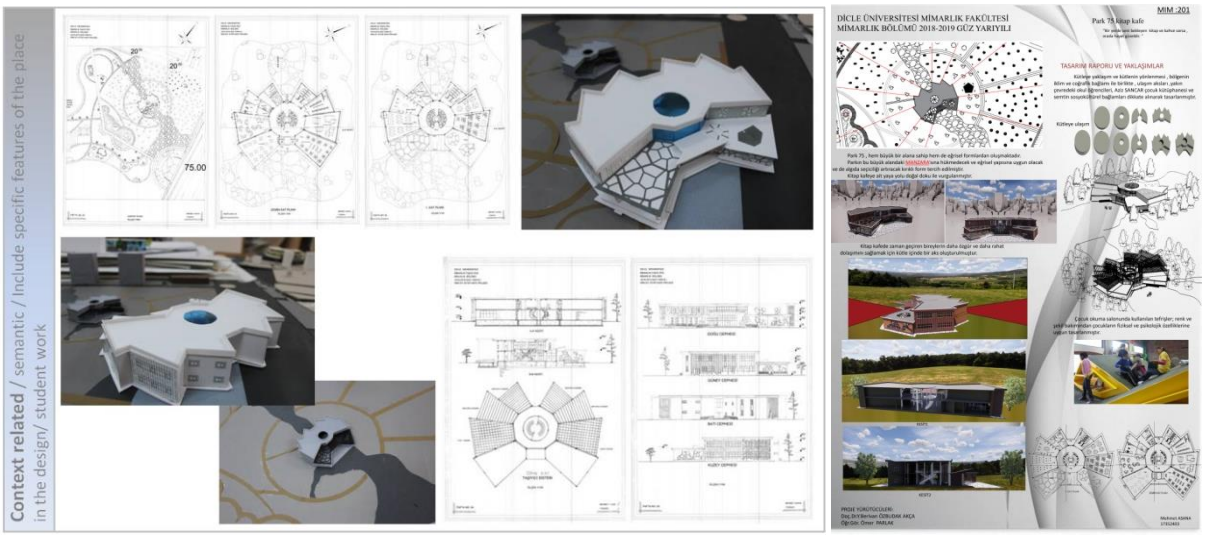


Figure 7: End-of-term individual project example

The Park 75 grounds are very wide and feature a dense landscape. When designing the project, a form that dominated the *LANDSCAPE* in this large area was selected (Figure 7).

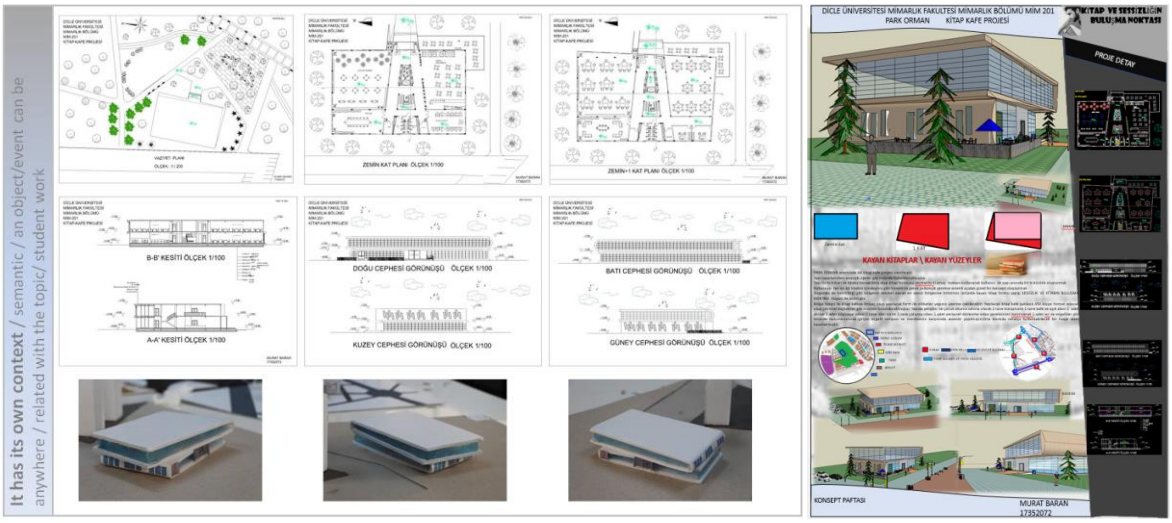


Figure 8: End-of-term individual project example

Analogical elements were considered while designing the structure, which was similar to a book in terms of its form, and a *SLIDING SURFACES THEME* was adopted. The aim here was to ensure integrity between the users and the structure, where the users would feel as if they were inside of a book, and to create both a psychological and aesthetical impact on the users (Figure 8).

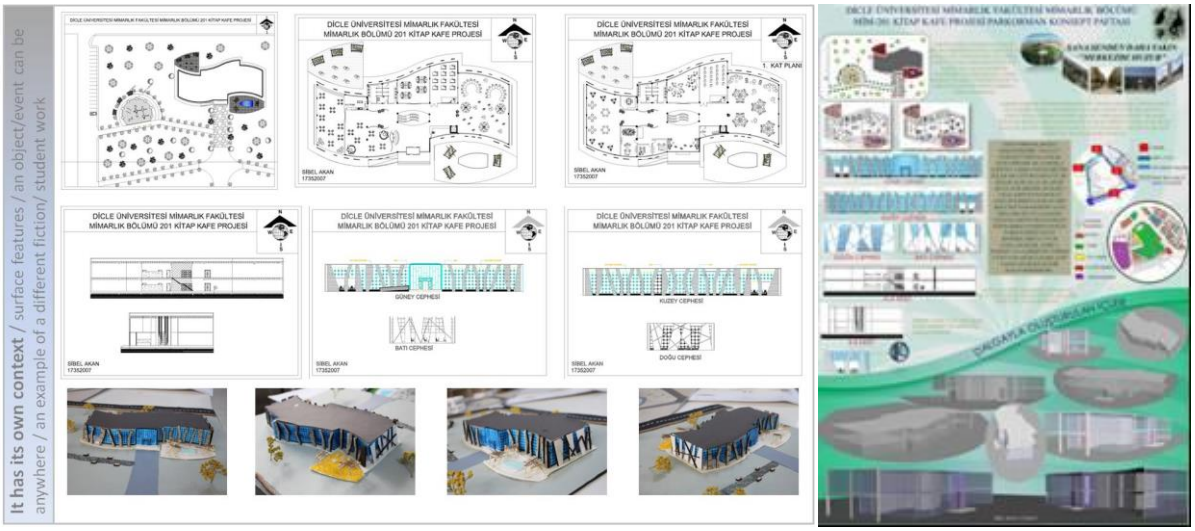


Figure 9: End-of-term individual project example

The building was in S form and had the highlight of a *WAVE THEME*. With this form, the internal elements were used as open spaces and helped to shape different sections of the building (Figure 9).

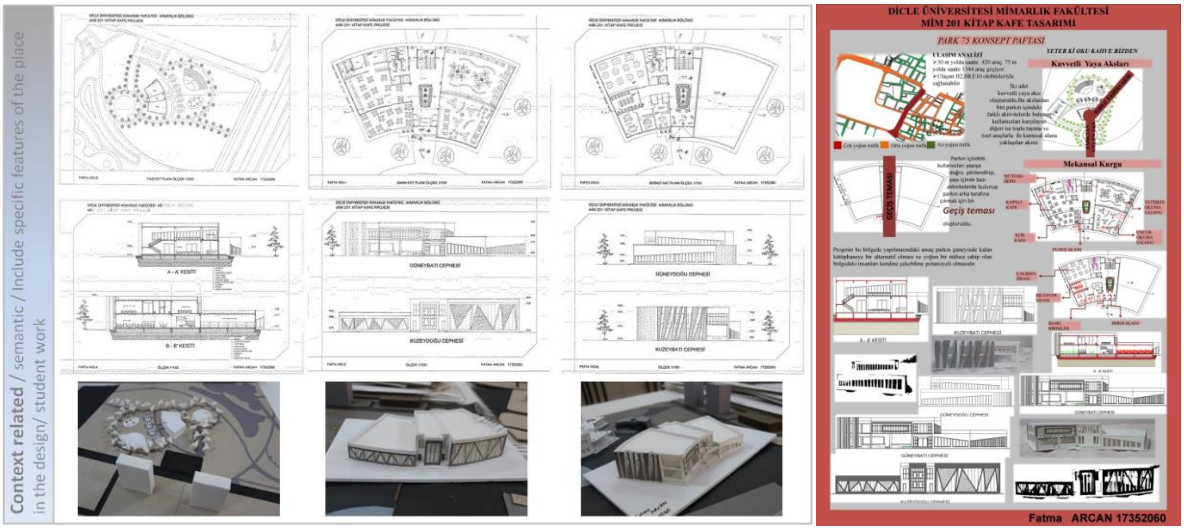


Figure 10: End-of-term individual project example

Two strong pedestrian axes were created in the project area, with one of them greeting the people in the park and the other greeting those who approach by public transportation. When designing the project, a *TRANSITION THEME* was applied by taking the users inside the park, where they could engage in various activities before moving on to the back of the park (Figure 10).

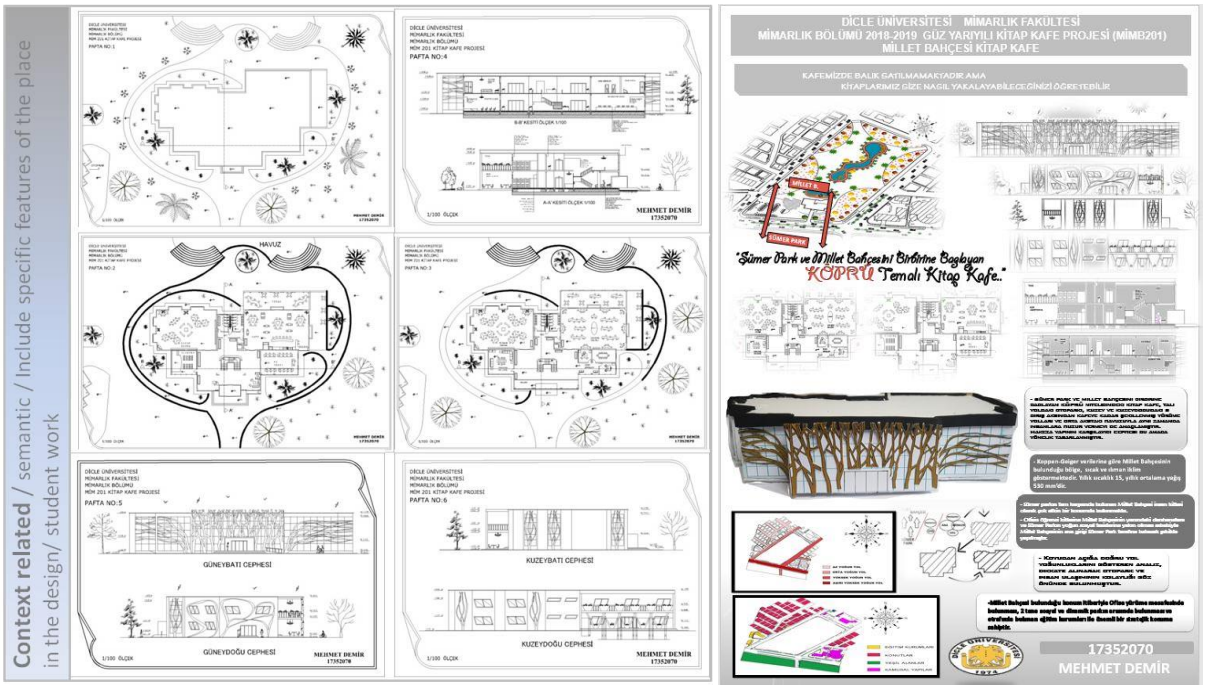


Figure 11: End-of-term individual project example

The Book Café project featured the design of a *BRIDGE* theme that linked Sümer Park and Millet Bahçesi by land (Figure 11).

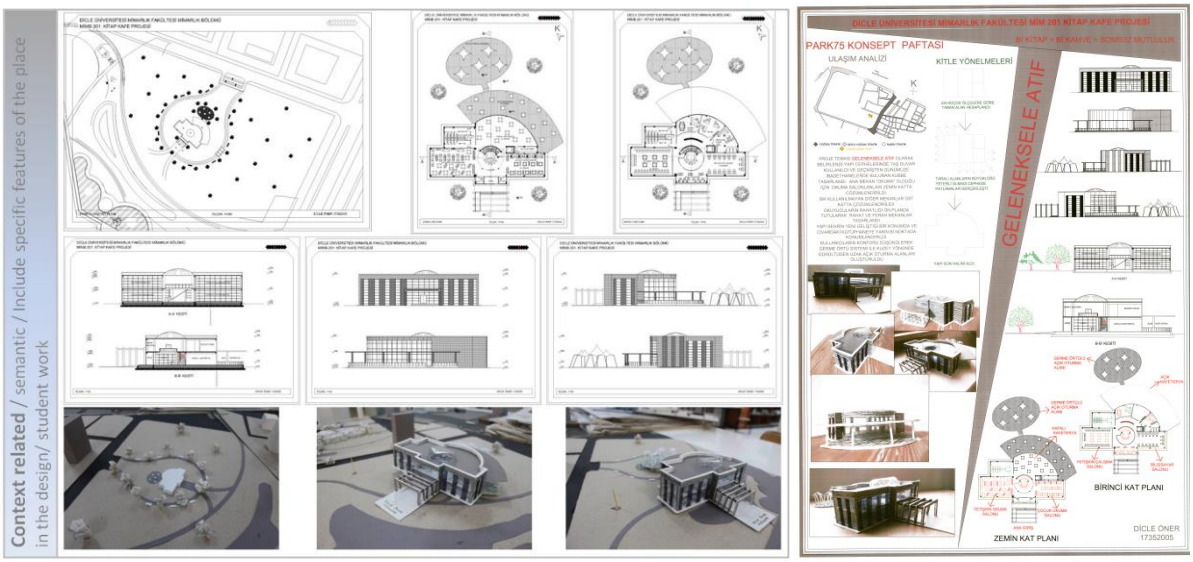


Figure 12: End-of-term individual project example

Stone walls were used on the building façades. In addition, the "dome" element had the effect of bringing people from the past to the present time. As for the elements used in the building, the theme of *REFERENCE TO THE TRADITION* was emphasized (Figure 12).

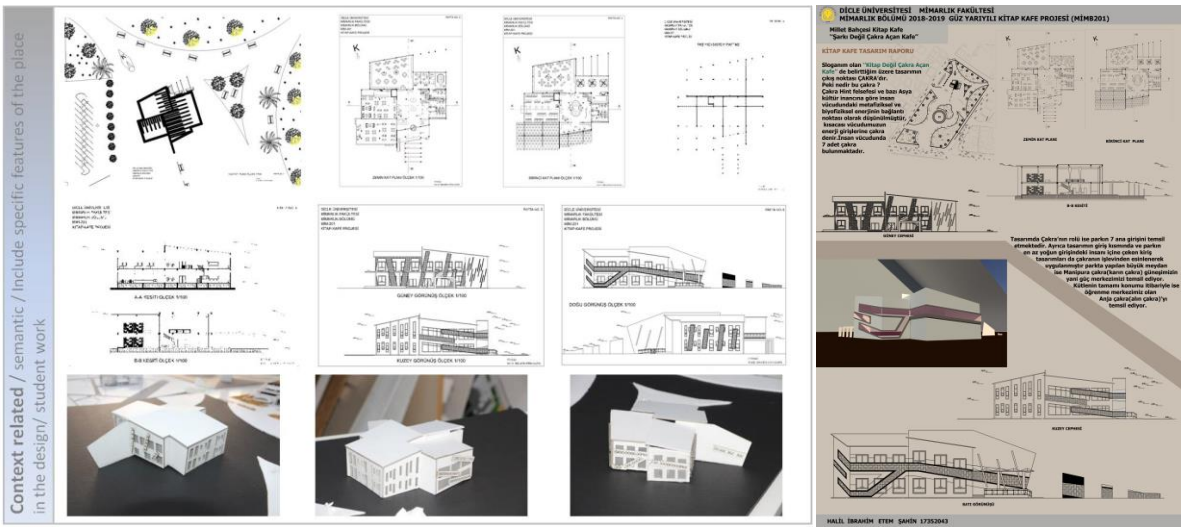


Figure 13: End-of-term individual project example

The *CHAKRA* theme was used for designing the project. As there are said to be seven chakras in the human body, the role of the theme represents seven main entries to the park. The large square in the park designed represents Manipura (stomach chakra), our sun or our center of power. The entire mass, on the other hand, represents Ajna Chakra (forehead chakra), our center of learning (Figure 13).

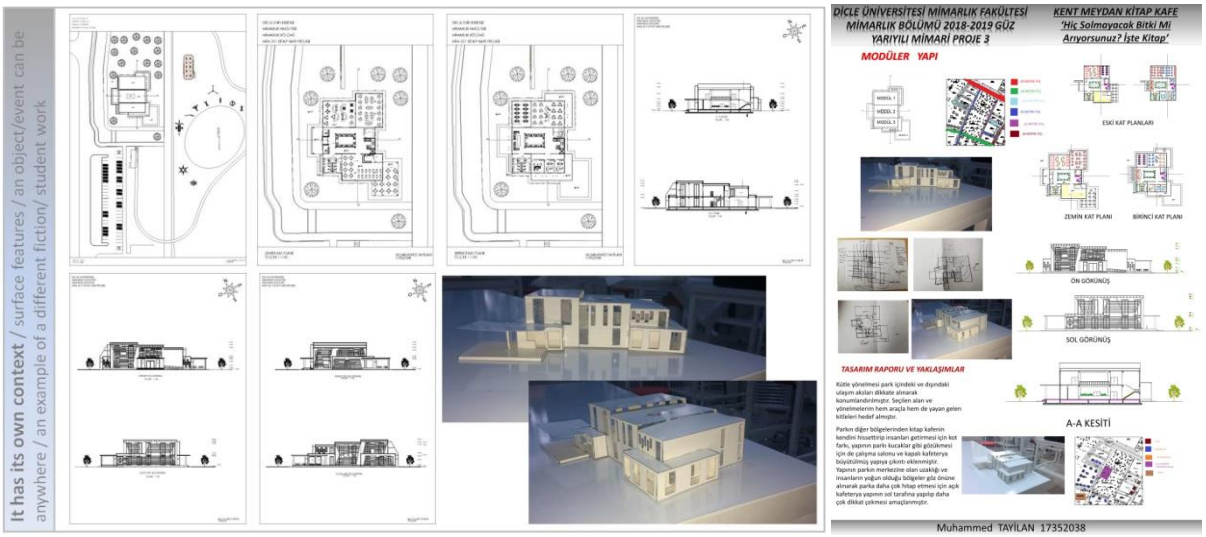


Figure 14: End-of-term individual project example

In the design stage, it was considered that the *MODULAR STRUCTURE* theme would be suitable for facilitating the work and generating ergonomic spaces. In the structure, studies on different modules involving the different floor heights required by the spaces were conducted (Figure 14).

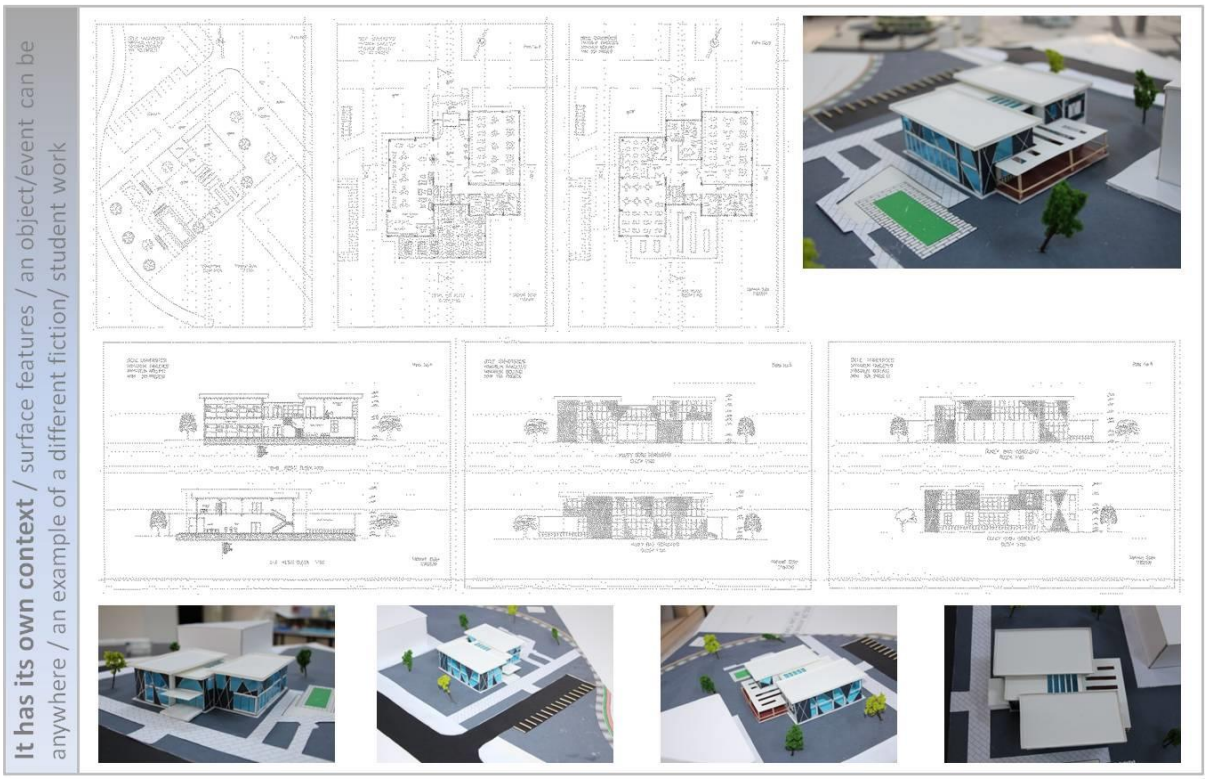


Figure 15: End-of-term individual project example

The *SLIDING MASSES THEME* was considered during the designing stage. The building consisted of three different masses, namely the foyer facing the entrance, the main mass containing the vertical circulation, and subsidiary units, which included the areas with broad spaces (Figure 15).

EVALUATION AND CONCLUSION

Working with concepts in architectural education can serve as an inspiration for students' designs. Schön (1985) stated that in the search for information that architectural students experience in architectural designing studios, the students are introduced to a new language that they had never seen before, and that the primary aim of architectural design education is based on teaching and developing this language. The contemporary architectural environment, with its interdisciplinary developments and new approaches, needs new terminology as it regards visual and semantic expressions. In this context, architectural designs now involve concept generation. In architectural design, the concept is an idea that serves to guide designers during the process related to abstract spatial creations, and it is defined as a key to fully comprehending the designed element (Tigges and Jonson 2014). According to Bielefeld and El Khouli, the concept of identity in architectural designing refers to the identity of the structure, and it is regarded as the solid foundation on which the design can be developed (Bielefeld and El Khouli 2010). The evidence shows that addressing the designing process in terms of the approach of generating concepts gives students new perceptions that will serve to support them in their professional careers. In addition, scientific studies have indicated that students who start designing with a specific concept produce more successful projects than those who do not use this approach (Turan and Altaş 2003). The teachability of the conceptual study was determined in line with the above-mentioned statements and interpretations, and the assumption that students would develop creative thinking skills in the Architectural Project 3 studio managed by the instructors and that they would conduct projects in relation to their environment were accepted as hypotheses. Thus, the existing built environment and urban context were reinterpreted, and suggestions were presented in line with the concepts produced according to the modern designing concept.

Architectural design is based on methodological rules expressed through certain criteria and processes as well as on a medium through which one reflects his/her creative skills (Jormakka 2010). The relationship between the buildings and space has been discussed with regard to different ideological architectural systems. Norberg Schulz defines space as a total phenomenon that functions as an absolutely integral part of the existence in the relationship between space and architecture from a phenomenological point of view, and states that different solutions can be achieved under spatial, cultural and environmental conditions for a simple function (Norberg Schulz 1980). This definition expresses that the concept of space embodies a unique architectural identity. Norberg Schulz's approach suggests that it is not possible to remove any components from spatial references. This aspect related to spatial designing and designing outside of spatial context was taken into account in the studio study, and the creative ideas generated by the architectural students were evaluated in terms of their relation to the current criteria. In this context, the achievements made in the studio course can be listed as follows:

- The students obtained general information about the design approaches and gained an understanding of the value of analysis for their projects.
- In the first stage of the design, sample projects were examined, and the importance of spatial hierarchy and conceptual work was realized.
- The students observed that designing through concept adds meaning to each movement of the resulting product.
- The relationship of each unit, in terms of the location of space and form, was addressed, and the importance of the formation of the project within a certain context was emphasized.
- Through the studio work and the master-apprenticeship relationship, the students were able to daily observe and understand the development of the projects and benefit from the information exchange that took place. and it was understood that such a concordance and information exchange between the instructors and students can be ensured only in studio studies.
- During these studies, architectural students focused not only on their own projects but also on the problems and solutions related to the projects of their peers – a dynamic characterizing the studio environment that had a large impact on project

development. Over time, they gained the ability to look critically at their own projects as well as their peers' projects.

- Duty cycle rates during the stage of form generation, the students gained the ability to design with the help of concepts by discussing issues like occupancy/vacancy rates, the relationship with the environment, dimensional differences, and the differentiation between indoor and outdoor spaces.
- Students generated concepts through the themes they formed by considering the contexts (spatial or non-spatial context) after exchanging information with their instructors, and they made efforts to generate designs suitable to the current environment using these concepts. The students were organized into the following three different groups based on their design approaches:

    - A group of students who start designing with the concepts or main ideas and who consider the spatial contexts and use these within the designs they develop
    - A group of students who start designing with concepts/ideas that are not clearly defined and that are unrelated to the spatial context and they go on to develop their designs with this approach,
    - A group of students who start designing without any concepts or main ideas.

In this study, the final designing projects created after the 16-week education showed that the approach of designing through conceptual reasoning provided an advantage for the students in perceiving the spaces. Furthermore, the study found that the students who generated designs through conceptual reasoning were more successful than those who did not, and that studying with the concepts yielded more instructive results for the students, helping them to be more knowledgeable and preparing them for professional life. In the educational system in Turkey, students start their undergraduate studies with rote-learning, analytical thinking and concrete structures. However, architectural education, contrary to these educational approaches, is an educational system that can be carried out through abstract and creative thinking. Therefore, students have difficulty abandoning concrete ideas, adopting an abstract ideology, transcending certain rules and adopting creative methods for seeking solutions. It is believed that this study can contribute to overcoming these difficulties faced in designing studies. The instructors' role in studio courses is to highlight the importance of contextual studies, not only during the educational activities, but also in the practice-based activities, and to ensure that students understand this importance. For being able to experience being an architect in a freer way that is without repression, the acceptance of uniqueness that is not boiled down to stylistic differences and superficial innovations, at least during training, can create an opportunity to explore a wide range of spatial qualities.

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