Abstract
Architectural design is defined as decision-making process. Design studios play an important role in experiencing this process and provide the competence of design to prospective architects. The instructors of architecture aim to compel the imagination of the students develop creative thinking, raising the awareness among students about their abilities. Furthermore, executives of the studios pay attention to delimitative elements in design in order to provide the competence of problem solving for students. Each experience in education period prepares the prospective architects for the social environment and the realities of the future. The aim of the study is to examine a practicing in architectural education. The general hospital project was carried out with 40 students and 4 project executives within the 2007-2008 academic year Spring Semester Studio-7 courses. The steps followed in the studio process were analyzed with the design problem of "hospital". Evaluations were performed on; the solution of functional-spatial organization, solutions about the activities of the users, convenience with the standards and regulations and prosperity-aesthetic notions in internal space. Prospective architects generally became successful in the design of hospital building with complex function. This experience raised awareness about access to information via thinking, provision of a new position for information in each concept.

Keywords
Design studio, hospital design, architectural education, systematic design process.

Introduction
Architectural design is defined as decision-making process encompassing problem solving, the choice among one of the alternatives for solution. Design studios play an important role in experiencing this process and provide the competence of design to prospective architects. According to Aydinli (2001), teaching and learning processes complement each other in design studios and the role of the learning and teaching are constantly query. The design studios are a learning environment focused on the synthesis of theoretical knowledge and the problem solving. Furthermore, it is a social organization. The most determinative factor for social organization is the verbal and visual communication between the students and the executives of the studios. Studio experiences in architectural education occur from the simple to more a complex process.
As one’s experience is enhanced and one gets closer to being involved in real life as a professional, the problems become more complicated in terms of enriching the design infrastructure. Thus, in the process of architectural education, considering the objectives of the instructors in the learning process, design problems gain importance. The design problem of “150-bed General Hospital Project” was assigned to Selcuk University (Turkey-Konya) Department of Architecture 4th grade students. Within the scope of this design problem, this study will explain how the objectives were determined in the studio process; analyze the acquisitions of the students; show the chosen examples of design products and analyze the characteristics of these examples. The General hospital project studio process was carried out with 40 students and 4 project executives within the 2007-2008 academic year Spring Semester Studio-7 course. This course is the penultimate project in the department of architecture at Selçuk University therefore, in the process of professional training for architecture, this course is important for preparing the student for design problems they can encounter later.

Design Studios in Architectural Education

In parallel to the process of realizing designs for application and utilization, architectural education, which encompasses design, has an important role in design education. According to Demirbaş and Demirkan (2007), “in design education, learning and teaching methods aim to balance the creative process with a critical awareness of more objective criteria in the development of a proposition”. In addition, when concerning architectural design, in the process of forming the products, technical, functional, aesthetic, social and economic factors are the determinants. According to Kurt (2009), “design process can be defined as a process, which involves all activities, which can be performed by a designer from the beginning until locating the final solution. This procedure is full of repeated actions that lie between a problem definition and the solution of this problem. It is research and decision-making process and at the same time problem solving process”. In this process, architectural study courses have an important role, architectural education is matched with studio education since design studio is the combination of all other courses in architectural education (Bunch, 1993; Demirbas, 1997, 2001; Demirbas & Demirkan, 2000, 2003; Teymur, 1992, 1996; Uluoglu, 2000). “Architectural design studios are educational environments that professional education and art education is conducted jointly (Çiçek and Çil, 2009). Additionally, “these studios are premised on a particular kind of pedagogy defined as “learning by doing” and architectural curriculum has been based on “learning by doing” in the design studio” (Çiçek and Çil, 2009; Kurt, 2009) and similar practicing course. In this process, communication/interaction is an important part of learning. The design studio according to Şentürer (2004), is a communication-based, imaginary, intellectual and experiential environment where the individuals collectively perform design activities by exchanging views; where related knowledge and design experiences are attempted to be taught to the students. In the studio environment, there are various ways of communicating. “Performed as visual, verbal, tactile, written rich communication sometimes involves students working in groups, and so it is arguably rich in team working potential” (Nicol and Pilling, 2000). The task of instructor in this process is to effectively run and control the design studies. In junior semesters, education
programs are presented though the instructor, assessment and a limited number of students (10-12), however, towards the senior years as the design ability improves, the education programs involve jury system. In the juries, visual and verbal communication established between instructor-student(s) and students-students enhances the quality of designs, allow for the discussion of the unknown and create new horizons.

The instructors of architecture aim to compel the imagination of the students develop creative thinking, raising the awareness among students about their abilities. Furthermore, executives of the studios pay attention to delimitative elements in design in order to provide the competence of problem solving for students. Each experience in education period prepares the prospective architects for the social environment and the realities of the future.

In this context, over a complex design problem, the steps of analysis, synthesis and evaluation provide the students with successful results in the studio environment. Analysis, synthesis and assessment process were analyzed as systematic design steps by Salama (2005), while Lawson (2005) defined them as a general map for design. In this process, in the case of insoluble problems and the dialogue from instructor to students, student to student, the sharing enacted to produce solutions and eliminate deadlocks, the analyzes and observations on example areas gain importance. Somewhat According to Demirbaş and Demirkan (2003), design studio, the organization of necessary knowledge and ways of presenting this knowledge that is accessible to every student by design instructors are the important factors in the design studio at epistemological level. When the related design problem is a hospital in the analysis process, collecting information and determining the necessary information to solve the design problem gains importance in the appropriate progress of the studio process and determines the content of communication environment.

**Hospital Design: A Studio Experience**

**Hospital as a Design Problem**

Health-related buildings have been developed proportional to the development level of the societies from past to present. In the last fifty years, medical technological developments raised the level of architectural competence in such buildings and the buildings became more complex. The complexity results from the units, spaces related to these units, the abundance and diversity of the users and the quality of the medical technology (Aydın, 2009; Aydin, 2001). Hospital architecture requires a wide range of information background and coordinative work as a result of functional and technical problems, requirement of combination of architecture and engineering, the standards determined by the concerning ministry in the country. Attainments of studio experience are as follows considering the complexity of the design as a result of the function of the buildings: a) raising awareness about the legal and professional problems students may encounter in real life, b) analyzing the complex hospital building via users and functions, c) empowering the sophisticated thinking ability about spatial and functional organization, d) provision of spatial solutions of functions via information background (operation rooms, emergency etc.), e) determination of efficacy for related engineering branches about the design, f) having a full command
with systematic design process experience.

**Architectural Design Studio: Process of Hospital Design**

The steps followed in the studio process were analyzed with the design problem of “hospital”. “Analysis, synthesis and evaluation” which are the sub-parts of the programming and design are cited as the sharing with the students. Delimitative and directive elements of physical environments are as follows: Turkish Republic The regulation for Private Hospitals determined by the Ministry of Health, regulation and standards about units (emergency, intensive care), principles about functional organization, spatial qualifications and the qualification of the units, the problems about “space” and analyses.

The curriculum lasted for 14 weeks. The discussions and sharing were conducted in the scope of the products. Studio process was realized as provision of design problem and design space, information collection via interviews and visual tools (examination on site and the provision of the examples via presentations), determination of spatial programming, analysis about the design (for design space and problem), design process (analysis, synthesis, evaluation). Figure 1 shows the actions of the students and instructors in design process in sub-parts of the programming and design processes (analysis, synthesis, evaluation).

**Determination of Programming**

The hospital was designed to be 20,917 m² including circulation. The main areas included polyclinics, emergency, patient care units, operation room, intensive care unit, service spaces (laundry, kitchen and medical gas storage), managerial section and technical services (heating center). In the programming stage, to encourage the students to carry out research, motivate them and raise awareness, the concrete spatial program was formed in discussion with the students; the students were encouraged to undertake research for the program; they were accompanied in visits and they were supported in interviews. When the programming stage was completed, the students were able to find the answers to the following question: What will be designed? What will the functional, technical properties of the building/space be? What are the properties of design specific to a hospital?

In the analysis step in the design process, analyses were performed in relation to the design area. The analysis of the area affects the principal decisions in the design.

**Characteristics of the Site Area**

The design area is the centre of Konya city and area size is 10041 m². There are residences and commercial units near the area. On the northeast axis of the site lies the main vehicle axis. Mass transport and main vehicle circulation flow on this route. In accessing the hospital, the movement of pedestrians and vehicles were analyzed; and in terms of function, the connections with the exterior space such as the emergency entrance, main hospital entrance, service entrance and morgue exit were analyzed in terms of pedestrian and vehicle flow. The direction of the site was analyzed considering hospital units. The direction of the units such as operation room, intensive care and laboratory are important in terms of utilization and commissioning. In addition, the dominant wind direction should be determined particularly for patient care units. In certain
climatic seasons, wind can cause problems in utilization. The building restrictions on the site were defined as “land area x 1/2” for the ground floor and “land area x 2.20” for the ground and upper floors. No limitation was specified for the building height. In the design, the distance from design area border to the main vehicle axis and other roads were important in defining the ground floor area.

At the stage of synthesis, the information collected for the spatial program and the analyses related with the land were integrated. Each student made their own analyses and presented them specifying their reasons for their analysis. In visual or oral presentations, positive and negative aspects were collectively discussed and the main decisions were taken. Thus, considering the site size, zoning status, dominant wind and the direction and the function of the building, synthesis process began. The fact that a hospital would be constructed on the chosen site required a rational discussion of the problems.

The evaluation process under the sub-parts of design process, involves the selection of the most advantageous alternatives from those suggested ones. When analyzed in terms of education, the evaluation process involves the evaluation of the designs by the students. Thus, the evaluation process involves analyzing and discussing the design products in a studio environment and talking about the rights and wrongs in line with the principles related to the design problem. In this process, the discussions between the studio executives in the studio environment lay the basis for enriching the
ideas of students concerning the design. The discussions allowed each student’s project to present different views and determine possible alternatives. Visual and oral criticisms of the projects enable the students to criticize their own work. Particularly, in the first weeks of the design, the students’ solutions suggested for the hospital contained mistakes for example, (operating theatres, emergency rooms, the intensive care unit and the relationship between the sections. Almost all the projects contained mistakes this required making the corrections and thus it was part of the learning process. In such cases, visual and verbal explanatory information provided generally to the class by the project executives were effective. Thus, during the semester, studio course was supported with theoretical courses/presentations based on the given design problem.

**Parameters of hospital design problems for evaluation of students’ projects;**

— Solving functional – spatial organization (relationship between departments)
— Solutions relating to user action (entrances, accessible to departments)
— Conformity to the standards and legislation (size of space, especially operation room, intensive care and patient room)
— Richness indoor space – aesthetic (aesthetics concern, difference indoor space, especially waiting area and corridor, and façade)

**Assessment through Examples of Student Projects**

All of the students became successful and get through the next year. According to the grades of the students, medium, good and excellent grades were classified and excellent (12.5%; grade: 75 and above) and good (30%; grade: 65-74) design products were included to the study.

Successful and poor solutions in design are specified according to evolution criteria. Standards for every student are showed in the tables (1-6) as different spaces. Aesthetic is to be given as an example of indoor space, façade and specific space. (See Appendix)

In architectural design education, design studios are the environments where how the design is taught and experienced. Prior to defining how design will be taught, what will be taught should be clearly determined. Each design experience provides the students with new acquisitions. In this context, the given design problem is important.

In Studio 7 prospective architects generally became successful in the design of hospital building with complex function. This experience raised awareness about access to information via thinking, provision of a new position for information in each concept.

In addition to the given design problem, the students acquired the ability to understand and deal with the problems, and solving the complexity in the spatial organization and functional relationships. In the design stage, the students found it difficult to solve some problems such as the functioning of the operating theatre and the relationships between the units. The problems were solved by in situ examinations, interviews with the users and the presentations of the project executives. Thus, in cases of deadlock, where the students were unable to produce solutions, leading the students contributed to the progress of the designs. In the
studio process, information exchange supported communication, which led the students to trust the instructor and created self-motivation in students with the feeling “I can do it”. The fear of unknown in the students was overcome with positive communication.

References


Table 1: Example 1 (student name Nihan Bulbul). (Source: Authors).

Table 2: Example 2 (student name Selim Yolcu). (Source: Authors).

Table 3: Example 3 (student name Musab Keskin). (Source: Authors).

Table 4: Example 4 (student name Firat Polatdemir). (Source: Authors).
Table 5: Example 5 (student name Büşra Karagözoglu). (Source: Authors).

Table 6: Example 6 (student name Mucahit Ozcan). (Source: Authors).

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