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Re-thinking Basic Design Course in Architectural Education in Turkey

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Abstract: The aim of this study is to determine the current status and significance of Basic Design education in contemporary architecture schools in Turkey to contribute in developing new course content and teaching methodology that keeps up with the necessities of the rapidly changing world of 21st century. Taking its origins from the Bauhaus, the Basic Design course still maintains its significance in the Turkish architecture schools. Due to technological developments, some experimental approaches started to be appeared to integrate digital technologies and computational thinking into the course curriculum. In order to reveal the status of the course, by using literature review and statistical data, history of the Basic Design course, the technological and generational changes of the 21st century as well as their effects on the course, the characteristics of the course in contemporary Turkish architecture schools, and some experimental approaches to the course will be presented throughout the study.

1. Introduction

Originated from 'Vorkurs' (Preliminary Course / Foundation Course) of the Bauhaus, after 100 years, the Basic Design course still continues to preserve its importance in architectural education. It is the first design course where prospect architects encounter with design problems and start to develop a sensitivity towards visual language by focusing on design elements and principles (Acar, 2003). 'Vorkurs' was initiated at Bauhaus in 1919 after Johannes Itten's proposal about a trial semester for the enrolling students was accepted by Walter Gropius (Itten, 1975). The course was taught first by Itten, later by Lázsló Moholy-Nagy and Josef Albers, each of whom had different approaches and concerns in terms of education. For instance, Itten used "creative automatism" whereas Moholoy-Nagy introduced a more scientific based problem-solving approach (Wingler, 2015).

Following Bauhaus, the Hochschule fur Gestaltung, Ulm, tried to create a more scientific basis for the beginning design education with more emphasis on social responsibilities (Farivarsadri, 1998).

With its universal and abstracted education, the New Bauhaus in Chicago also shared the same ideals with the German Bauhaus (Acar, 2003).

The structure of the Basic Design education in Turkey can be interpreted as the continuation of the Bauhaus pedagogy (Makaklı & Özker, 2016). Since many years, the structure of the Basic Design course in architecture programs in Turkey has reflected the concepts of the Bauhaus (Farivarsadri, 1998). In 1979, Denel (1979) stated that: "Basic design needs to be designed for the needs of today's architectural students."(p. 16). It has been 40 years since Denel's dissertation and it is seen that the Basic Design course still needs to be restructured to serve the needs of today's architecture students. The world changes continuously, so do the generations and students. Despite these changes, the traditional teaching methods and contents of the Basic Design course have not been questioned sufficiently.

The review of related literature revealed that few studies in Basic Design course structure and teaching methods for first-year architecture students have been conducted. Johannes Itten's "Design and Form" first published in 1964 and since then used as the most important reference book in the field. Other Bauhaus teachers also wrote books about their understandings of the foundation course. Pedagogical Sketchbook, written by Paul Klee in 1972, and Point and Line to Plane, written by Wassily Kandinsky in 1926, are some other examples. Another important book about Basic Design is written in 1972 by İ. Hulusi Güngör with the heading "Temel Tasar" and still being used as a reference book by the Turkish Basic Design educators. Though it covers the subjects taught in Basic Design courses, there is a lack of information about the methods of teaching. Another important source is again a dissertation written by Bilgi Denel titled "A Method for Basic Design" which was written 40 years ago in 1979. Denel's work focuses mostly on the assignments rather than the structure of the Basic Design course. Another significant work is the Ph.D. dissertation written by Nuri Temizsoylu in 1972 in London entitled 'The Background and Development of "Basic Design" Concept', which concentrates more on the historical development of the course rather than its contents. Though there is a significant number of articles found in the literature, they mostly focus on the works done in the Basic Design course, not on the structure of the course or the teaching methods. As Boucharenc (2006) mentioned in his article, there is still a need for further research in the field of Basic Design education.

Review of the current literature shows that few studies in Basic Design course content and teaching methods for first-year architecture students have been developed. Therefore, the aim of

this study is to determine the current status and significance of Basic Design education in contemporary architecture schools in Turkey to contribute in developing new course content and teaching methodology that keeps up with the necessities of the rapidly changing world of 21st century.

The procedure related with the method applied is as follows: First, the programs of architecture were determined based on the information declared in the Higher Education Program Atlas published on the official website of the Council of Higher Education in 2017. Then, the curriculum information and the syllabi of the first-year design courses of the determined architecture programs were gathered from the Undergraduate ECTS Information Guides published in the official websites of the universities. Afterward, all the data gathered were transferred to KoBoToolbox in order to transform the information into statistical data. Meanwhile, a theoretical study based on literature reviews was conducted to form a solid basis for the research.

In that regard, in the second Chapter, the execution and evolution of Basic Design education in historical context will be examined. In the third Chapter, the requirements of the course considering the technological developments and the generational change in 21st century will be discussed. In the fourth Chapter, the history and the current status of Basic Design education in the programs of architecture schools in Turkey will be investigated and some experimental case studies will be presented. And in the fourth Chapter, the findings of the study will be evaluated.

2. History of Basic Design Education

Present day applications of Basic Design education are either development of or reactions against the previous models executed in the history of architectural education (Farivarsadri, 1998). Since all the contemporary systems of Basic Design education are based on theories and methods applied in the past, in order to understand the current approaches to Basic Design education thoroughly, it is necessary to make a historical review of the subject. Considering the fact that a comprehensive historical review of the subject matter is beyond the limitations of this study, the most influential schools of architecture in the development of Basic Design education will be accentuated. The schools of architecture focused on in this study to examine the historical evolution of the Basic Design education are determined according to the "three historical embodiments of the archetype" put forward by Findeli (2001), that are Bauhaus, New Bauhaus, and HfG Ulm.

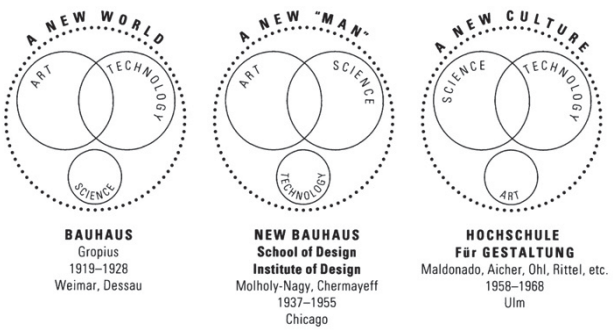

Figure 1. Three Historical Embodiments of the Archetype (Findeli, 2001)

2.1. THE BAUHAUS

The history of Basic Design education dates back to *Vorkurs* (Preliminary Course) of the Bauhaus (Özkar, 2017), which was founded by Walter Gropius in 1919 in Weimar, Germany (Bayer, H., Gropius, I., & Gropius, W., 1938).

Gropius published the program and the manifesto of the Bauhaus, also knowns as Staatliche Bauhaus, in April 1919 as a four-page leaflet where he states the aim of it as to collapse the barricades between the artist, craftsman, and the architect by bringing them together (Wingler, 2015). In order to achieve his goal, Gropius invited celebrities to teach at the Bauhaus, and these celebrity collaborators of the Bauhaus differentiated the school from its contemporaries (Dearstyne, 1986).

Since the incoming students of the Bauhaus were expected to have studied basic concepts of art before (Moynihan, 1980), a Vorkurs-like fundamental course was not included in the foundational program of the Bauhaus declared by Walter Gropius in 1919 (Wingler, 2015). But throughout the first semester, it was observed that though having art education previously, the incoming students were still insufficient in perceiving fundamentals of form and creating innovative works.

Therefore, after the first student exhibition, Gropius decided to set up a fundamental design course to solve the encountered problems of the students related with form and creativity, and he began to seek a master who could be responsible for that kind of course (Moynihan, 1980). Eventually, Johannes Itten was invited with the advice of Gropius' wife, Alma Mahler, and started to teach at the Bauhaus (Itten, 2002).

The pedagogy of Johannes Itten, who was a teacher and painter, was the combination of the ideas of Froebel, Montessori, Cizek, and Pestalozzi (Lerner, 2005; Wick 2000). Deeply affected by the thoughts of these names, Itten proposed a compulsory trial semester for each and every applicant of the Bauhaus. Following his proposal's acceptance by Gropius, the Basic Course was introduced in the Fall of 1919 with a duration of six months (Wick, 2000). By means of the preparatory course called 'Vorkurs', 'Preliminary Course', 'Foundation Course', 'Basic Course', etc., which formed the backbone of the teaching philosophy of the Bauhaus in the following years, Itten made his enduring contribution to Bauhaus (Wingler, 2015).

In the Statutes of the Staatliche Bauhaus, the contents of the Basic Course were explained as form training as well as the experimental material studies conducted in the craft workshops (Wingler, 2015).

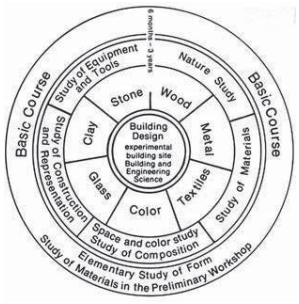

Figure 2. Syllabus of the Weimar Bauhaus, 1923 (Itten, 2002)

According to Itten, the main problem of teaching art was to evoke the individual expression within each student in order to expose their creativity (Itten, 2002). Influenced by the warm-up exercises of Hölzel, who was a professor at the Academy in

Stuttgart where Itten had studied, Itten introduced these exercises preceding the day's assignment to make the students relaxed, to prepare them for the subsequent rhythmic works, and to improve the students' eye-hand coordination (Wick, 2000).

The composition was taught in the Basic Course of Itten via two significant exercises. The first one was experimenting and constructing three-dimensional works with a special emphasis on different forms, textures, and materials, then, transforming them into two-dimensional drawings by concentrating on the contrasts considering the concepts of form, proportion, color and rhythm (Itten, 2002; Whitford, 1984). The second required the structural analysis of the works of old masters considering the linear composition, three-dimensional relations, and light-dark proportions within the painting in order to catch the expressive creative essence of the original work (Whitford, 1984; Wingler, 2015). While the Preliminary Course of Itten was evaluated by the critics as menticide causing the dismissal of previously gained knowledge or skills of the students, the course was considered by its defenders as the freeing of the creative potential which was inactive within every single student (Whitford, 1984).

Though Itten's pedagogical approaches were striking at that time, due to his conflict with Gropius he resigned and went from Weimar Bauhaus in the spring of 1923. After the resignation of Itten, Josef Albers, who was a former student of Itten, was appointed to the material workshop of the Preliminary Course while Hungarian artist Lázsló Moholy-Nagy became responsible of leading the Preliminary Course (Wingler, 2015).

With his arrival at Bauhaus, Moholy-Nagy altered the characteristics of the Preliminary Course by abolishing expressionistic tendencies such as the empathy, emotional responses of the students and relaxation exercises prior to the course and carried it closer to the motives of Gropius in terms of the integration of design and industry (O'Sullivan, 2012). He placed the problem-solving at the center of the lessons. While material studies remained, intellectual and scientific development was accentuated in the Preliminary Course of Moholy-Nagy. The main concerns of Moholy-Nagy were space, laws of physics and structure, balance, light, transparency, opacity and kinetic energy. Therefore, while introducing a problem-solving approach by giving importance to the construction of space considering the laws of science, he drew the attention of the students to three-dimensional relations which form the basis of architecture and design (Wingler, 2015).

While Moholy-Nagy concentrated on the basic visual training of the students, Albers focused on the introduction of the real materials the students would be dealing with in their future such as "stone, glass, wood, metal, paint, and textiles" in his Preliminary Course and his students learned the different characteristics and usages of the materials (Wick, 2000).

One of the most significant examples of Albers' Preliminary Course was his studies by using paper. By shaping and folding the paper, the students of Albers learned that the typical characteristics of materials can be changed and the relationship between materials and forms can gain a new notion (Wingler, 2015).

The concepts concerned in Albers' Preliminary Course while analyzing materials are "dimensions (point, line, plane, space, volume), mass (proportion, rhythm, addition, subtraction), movement (dynamics, statics), energy (active, passive) and expression (light, dark, colour, matter)" (Wingler, 2015). Other main interests in Albers' course were surface and texture qualities of materials. The texture was related to the appearance of the material considering its visual and tactile qualities (Moynihan, 1980).

The Bauhaus relocated to Dessau in 1925 when a significant change also happened in the organization of the school. Each workshop was led by a design master and a practical instructor in Weimar. After moving to Dessau, a single master became in charge of each workshop (Gropius, 1965). While Albers was in charge of the first semester of the Preliminary Course, Moholy-Nagy was responsible for the course's second semester. (Wick, 2000).

After the resignation of Moholy-Nagy with Gropius in 1928, Josef Albers became in charge of both semesters of the Preliminary Course. When the Bauhaus moved to Berlin from Dessau, Albers stayed with the school and continued to teach the Preliminary Course until the closure of the German Bauhaus by Nazis in 1933 (Moynihan, 1980).

With the sudden closure of the Bauhaus by the Nazi regime in 1933, leading masters of the German Bauhaus emigrated to America, where they continued to spread the Bauhaus ideals at American schools. The translation of the Bauhaus pedagogy from Germany to America was made specifically "by Lázsló Moholy-Nagy at the New Bauhaus and at the School of Design, and, afterwards, at the Institute of Design, in Chicago, by Josef Albers Black Mountain College and at Yale, and by Walter Gropius at Harvard GSD" (O'Sullivan, 2012). As it was mentioned in the second Chapter, Chicago Bauhaus which is one of the "three historical embodiments of the archetype" put forward by Findeli (2001), will be examined in the following Chapter.

2.2. THE NEW BAUHAUS

The New Bauhaus was founded by Lázsló Moholy-Nagy in 1937 in Chicago. It was closed due to the financial problems in 1938 but with most of the members of the faculty, it was opened again under the name of "School of Design" in 1939, in Chicago. Later in 1944, its name was changed into the Institute of Design (Wingler, 2015). Since 1949, it has been incorporated into the Illinois Institute of Technology (IIT) (Wick, 2000).

Though Moholy-Nagy believed in the validity of the Bauhaus ideas, he also became aware of the fact that the content of the curriculum needed to be modified due to the scientific and technological developments occurring in America. Therefore, he made two important changes in the original curriculum. More technological arts such as kinetic and light sculpture, film and photography as well as music and poetry, which are not visual, integrated into the curriculum. Also, in addition to the two main ingredients of the Gropius' formula, which were art and technology, Moholy-Nagy placed science into the structure of the program. As a result, social science, physical, human and life courses entered into the school's program (Findeli, 1990).

According to Moholy-Nagy, by means of one-year preliminary course students can try their abilities, can experience themselves, can take brief training in the specific workshops and can have the chance to choose their future specializations carefully (Findeli, 1990).

Moholy-Nagy was interested in material experience, surface, space, and volume. He also believed that there is a necessity of universal purified language in order to talk about art like we talk about science (Wingler, 2015).

The Foundation Course outline was composed of two parts: "plastic elements (line, shape, color, texture, structure, volume, motion, space, etc.) and specific tools and materials used to create form (brush, pen, power tool, camera, pigment, paper, clay, wood, plastics, etc.). The students of the course were expected to be familiarized with both of them with the given assignments (Findeli, 1990).

The new Bauhaus was also sharing the same ideals with the German Bauhaus by being universal and abstract (Acar, 2003).

But founded on a more scientific and purified translation of the German Bauhaus, the pedagogy of the New Bauhaus was a more successful achievement of the former Bauhaus (Wingler, 2015).

2.3. HFG ULM

The Hochschule für Gestaltung (HfG), Ulm was founded in 1953 under the rectorate of Max Bill, who was a former student of Bauhaus. Though at first, HfG Ulm was led according to the Bauhaus principles, shortly the main fields of the studies became mass communication products, industrial designs, and buildings (Leopold, 2013).

Based on the Bauhaus pedagogy, HfG Ulm also offered an introductory design course called Grundlehre (fundamentals) which had to be taken by all the beginning design students (Spitz, 2002).

Being a former student of the Bauhaus, Max Bill invited Bauhaus masters such as Josef Albers and Johannes Itten as guest lecturers for the opening course which was in August 1953. In the first years of the school, between 1953 and 1958, pedagogy of the basic course at HfG Ulm's was based on the Preliminary Course of the Bauhaus. In this first phase of the course, it focused on the visual training, freehand drawing, and material experimentations, and the duration of it was one year at HfG Ulm (Leopold 2013).

In the second phase of the course, "Visual Methodology" was the leading field of the study. The main concern of the course was transformed in order to teach the students the design process in a conscious and controlled manner. This new course which would be called "Ulmer Modell" after, comprised "Perception and Gestalt Theory", "symmetry", and "topology" (Leopold, 2013).

The general structure of the course was composed of basic design theory, form, color, light, material studies as well as the discussions on social, political, cultural, and scientific topics of the day (Lindinger, 1990).

Focusing more on the social responsibilities, the Hochschule für Gestaltung (HfG), Ulm, attempted to formulate a more scientific approach for introductory design education in order to defeat the problems caused by the Bauhaus education system (Farivarsadri, 1998).

3. Basic Design Education in 21st Century

Due to the rapid developments in science and technology, an explosion of information has been experienced in the 21stcentury. Due to these developments, 21stcentury, also being called the information age or digital age, is different from the times where Bauhaus emerged (Dong, 2017). Although the pedagogy of the Bauhaus is still being applied in many contemporary design schools around the world after 100 years of its establishment (Boucharenc, 2006), there are important differences between the present-day students and that of the past century.

The generational characteristics of today's students could not have been explained clearly and thoroughly yet. They are given different names such as "Net Generation", "Digital Natives", "Gen Z", etc., considering the year of birth or their usage of technology. The skills, habits, inclinations, cultural qualifications, and learning styles of the generations born into the digital age are totally different than the older ones. In contrast to the older generations, today's students can receive information from an incalculable number of sources, and the influence of technology on the student profiles are undeniable (Büyükkeçeci, 2017).

In the last decades, technological advancements have also caused considerable changes in architectural practice particularly with the enhancing use of computer technologies (Doyle & Senske, 2017). In the beginning, computers were used mostly as a complementary tool for drawing and presentation but with the rapid development of digital technologies, they also started to be used as design tools (Ağırbaş, 2017). Especially digital fabrication and computational design tools enabled new designs that would not be possible to be realized without computers (Carpo, 2012). These advances in technology also affected architectural education as well as architectural practice (Norman, 2001). Due to the never-ending developments in digital architectural design, new necessities emerged in architectural education to answer the needs of the fast-changing architectural practice in 21stcentury. Therefore, computational tools started to be involved in the architectural curricula both as elective and compulsory courses either integrated into the design studio or stand-alone (Ağırbaş, 2017; Varınlıoğlu, Halıcı, & Alaçam, 2015).

Though it is inarguable for the scholars in the design field that it is a need to integrate computational tools into the architectural curriculum, when and how to teach these tools in architectural education is still being discussed among the scholars and professionals. Some academics argue that computational tools have to be integrated into architectural education after students get acquainted with a strong background with certain skill sets like hand drawing and physical model-making (Kara, 2015). On the other hand, some academics believe that how the first-year design students learn to draw and model from scratch, they can also learn to use digital media as design tools simultaneously. Moreover, they argue that integrating computational tools into the architectural curriculum as soon as possible starting from the first year enables the students to improve a more profound perception of the possibilities and constraints of these tools (Carraher, 2011).

Therefore, there are several studies conducted searching for pedagogical methods for integrating computational tools into the Basic Design curricula around the world.

One of these studies was conducted by Roudavski at the University of Melbourne in 2010, where the first-year students were asked to design and build paper sculptures with complex geometries to be worn on the head by using various digital and analog tools. At the beginning of their design process, students propose a concept for their headpieces. After this proposal, they develop three-dimensional forms by sketching and making models out of paper and clay. Then these hand-made physical models are converted into digital representations by using computational tools and their designs are developed with the help of digital modeling. Later these digital models are used to generate unfolded patterns of complex forms to be cut and digitally fabricated out of paper by using laser cutting robots (Roudavski, 2011).

Another study was carried out in the United States. During the 2010-11 academic year, School of Architecture + Design at Virginia Tech organized a series of workshops where first-year and upper-level design students from different design disciplines attended separately or together. One week lasting each workshop started with Rhino tutorials and later students were asked to accomplish different tasks. In one of them, students were expected to design within a 4" cubic volume by means of cutting, folding and scoring. After the students brought their designs, they were expected to translate them into Rhino commands and make iterations of their forms. Afterward, for two-dimensional fabrication, three-dimensional computer models were prepared and laser cutter was used (Carraher 2011).

As it is seen from the examples, they try to integrate computational tools into the Basic Design curricula by trying to balance the conventional tools with digital tools and

computational thinking during the design phase. Considering the issue of when and how to incorporate digital tools into the design curriculum the case studies introduced above are selected as samples from the world because they can be accepted as a few but important examples summarizing the common approaches which aim to respond to the 21st century requirements of the profession and education of architecture. Though the general tendency is like the cases presented here, there is still need for more pedagogical researches about the integration of the digital tools into design curriculum in order to meet the present and future needs of the profession.

4. Basic Design in Architectural Education in Turkey

4.1. HISTORY OF BASIC DESIGN EDUCATION IN TURKEY

Though it was mentioned in the article written by Esen, Elibol, & Koca (2018) that the Basic Design education as a course in Turkey first appeared at 'Istanbul Vocational State School of Higher Education', which is called Marmara University at present, in 1957 (Esen, Elibol, &Koca, 2018), the "first institutionalized Basic Design education" was executed by the Department of Architecture at Middle East Technical University in 1956 (Acar, 2003; Uysal, 2003). Later in 1967, at School of Fine Arts, known as Mimar Sinan University today, the first-year architecture and fine arts students started to take a compulsory common basic course which was influenced by the Bauhaus pedagogy (Bayındır, 1994). The main purpose of that course was to teach the first-year students the basic design elements and principles. The Bauhaus pedagogy also affected the education of other architecture programs in Turkey, and since then traces of it are seen in most of the Basic Design courses offered in the first year of architecture schools in Turkey (Farivarsadri, 1998).

4.2. CURRENT STATUS OF BASIC DESIGN EDUCATION IN TURKEY

According to 2017 data published by the Council of Higher Education, there are 87 universities offering architecture programs. 45 of these universities are state universities, and 42 of them are foundation universities. 2 of the state universities and 10 of the foundation universities offer architecture programs in both English and Turkish. So, in total, there are 99 programs in Turkey providing architectural education.

While the expression of "Basic Design" or "Design Fundamentals" are clearly mentioned within the curriculum of 88 % of these programs, 12 % of the design courses offered in the first semester of these programs are given different names such as "Design Studio 1", "Design", "Art and Design Studio 1", "Architectural Design 1", "Introduction to Architecture", "Introduction to Design", and "Introduction to Design 101".

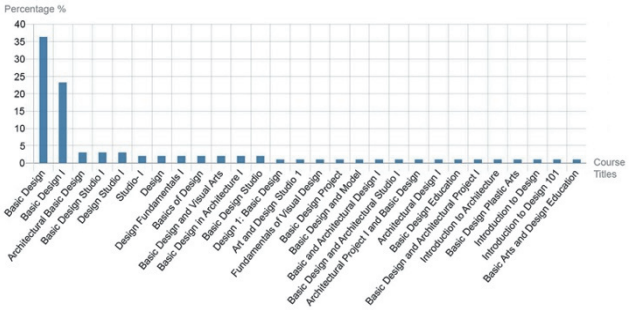

Figure 3. Titles given to the course in different programs

When the course descriptions, course objectives, and weekly course plans which are published in the official website of the schools are examined, it is understood that in 99% of these programs basic design elements and principles, which are the primary concerns of the Basic Design course, are taught. But the way how they are included in the curricula of the programs differ.

When the design courses offered in the first year of the architectural programs in Turkey are examined, it is seen that there are seven systems formulating Basic Design course. Either Basic Design course is offered alone throughout the first year in both semesters, or it is offered in both semesters with a simultaneously offered another design course, or it is offered for both semesters and another design course is also offered in the second semester, or it is offered in the first semester alone, or it is offered in the first semester with another design course simultaneously, or it is offered together with another design course, or it is not offered at all.

When the weekly course hours of the course are considered, data of the 97 programs out of 99 programs were reached through their official websites. Within the curricula of these programs, weekly hours of the Basic Design course are 8 hours (30%), 4 hours (21%), 6 hours (18%), 12 hours (9%), 3 hours (8%), 10 hours (7%), 9 hours (2%), 11 hours (1%), 2 hours (1%).

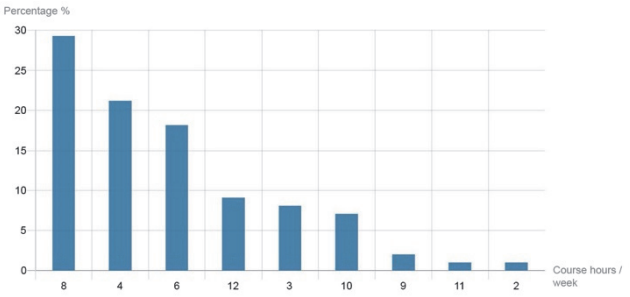

Figure 4. Total course hours per week

When the course weights/semester are analyzed, since 4 programs out of 99 programs have not published their total ECTS per semesters until the time of the writing, they are not mentioned in the following statistics. Other than these programs, in 15 of the programs the ECTS weight of the Basic Design course in its offered semester is 33%, in 13 programs it is 27%, in 13 programs it is 17%, in 10 programs it is 13%, in 9 programs it is 20%, in 8 programs it is 10%, in 5 programs it is 23%, in 3 programs it is 43%, in 3 programs it is 29%, in 3 programs it is 40%, in 2 programs it is 28%, in 2 programs it is 30%, in 2 programs it is 37%, in 1 program it is 22%, in 1

program it is 9%, in 1 program it is 15%, in 1 program it is 32%, in 1 program it is 50%, and in 1 per cent of them it is 47%.

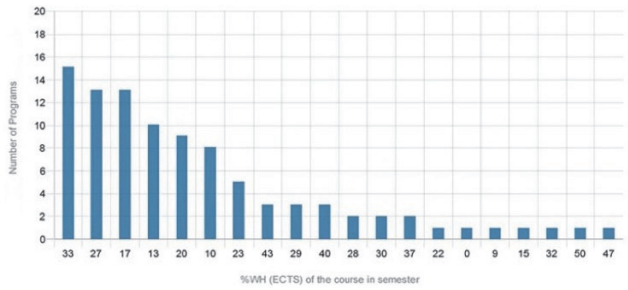

Figure 5. %Weight (ECTS) of Course in Term

4.3. EXPERIMENTAL APPROACHES

Through literature review, some case studies are selected to be introduced in this chapter. The samples are selected from the universities which are accredited, are within the top 20 schools in the ranking list according to the numerical data published by Higher Education Council, and give graduates at least since 2014. It should also be noted that the examples presented here do not include the entire studio workflow of the Basic Design courses offered in the selected programs. Instead of explaining the entire studio process, the following examples present short-term studio exercises applied at different universities meeting at the common point of integrating digital and computational tools into the Basic Design course while trying different methods. Due to the limitations of this study, the assignments will be summarized considering their different approaches to the subject matter.

Aiming to make the students acquainted with the concept of design computing at a school having well-protected traditional approaches to design, at the beginning of 2004-05 academic year's Fall Semester, Basic Design students of architecture at Middle East Technical University were given a two-week period exercise series where they were asked to follow a step-by-step procedure while designing in order to understand certain formal rules with reasoning. First, they were asked to take photographs of different positions of the body in front of the studio wall. In the second exercise, they were expected to arrange a 2D composition by using six of the photographs. In the third exercise, in order to make these photographs gain geometric characteristics, they were asked to draw lines on them. In the next exercise, by using black and grey paper the drawn lines were translated into planes. In the following exercise, a 2D composition was made by using thirteen elements taken from the previous exercise. In the subsequent exercise, a 2D composition was made on a square background by using three of the elements. And in the last exercise, a new square was made by placing nine of the squares from the previous exercise. During the exercises, the students noted the progression and changes in their design thoughts by comparing their works with their classmates throughout the discussions held in the studio at the end of every single step. At the same time, compared to the traditional approaches to Basic Design education, they became more conscious of their reasoning paying attention to the visual rules by being encouraged to explain their design process verbally. This study also differs from the other cases by integrating computation concept into the design curriculum without using any digital tool (Özkar, 2005).

Targeting to overcome the difficulties faced by the students in creating varied design alternatives by using fundamental geometries taking the defined principles of design into consideration, in 2012 Yavuz and Yıldırım presented a case study which was conducted with Basic Design students of architecture at Gazi University. For this study, "user-participated artificial intelligence software" and algorithms by using 3DS Max Script were developed by the instructors of the Basic Design course. The case study consisting of two stages lasted for 4 weeks. In the first stage, the Basic Design students were asked to form a composition composed of 5x5, 3x3 cubes, spheres, prisms or cylinders considering "repetition, unity and rhythm" principles by using traditional drawing methods. In the second stage, students were given 5x5, 3x3 cubes, cylinders with the radius of 5cm and height of 20cm and a sphere and they were asked to form alternative compositions out of them by using the script. At that stage, the necessary information to use the software was also given to the students. As a result, when compared to the traditional approaches, it is observed that the software made more contribution to student's design thinking, problem-solving abilities, and their creativity while enabling them to create diverse design alternatives as solutions to the given problem in a freer way (Yavuz and Yıldırım, 2012). Unlike the previous example, focusing more on software development and usage, this case presents another approach for integrating digital tools to Basic Design education.

Having the intention of integrating computational thinking and latest technologies with material knowledge, geometry and hands-on learning, at the end of the Fall Semester of 2017-18 academic year, students of computation-based Basic Design studio at İstanbul Bilgi University were asked to work in groups and to design and construct a lantern which is suitable for outdoor conditions and they are given five weeks to complete the project. During the development of designs, students were expected to investigate and concentrate on the properties and performances of materials, geometrical relations, and interlocking details while considering light, shadow, transparency and reflection properties together with the basic design elements and principles which are discussed in the preliminary exercises throughout the whole semester. Parallel to this final assignment which is given in the Basic Design studio, students are enabled to experiment and fabricate the components of their designs by using different materials with the help of the tutorials provided in the Design Geometry course. Using polyhedra as a reference, students research materials and joint details and make hands-on experiments in order to achieve the determined particular geometric shape with the appropriate materials and joint details. After experimenting with diverse materials having different transparencies, the students use different materials such as polypropylene sheets, aluminum sheets, and aluminum mesh sheets and fabricate the components of their designs using different techniques such as CNC cutting or vacuum forming depending on their material choices for their final products. As a result of this study, the students became capable of creating different geometric forms by means of computational design accompanied with hands-on experience based on material knowledge (Gündüz, Oral, & Yazar, 2018). Different from the previous examples, this study focused more on the material knowledge and the results of the student works reveals the integration of the computational tools into the curriculum more explicitly.

5. Findings

The study reveals that Basic Design course and its contents are offered in 99% of architecture schools in Turkey under different names either as a stand-alone design course or as integrated into another architectural design course in the first-year curriculum. The study also presents that Basic Design education, adopted from Bauhaus initially, continues to be valid and influential in contemporary architectural schools in Turkey. The course hours and their weights within the curricula also show the importance given to the course in present-day architecture schools in Turkey.

The study also exposes that the instructors of Basic Design course, both in Turkey and in other countries, have already started to search for alternative methods to include computational tools into the design curriculum by means of experimental approaches. The selected experimental case studies mentioned above, except the one conducted at Bilgi University, can be considered as preliminary studies reflecting the informal attempts of integrating computational and digital design approaches into the first-year design curricula of different architectural programs by using different methods.

While in the case of Gazi University, user involved computer-based design tool generating various alternatives by bringing the basic geometrical shapes together according to defined design principles is offered, in the case of Middle East Technical University, by integrating design thinking and computing into the Basic Design education, a different approach is proposed by Özkar showing that design computing can be made without computers. On the other hand, by founding the Basic Design course from the beginning as a computer-based course, İstanbul Bilgi University provides a special curriculum which presents the integration of computational design thinking and hands-on making giving emphasis to the experimentation with different materials.

All the cases explained in this study show that it is possible and necessary to integrate the computational tools into the design curriculum in different levels depending on the infrastructures of the schools while still going on to utilize the main concepts of traditional Basic Design education inherited from the Bauhaus. These examples can also be accepted as evidences revealing the necessity of revising the current Basic Design curriculum to fit the needs of both the architectural profession under the influence of 21st century technological developments and the profiles of the current and future students belonging to different generations who have and will have different characteristics especially in terms of their relation with technology.

6. Conclusion

It is obvious that in the 21stcentury, students require to be made ready, starting from their first-year design studies, by being equipped with necessary technical skills in order to create solutions for the real-life problems occurring at present and will occur in the future. Being the first design course where architecture students encounter with design problems for the first time, Basic Design course still preserves its importance and validity in Turkish schools of architecture. Due to the rising usage of digital tools in the architectural profession, a necessity of incorporating digital design tools into the curricula of first year Basic Design courses emerged in order to fill the gaps between the traditional architectural education and needs of the 21st century architecture profession. Parallel to the changes occurring in 21st century, also the new generation student profile has changed. Therefore, architectural pedagogy needs to be reconsidered in terms of the requirements of the 21stcentury. The general picture of the current status of the Basic Design course in Turkey drawn in this study is hoped to be utilized in designing a new Basic Design course curriculum according to the current and future needs of the profession and education considering the necessities of the new generations and the 21stcentury.

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