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ONLINE EDUCATION ON FURNITURE DESIGN FOR HOUSEHOLD PEOPLE DURING LOCKDOWN

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Abstract

During 2020 Spring academic semester, the majority of the universities in Turkey shifted to fulltime online education due to the Covid-19 pandemic. As a result, theoretical and applied courses in both graduate and undergraduate programs were carried out to an online platform. "Contemporary Furniture Design" was one of the undergraduate elective courses in Istanbul Technical University, Faculty of Architecture. The course started in studio environment with face-to-face interaction and shifted to online education regarding the lockdown regulations.

For the final submission, students were asked to develop a detailed furniture design system for household people during lockdown. Each week a milestone has had to be achieved such as; scenario building and brainstorming ideas for the first week, developing themes and evaluation of initial ideas through sketches, collages, concept/mood boards etc. for the second week and so on. Within this context, this study aims to demonstrate the process and evaluation of designing furniture in an educational setting. The challenges and benefits of online education in applied courses is an additional finding to be discussed in this study.

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1. Introduction

Furniture, as a product, is embedded with multiple layers of meaning. Besides a function based utilitarian approach, one can think of furniture as a symbolic aspect of life style. Lucie-Smith (2004) describes the meaning of furniture under four headings. In addition to the above mentioned two, furniture can be thought under technological aspects. Moreover, furniture is "purely personal and is a subjective statement of the individual who uses it" (Lucie-Smith, 2004).

Furniture design education is a challenging task. In the Preface to the first edition of "Furniture" published in 1979, Pile states the difficulty of teaching furniture design. Besides the need to have some creative ideas, an instant mental access to a mix information (materials, processes, ergonomics), one must be acquainted with "the history of successful and unsuccessful efforts of all the designers who have struggled with furniture problems over the last four or five thousand years (Pile, 1990)".

Typically designing furniture is an iterative process and the methodology it carries within has not changed much over the years. Pile (1990) states the basic pattern of furniture design process into the following steps: First, the definition of the problem is clarified. A tentative (yet creative) solution to the problem is obtained. Visualization of the tentative proposal can be prepared by sketches, draft models and drawings. Then the critical evaluation and if necessary, re-evaluation of the proposed design is made. After this stage, prototyping is done. Following prototyping minor improvements can be done and subsequently the design is ready for production. This process resembles a clear similarity between well-known "Basic Design Cycle" proposed by Roozenburg and Eekels (1995). The basic design cycle starts with defining the function, followed by analysis, synthesis, simulation, evaluation and finally decision steps take place prior to the approved design.

Many design/engineering schools have been referring to the basic design cycle, as well as the iterative structure of the design process, while teaching design in theory and practice. However, considering the current global arguments in design education it can be foreseen that design education itself is at the edge of an expected change (Meyers and Norman, 2020).

Furniture is an important industry in Turkey. However, recent reports (Furniture Sector Report (2020), Turkish Furniture Assembly Sector Report (2017), Furniture Working Group Report under the Tenth Development Plan (2014-2018), etc.) published by Republic of Turkey Ministry of Trade, The Union of Chambers and Commodity Exchanges of Turkey and (former) Republic of Turkey Ministry of Development have simultaneously mentioned problems in this field related to Design and Production. Among the problems of the industry, the lack of local designers become a considerable disadvantage. Reports base this problem on the inadequate education of architects, interior architects and industrial designers.

Therefore, the situation also remains to be clarified in the context of furniture design education in Turkey. Since Çınar's overview (2005) on furniture design education in Turkey or Curaoğlu's reflections (2008) on furniture design courses in interior architecture education, a considerable improvement in this field hasn't took place. Çınar and Curaoğlu both state that the furniture design education is not sufficient in Turkey in terms of certain aspects regarding quality and quantity (Çınar, 2005; Curaoğlu, 2008). Although design related departments in Turkey have rapidly increased in the last years, furniture design education still remains as a improvable area.

Based on the framework provided above, this paper focuses in a case study which demonstrates the process and evaluation of current furniture design education. The case study is particularly selected in Spring 2020 academic semester due to the first-time coexistence of face to face and online education regarding pandemic regulations. The challenges and benefits of online education in an applied course is an additional finding to be discussed in this study.

2. Process and Methods

Coronavirus (COVID-19) pandemic which surfaced in December 2019 effected the majority of educational institutions globally including the universities in Turkey. Theoretical and applied courses in

both graduate and undergraduate programs were carried out to online platforms during 2020 Spring academic semester. "Contemporary Furniture Design" was one of the undergraduate elective courses held in Istanbul Technical University, Faculty of Architecture, Department of Industrial Design. The course started in studio environment with face-to-face interaction in February 2020 and shifted to online education in April 2020 according to the imperative changes in academic calendar caused by lockdown regulations (Web-1). 24 undergraduate students from Department of Industrial Design and Department of Interior Architecture were enrolled in the course. During the online course weeks (which was carried on for seven weeks: first three weeks as a warm-up design exercise and the remaining four weeks as the final project) four sequential hours of class activity was performed online each week.

For the final submission, which effected the grades in 40%, students were asked to develop a furniture design system for household people during lockdown. This subject was mainly selected because as all students were attending the course online from their homes, they were experiencing the challenges of the situation first handed. Outcomes of the project aimed to ease this unpredicted and therefore unprepared condition for the household. The design process of the project consists warm-up exercise, three stages of design development, and the final submissions (Figure.1).
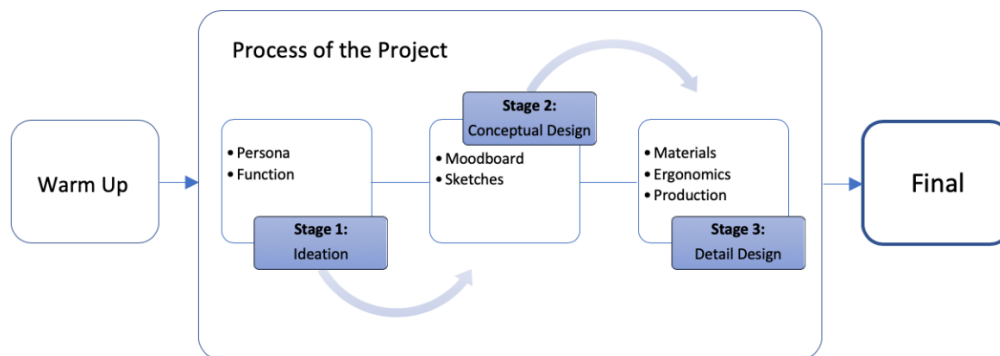

Figure 1: Process of the Furniture Design Project

2.1. Warm-up session

Prior to the project, a two-week design exercise was conducted as a warm-up session. This session aimed to literally warm up the students to each other in an online environment, and to warm up to the furniture design subject. Students were formed into six groups, all distributed randomly in equal quota of four students in each group. During the first lecture formation of the groups were announced. After brief explanation of the exercise students were sent into *break out rooms*, a feature of the online meeting software, where each group could individually discuss their topic. Besides getting familiar with the course terminology and technical infrastructure, the exercise contributed to learn the basic ergonomic dimensions related to furniture. The presentations were made by each group the following week. The groups also had a chance to test their compatibility in working with this exercise. As a result two out of six groups asked for a change in their formation, claiming that they found it difficult to work together. Based on their inquiry eight groups were formed with unequal number of students. The students preferred to continue to the main project this way. The process continued with three design development stages: Ideation, Conceptual Design and Detailed Design.

2.2. Design Development Stages

Each week a milestone has had to be achieved such as; scenario building and brainstorming ideas for the first week, developing themes and evaluation of initial ideas through sketches, collages, concept/mood boards etc. for the second week, reviews and further development of detailing, ergonomics, material and manufacturing processes for the third week and so on. Though it was a highly iterative process, it is possible to analyse the design development under three headings: ideation stage (using ethnography and critical design practice methods in order to create a persona, define functions of the furniture), conceptual design stage (brainstorming, sketching, using qualitative research methods [such as surveys] to prepare user requirement lists) and finally detailed design stage (ergonomic issues, material and production details, colours, finishes, etc.). Each group created separate personas and project briefs accordingly (Table 1). Mood/concept boards were used as visual narratives for the project (Table 2). Brainstorming charts, surveys and data analysing, benchmarking in the national/international market, sketching and 3D modelling was among the various methods of design/design research (Figure 2 and Table 3).

Table 1: Personas and project briefs by project groups

Group #	Member # (Dept.)	Persona	Project Brief
Group 1	4 (ID[a] & IA)[b]	Newlywed couple, living in a small apartment with cat. He is a UI/UX Designer. She is a yoga instructor	Multifunctional furniture system for household people during lockdown
Group 2	2 (ID & IA)	Family with two children, preschool aged. Mother is a youtuber with a food channel	Social area and kitchen interface furniture used for video shooting during lockdown
Group 3	4 (ID)	Pre-teens aged 9-14	The burrow that meets all the needs of pre-teen and surprises them
Group 4	3 (ID)	Young couple, both working as engineers	Dining, working and storage area for two people in lockdown
Group 5	4 (ID)	Young female graphic designer, single, living alone. Does yoga	An experimental furniture system that lets you explore
Group 6	4 (ID)	Young male industrial design student, single, living alone. VR and cats	Think about a wall which gives what you need
Group 7	2 (ID)	Single, middle aged female writer	A multifunctional furniture system for both small houses and people who work from home
Group 8	1 (ID)	Young flatmates, three people living together	Create, purchase and share! Open design approached relaxing, sitting and exercising unit

Table 2: Examples of mood/concept boards

Group 1	Group 2

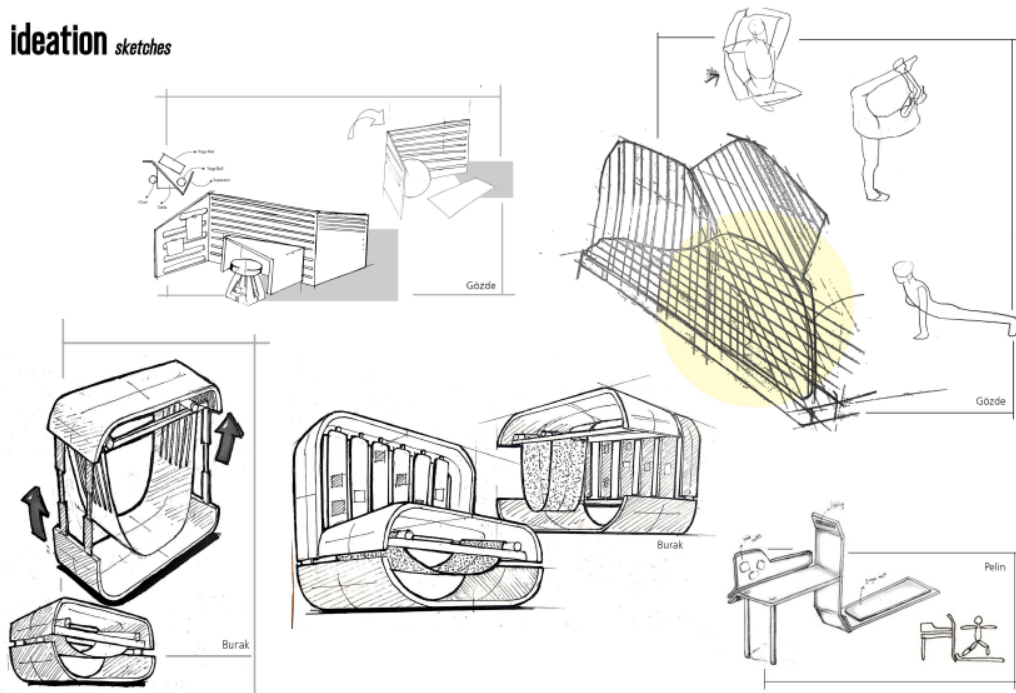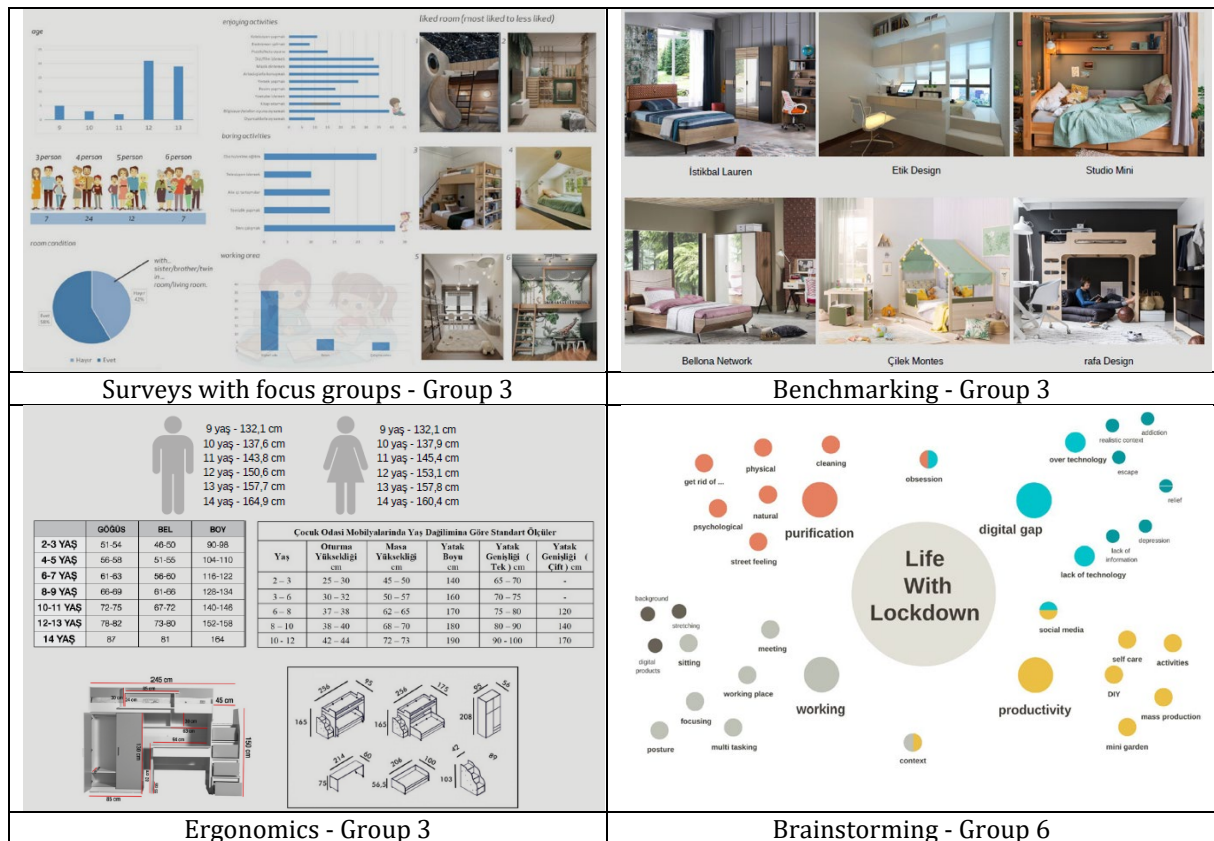| Group 4	Group 5

[a] ID: Industrial Design
[b] IA: Interior Architecture

Figure 2: Ideation sketches by Group 5
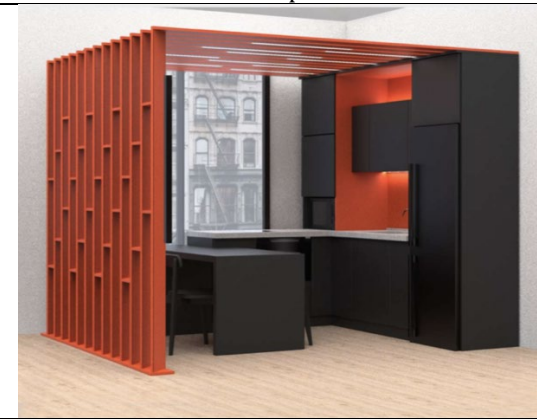
Table 3: Examples of various design /design research methods

| Surveys with focus groups - Group 3 | Benchmarking - Group 3 |
| Ergonomics - Group 3 | Brainstorming - Group 6 |

3. Results

The reflections on final submissions made by students express that Coronavirus (COVID-19) pandemic has a perceptive relation with household furniture design. Due to the lockdown regulations amount of time spent at home suddenly increased for all user groups. Multiple users, including members from different age groups, genders and social status were defined as personas by each student group. Each group selected different paths and covered a wide range of user requirements. There were contrasting user profiles in each design scenario submitted: In some cases, lockdown meant increased amount of time spent with children and pets, working from home activities, home schooling, etc. whereas in other cases lockdown had a significant aspect on ones' psychology due to social isolation. Lack of exercise and sunshine was among the challenges of lockdown. It is understandable that the personas students have created for the project was partly an echo of the challenges they faced in their own lives during the process. Therefore, a considerable amount of input of self-experience was delivered into the solutions, whilst using furniture design as a tool to solve the faced design problems. Multifunctional, adaptable, movable furniture systems were highly suggested by students. Aiming to perform more functions with less furniture, Group 1 designed a portable and collapsible working environment that can be positioned according to daylight. Based on the scenario of spending more time in the kitchen during the quarantine period, Group 2 turned the kitchen into a video shooting area when necessary, allowing the food preparation activities to be shared on the internet. Targeting users aged 9-14, defined as pre-teens, Group 3 designed a furniture system with the theme of "room in room" allowing the user to physically isolate during online education sessions or virtually socialize in free times depending on their needs. Group 4 combined the kitchen area with the working area, considering that during lockdown young couples spend most of their time in the kitchen, and the remaining time in online meetings. Kitchen/work environment was introduced as a social hub. Group 5 introduced an experimental furniture system for a single user that aims to turn work, rest and storage into a mindful experience. Group 6 designed a multifunctional furniture system with vertical components of entertainment and work such as VR, online video meeting capabilities etc. Group 7 focused on a rotatable desk for small apartments which saves space while not in use. Lastly, Group 8 offered an open design approach allowing the users to build their own furniture and share it on social media (Table 4).

Table 4: Examples of final submissions

Group 1	Group 2
Group 3	Group 4

Group 5	Group 6
Group 7	Group 8

4. Conclusion and Discussion

2020 Spring semester was the first-time experience using online platforms for educational purposes since Contemporary Furniture Design course history. As a result, mentioning the reflections of this first-time experience will be appropriate. These reflections on online education in an applied course can be grouped as challenges and benefits.

The first and foremost challenge in online education on furniture design was the "virtuality barrier," which can be explained as the lack of physical and tactile qualities of face-to-face communication. This affected both student-to-student relations as well as instructor-to-student (and vice versa) relations. The highs and lows in an ordinary face to face dialogue, the attention peaks and lows in course flow seemed difficult to adjust for all.

Obviously, the online course is mostly dependant on internet quality and technical aspects of the connected device. It is observed that it became extremely difficult to focus on the course flow, particularly with a bad connection accompanied with hardware incapability (such as low-resolution camera and/or low spec microphone setting. So, the technical capabilities during connection highly affects the overall flow and quality of online course.

However, mentioning the experienced benefits of online education is also essential. As of today, the internet provides fast and clear access to knowledge, including a variety of contents and media formats. By this means it was quite simple to include different media (videos, animations, web pages etc.) impromptu to the course flow, which immediately rise attention to the content.

The fact that lessons were being recorded to cloud-based storage items provided the possibility of re-watching asynchronously. This possibility was particularly beneficial for students who missed the class for any reason, such as poor internet connection, etc. The students have also provided positive feedback on this aspect. Since the class was mostly dependant on studio critics, re-watching the critics provided by the instructor and team members was helpful to understand better.

One other benefit of simulating classroom environment in an online setting was experiencing the "breakout rooms" provided by the software. This setting allowed separate group discussions continue simultaneously as the instructor could join each breakout session. It is possible to say this application was time saving and efficient in conducting group projects.

Overall, considering the evaluation of a first-time experience in online applied courses, it is possible to say it was a fulfilling experience once the mental barrier was overcome. Nevertheless, the tactile qualities of communication still remain necessary in applied courses such as Contemporary Furniture Design.

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Conflict of Interest Statement

The corresponding author states that there is no conflict of interest.

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