# Journal of **design studio**

**special issue 2**

## ICMEK-5 Rethinking

ISSN 2687- 2838

spi:2

2022 october

# Journal of **Design Studio**

AIM

*The aim of the Journal of Design Studio is bringing different design studio researchers together on a multidisciplinary design studio research platform. This design studio research platform gives the researchers who made experimental studies in their design studio education to share their works with the other researchers in the same area or similar research fields. The scope of the Journal of Design Studios include all research and experimental works realized in all type of design studios.*

SCOPE

*Design studio pedagogy,*
*Design theories and methods for studio works,*
*Architectural design studio education,*
*Design principles for studio work,*
*Product design studios,*
*Interior design studios,*
*Urban design studios,*
*Landscape design studio,*
*Communication design studio,*
*Graphic design studio,*
*Media design studio,*
*Fashion design studio,*
*New trends in design studios,*
*Virtual design studios,*
*Design thinking,*
*Studio culture,*
*Studio teaching,*
*Innovative and creative works in design studios*
*Quality assessment in studio work,*
*Collaborative design studies in design studios,*
*Integrated design studio,*
*Design studio practice,*
*Design practice,*
*Design research,*



ABSTRACTING / INDEXING

*AccessOn, ASOS Index, BASE (Bielefeld Academic Search Engine), CROSSREF, Dimensions, EuroPub, GoogleScholar, Ideal online, Index Copernicus, OpenAIRE, OUCI - (The Open Ukrainian Citation Index), Paperity, Publons, ROAD (Directory of Open Access Scholarly Resources), Scilit, scite_, Wizdom, Worldcat, World Catalogue of Scientific Journals,*

Journal of
**Design**
**Studio**

eISSN 2687-2838 / DOI 10.46474/jds

WEB

https://www.journalofds.com

https://dergipark.org.tr/tr/pub/journalofdesignstudio

E-MAIL

editor@journalofds.com

ARTICLE SUBMISSION

https://dergipark.org.tr/tr/pub/journalofdesignstudio

SOCIAL MEDIA

| Twitter | Facebook | Instagram | Linkedin |
| --- | --- | --- | --- |
| @studio_journal | @journalofdesignstudio | journalofdesignstudio | Journal of Design Studio |

Journal of **Design Studio**

spi: 2 / October 2022

# SPECIAL ISSUE "ICMEK – 5 RETHINKING"

## Contents:

# Editorial
# "ICMEK-5 Rethinking" special issue

Derya Adiguzel Ozbek
*Special Issue Editor*
*Department of Interior Architecture and Environmental Design, Istanbul Kultur University, Istanbul, Turkey*
Armagan Secil Melikoglu Eke
*Special Issue Editor*
*Department of Interior Architecture and Environmental Design, Istanbul Kultur University, Istanbul, Turkey*

Refer: Adiguzel Ozbek, D., Melikoglu Eke, A.S. (2022). Editorial "ICMEK-5 Rethinking" special issue, Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 3-4
D. Adiguzel Ozbek ORCID: 0000-0002-6607-0103 , A. S. Melikoglu Eke ORCID: 0000-0002-7185-8480
DOI: 10.46474/jds.editorialspi2 https://doi.org/10.46474/jds.editorialspi2


Dear Colleagues,

We would like to welcome you to the "ICMEK-5 Rethinking" special issue of the Journal of Design Studio.

First of all, we would like to thank Prof. Dr. Orhan Hacıhasanoğlu and Dr. İlgi Toprak for their support in the field of interior architecture education. We would like to state that we are honored to be the invited special issue editors of this special issue, and thank the editor-in-chief Prof. Dr. Orhan Hacıhasanoğlu, the co-chairs of the "ICMEK 5th International Congress On Interior Architecture Education" congress Prof. Dr. Gülay Usta and Prof. Dr. Tülay Zorlu, the members of the scientific committee and the organizing committee, and all academicians and the authors who contributed to the development of interior architecture education with their valuable works.

Nowadays, we are in a period of rapid changes that affect the theory and practice of interior architecture education, as in all other fields. Especially, in terms of the actors that form the basis of professional training, a more visible transformation is exhibited in the dimensions of education programs, design approaches, and transfer process with the effects of changing social dynamics. For this reason, it is important to discuss the versatility of education on an academic platform in interior architecture, as it is in all design-oriented disciplines.

The "International Congress of Interior Architecture Education" (ICMEK), the first of which was held in 2007 at Istanbul Technical University, was later held in 2012, 2015, and 2017, hosted by the Department of Interior Architecture and Environmental Design of Istanbul Kultur University has contributed to the discipline as a national platform with the extent of participation and bringing together scientists who think and research on interior architecture education. The congress, which plays a role in the development of interior architecture education with different themes, was held in 2022 as an international scientific event. Organized in partnership with Istanbul Kültür University and Karadeniz Technical University, the "5$^{th}$ ICMEK International Congress of Interior Architecture Education" tried to shed light on new dynamics and future projections in interior architecture education at an international level.

In this sense, the theme of the 5$^{th}$ ICMEK, which aims to discuss interior architecture education and present various suggestions for its future, has been determined as "rethinking". Researchers involved in interior architecture education or practice were invited to question the past and the present, think about the future, and produce within the framework of theory-practice-history, teacher-learner, undergraduate-graduate, formal-informal, curriculum-process, face-to-face-online, physical infrastructure-technological infrastructure, interdisciplinary interaction-continuous professional education, digitalization, ethics and many more, through the congress. In the congress, which was held online on 16-17 June 2022, in addition to twenty-one paper presentations, four guest speakers who are the leading names in the field from abroad,

made presentations. In this special issue of the Journal of Design Studio, titled "ICMEK-5 Rethinking", articles of six original studies that were presented as extended abstracts at the congress have been included.

The first article titled "Between Education & Profession: An Evaluation of Graduation Projects in the Field of Interior Architecture in Turkey" was prepared by Gülay Usta, Armağan Seçil Melikoğlu Eke, and Özge Ilık Saltık. The article has focused on the undergraduate graduation project approaches and trends of the universities which are providing interior architecture education in Turkey, by making qualitative and quantitative evaluations on the MEKAN / Interior Architecture Students National Graduation Projects Competition documents, which can be stated as an important archive.

The second article titled "The Effect of Three-Dimensional Drawing on Learning Construction Detail Design in Interior Architecture Education" by Emre Seles and Soufi Moazemi Goudarzi has focused on learning detail design. This article has shown that in interior architecture education, structure and detailing problems should be considered in a holistic framework with the design. Learning outcomes and teaching inputs have able to work together with both two-dimensional and three-dimensional representations for practice. The sub-purpose of this study is to show that the use of three-dimensional drawing techniques in interior architecture construction-detail education is effective for increasing students' ability to notice and learn building details.

The third article titled "Examining Workshops in the Intersection of Formal and Informal Architecture Education: The Case of "Bahar Atölyeleri" was prepared by Furkan Evliyaoğlu and Koray Gelmez. The article has focused on blurring the boundaries of formal and informal architectural education. It has been discussed the formal and informal status of workshops, which are excluded from formal architectural education and seen as extracurricular informal activities supplementing the curriculum. In other words, the main purpose of the study is to investigate the potential of workshops with different characteristics to be formal and informal in the cases of 4 different workshops organized by Istanbul Kültür University in the Spring Term of 2020-2021 under the name of "Bahar Atölyeleri".

The fourth article titled "A Case Study on Online Design Workshop Experience: Gamification and Space" by Derya Karadağ, Simge Gülbahar, Betül Ozar has focused on informal education through the popular phenomenon of "gamification". In this study, the contribution of the concept of gamification to design education has been evaluated in line with the observations and experiences gained.

The fifth article titled "Using Video Games for Design Education: An Example of Developing Earthquake Scenarios for Home Environments" has been prepared by Merve Öksüz and Özge Cordan. This study has focused on using video games as educational tools to raise design students' awareness for reducing the risks occurring in natural disasters such as earthquakes. In the scope of the Interior Architecture Project III course of the IMIAD graduate program, this study has been based on the development of a realistic game scenario for experiencing an earthquake.

The special issue of "ICMEK-5 Rethinking" ends with the article titled "On the Interaction Between Shared Design Studios and Interior Architecture Students: A New Spatial Experience with Extended Reality for Supporting Place Attachment". This article by Gizem Çorluluoğlu and Ahmet Fatih Karakaya has mentioned that within the scope of space design, creates the infrastructure of an unprecedented spatial interaction with a technology-based approach to a problem identified in shared working spaces. The aim of this study is to present a new interactive spatial experience proposal for shared design studios at university campuses with extended reality tools in line with analyzing the effect of motivation and place attachment on interior architecture students.

We think that this special issue will contribute to interior design education on the role of informal education in interior architecture education; constructing, implementing, and analyzing the outcomes by considering informal education examples as a case study, planning education at different scales of interior architecture, and reading the reflections of interior architecture education in Turkey through interior architecture graduation projects.

# Between Education & Profession: An Evaluation of Graduation Projects in the Field of Interior Architecture in Turkey

Gulay Usta
*Department of Interior Architecture and Environmental Design, Istanbul Kultur University, Istanbul, Turkey*
Armagan Secil Melikoglu Eke
*Department of Interior Architecture and Environmental Design, Istanbul Kultur University, Istanbul, Turkey (Corresponding author)*
Ozge Ilik Saltik
*Department of Interior Architecture and Environmental Design, Istanbul Kultur University, Istanbul, Turkey*

Received: August 3rd 2022, Revised: September 2nd 2022, Accepted: September 7th 2022.
Refer: Usta, G., Melikoglu Eke, A. S., Ilik Saltik, O., (2022), Between Education & Profession: An Evaluation of Graduation Projects in the Field of Interior Architecture in Turkey, Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 5-20,
G. Usta ORCID: 0000-0002-5262-6078, A. S. Melikoglu Eke ORCID: 0000-0002-7185-8480, O. Ilik Saltik ORCID: 0000-0002-1405-518X
DOI: 10.46474/jds.1154794 https://doi.org/10.46474/jds.1154794



**Abstract:** Design studios are at the core of architecture, interior architecture, or design education. Different design problems are experienced and solved in these studios every term or year. The last step of the design studios is the graduation/degree project, which is characteristic of a threshold between education and profession. The scope of the study is to examine the graduation/degree projects' approaches of the schools that are providing interior architecture education in Turkey and to evaluate their project outputs. Thus, quantitative analyses and qualitative evaluations have been made on the documents of the MEKAN/İç Mimarlık Öğrencileri Ulusal Bitirme Projeleri Yarışması (Interior Design Students National Graduation Projects Competition), which are served as an important archive.

In this respect, within the scope of the study, an inventory has been tried to be put forward by evaluating the competition processes through the participant projects between 2012-2021. Firstly, an analysis has been made on the numerical distribution of all the participant projects according to the years and the diversity of the participating schools. Then, more detailed analyses have been carried out on the award-winning projects by narrowing the sample group. In addition, developments in the matters of the perspectives of different schools on design problems, their proposals for solutions, their design representations, etc. have been brought to light. As researchers and educators, it has been tried to open a way for how interior architecture education to reconstruct itself in the future, by rethinking the education itself.

**Keywords:** Interior architecture education, Graduation project, MEKAN competition, Design studio, Degree project

## Introduction

Design disciplines that are concerned about many fields of our daily lives vary. Along with the familiar ones such as architecture, interior architecture, graphic design, and fashion design, other fields such as gaming design have occurred in recent years. Disciplines of architecture and interior architecture differ from other design fields by focusing on humans, directly affecting life, and with aspects of making life easier or not.

According to Brooker and Stone "Interior Architecture is only interested in reshaping the structures; and that is limited to the existing spaces, structures, principles of reusing and organizing the buildings. This approach establishes the connection between architecture and interior architecture." And they state interior design as "Interior Design is an interdisciplinary practice that deals with manipulation of spatial dimensions, organizational changes regarding the furniture or surfaces, creation of interior environments displaying the identity and atmosphere. Interior designers do not interfere with the structure of the building, or they make very little changes". The Council for Interior Design Qualification (URL-1, 2022) defines interior design as:

> "*Interior design encompasses the analysis, planning, design, documentation, and management of interior non-structural/non-seismic construction and alteration projects in compliance with applicable building design and construction, fire, life-safety, and energy codes, standards, regulations, and guidelines for the purpose of obtaining a building permit, as allowed by law. Qualified by means of education, experience, and examination, interior designers have a moral and ethical responsibility to protect consumers and occupants through the design of code-compliant, accessible, and inclusive interior environments that address well-being, while considering the complex physical, mental, and emotional needs of people.*"

International Interior Design Association (URL-2, 2022) also defines interior design as;

> *"Interior design is defined as the professional and comprehensive practice of creating an interior environment that addresses, protects, and responds to human need(s). It is the art, science, and business planning of a creative, technical, sustainable, and functional interior solution that corresponds to the architecture of a space, while incorporating process and strategy, a mandate for well-being, safety, and health, with informed decisions about style and aesthetics."*

As seen from the definitions above, the task of interior architecture can be explained as creating comfortable, safe, and healthy interiors to meet people's physical, mental, and emotional needs. When the studies on the design discipline of interior architecture are examined, it is seen that education studies are high in number as in many fields. When the history of the interior architecture field that has been educating professionals who are designing the organization of existing buildings' interiors is examined, the field had been shaped firstly as decoration at the beginning of the 20th century in the USA. Later, the field has become popular and preferred nowadays with its progress in the context of social changes.

Interior architecture as a professional branch, can be dated to the beginning of the 20th century. However, its flourishing as a discipline enough to raise professionals, and the teaching process have started only after the 1970s. Interior architects with professional awareness have emerged in the 1980s thanks to organized education. Evaluating the impacts of organizations and the design processes that develop under the leadership of these organizations keep the profession within a contemporary structure (Kaptan, 1998).

The first interior practices are encountered at the beginning of the 20th century in the USA where the concept of professionalism developed. What is more, the USA is where the theoretical and practical background of interior architecture as a profession has been established, and interior architecture education has first been institutionalized. The initial education was in the form of short courses. Later, it spread into the fields such as art, architecture, and human sciences.

Interior architecture education in Turkey concerns a more recent past. The starting point can be determined as 1925 the opening of Sanayi-i Nefise Mektebi, which is now called Mimar Sinan Fine Arts University. Beaux-Arts was the dominant ecole adopted by the school

for education at that time. Accordingly, the workshop-studio model that was followed by Sanayi-i Nefise Mektebi, was the basis of interior architecture education. The approaches embracing the French Ecole have retreated under the effect of the Bauhaus ecole which had developed in parallel to international developments starting from the first half of the 20th century. Marmara University's department of interior architecture (which was founded in 1957), indicates an authentic module of interior architecture undergraduate education free from the architectural discipline, its dominance, and decisiveness (Işıkgör, 2007). The establishment of interior architecture education at Mimar Sinan Fine Arts University and Marmara University was followed by Hacettepe University, Bilkent University, Anadolu University, Karadeniz Technical University, and Çukurova University. Bauhaus Ecole was taken over by its American counterpart as the department of interior architecture was founded at Bilkent University. Interior architecture education in Turkey- as it was determined by YÖK (Institute of Higher Education)- is a four-year undergraduate program. The number of universities offering Interior architecture education has risen due to its expanding popularity. Nowadays, there are nearly more than 80 universities offering this education.
When education curriculums of the universities providing interior architecture education in Turkey are examined, it can be determined that education plans have been updated in the context of the Bologna Process. Common qualifications to bring all the programs together in one frame. Therefore, there are many parallelisms between studio courses, compulsory courses, and elective courses in terms of academic qualifications and curriculum similarities in interior architecture programs in Turkey, which is worth noticing.

One of the common points of curriculums is the graduation or degree project, which is the last studio course the graduate-to-be students should take. Graduation projects are the first experience of the students who are considered to have reached a certain competence in the means of knowledge and skills in the last year of their studies. The graduation project, in which the students experience the project process alone for the first time, is also a simulation of professional practice and an important threshold between education and practice.

When the interior architecture education programs in Turkey have been examined, common degree/graduation project courses have been determined in all universities. Since it is an important threshold between the profession and education, graduation project courses are meticulously designed in the context of objectives and learning outcomes in all universities. Within the scope of the study, it has been aimed to read the interior architecture education in Turkey through the graduation projects, and participants of the MEKAN competition. Additionally, determining the approaches of different universities in this matter with the evaluation of the projects participating in the MEKAN competition has also been able to count as a reason for this study. There have been studies that include similar approaches in research on interior architecture education (Güzelci et al., 2017; Kutlu et al., 2018). This study which has been focused especially on the MEKAN competition differs from others with

- evaluating the whole process of the competition between 2012-2021
- evaluating the participants' award-winning projects with determined parameters
- making inferences about the graduation projects of interior architecture in Turkey.

**Competitions at Interior Architecture Education and MEKAN Competition**

Competitions are events that are based on the electoral system with their open nature to developing different options in the contexts of design and production. Moreover, they level the field for professionals and are open to everyone in the framework of competition agreements. Every design competition can be seen as an opportunity for design research. According to Chupin, Cucuzzella, and Halal (2015), every competition remains a world of possibilities: an intermediary space-time locus for the search for excellence in architecture. In some ways,

competition projects function like utopias. Design competitions such as in the fields of architecture and interior architecture have been accepted as one of the most important design and production approaches in Turkey as well as the world. Additionally, competitions have been seen as the most prestigious way to begin professional practice.

According to the Guidelines of the Competitions in Architecture, Landscape Architecture, Engineering, Urban Design Projects, Urban Planning, and Fine Arts which is currently in use in Turkey, the aims of the competitions have been stated as "In their own field, competitions should improve the values of culture, art, science, and environment via rivalry while focusing on the public welfare. Among many possible options, the most economical, functional, and innovative solution should be selected. An appropriate environment should be provided for determining the project owners, for encouraging the fine arts, for improving the professions, for accepting the ethical values, and for having an international competition" (URL-3, 2022).

Within the scope of design disciplines, competitions also serve as an educational platform by leading the emergence of different ways of thinking, spreading the culture of teamwork, and directing the designer to research. Competitions that enable the development of professionals also play an active role in the formation of design languages and the development of design methods by providing students with a unique informal experience outside of the university.

Unique cultural environments of the competitions provide opportunities for young ones to participate in the profession and have new experiences. These environments support the project owners whose ideas are found to be favorable. Additionally, they provide equivalent evaluations for creative ideas and make it possible to discuss architectural values via these evaluation results. Due to these, qualified design products can be supported. Competitions are like holy events or cults that contain cultures and provide power due to participating in them. Architecture without competition is less than architecture (Dinç, 2009).

At the same time competitions offer a laboratory environment by preparing the most original and avant-garde designs and by providing different solutions to a specific design problem. They reveal the possible consequences of different design solutions. Thanks to the competitions, architects at every stage of their profession, whether newly graduated or experienced, can see how their colleagues solve a design problem that may be required to overcome in the future. By determining the positive and negative aspects of the represented designs; they can create their own strategies. Therefore, design competitions also serve as a guide for architects. For these reasons, it is important to read about the problem of new building approaches in the historical environment through architectural competitions to obtain information about the subject and to explore new design methods (Özüer & Öktem Erkartal, 2019).

From the perspectives of young designers who participated in, competitions are a way to have self-awareness and make their qualities of profession visible. Competitions are informal events where students decide their own path and create their own learning methods in terms of design education. While competitions provide opportunities for students to gain new perspectives and extend their networks, as Yürekli and Yürekli state, they also create chances to recognize the world and their own with exercises that improve the student both intellectual and intuitional at the same time (Yürekli & Yürekli, 1995).

Guilherme identifies benefits arising from architectural competitions:

> *Competitions, in particular international competitions, test architect's capacities beyond controlled systems of social relations, comfort zones, age, gender or even expertise, in a fast sublimation process, as well as induce a recognition and publicity that surpasses the investments in time, energy and financial*

*resources, forcing a (re)interpretation of the role of the architect (Guilherme, 2014).*

It can be said that the competition culture has a long history in the field of architecture in Turkey. However, in the field of interior architecture, the formation of the competition tradition and professional-student categories can be considered historically new. The number of competitions that interior architecture students and professionals in the field can participate in is quite limited compared to other disciplines. Considering the outcomes of the competitions, each competition in this field will make positive contributions to both the field of education and the profession.

Competitions that make the students improve their abilities such as problem-solving and exploring are not sufficient in the fields of architecture and interior architecture. In the study of Garip and Garip, it has been determined that in a six-year period between 2007-2012, 43 competitions that interior architecture students could have participated in have been held. 40% of these competitions have been focused on the space, 49% have been focused on the product and 11% have been focused on the idea (Garip & Garip, 2012). In this context, it can be said the number of competitions that are related to interior architecture both student and professional categories has increased since 2012. Nevertheless, competition as a method hasn't been set enough in terms of creating an interior design.

In this context, MEKAN competitions in which the students who are studying in the field of interior architecture can participate, fill an important gap. The MEKAN competition which was first held in 2012 and is ninth in the progress nowadays, has gained an important place in the field of interior architecture in terms of having a corporate identity and a sustainable structure. In addition, the presence of academicians from different universities and leading designers from professional practice in the jury has been an effective aspect in gaining an important place among other competitions.

With this research, the changes, and developments in interior architecture education between the years 2012-2021 have been read through the graduation projects, which are important thresholds in interior architecture education. Additionally, developments in the matters of the perspectives of different schools on design problems, their proposals for solutions, their design representations, etc. have been brought to light. As researchers and educators, it has been tried to open a way for how interior architecture education to reconstruct itself in the future, by rethinking the education itself.

**Analysis & Evaluations of MEKAN Competitions**

As it has been known, competitions are one of the most effective and prestigious ways to bring creative forces together on a common platform. The MEKAN aims to create an awareness of design-oriented thinking and expression in students, develop a sense of constructive competition, and bring them together from different schools on a common platform. Nevertheless, due to the lack of competition organizations in the field of interior architecture, MEKAN is thought to bridge an important gap. The sample group of the research consisted of interior architecture students participating in the competition from Turkey and the Turkish Republic of Northern Cyprus, which is important for both showing different approaches of the schools and becoming an important archive for interior architecture education.

The eighth of the MEKAN competition has been held in 2021. The number of entries in the competition has gradually increased and diversified with the participation of different schools.

This study aims to examine the graduation/degree projects' approaches of the schools providing interior architecture education in Turkey and to evaluate their


***Figure 1:*** *Posters of MEKAN Competitions in different years (URL-4, 2022)*

project outputs. Thus, quantitative analyses and qualitative evaluations have been made on the documents of the MEKAN/İç Mimarlık Öğrencileri Ulusal Bitirme Projeleri Yarışması (Interior Design Students National Graduation Projects Competition), which are served as an important archive.

In a ten-year period, it is obvious that there have been changes in design problems, solutions, etc., in the context of interior architecture education. It has been a process worth investigating, as this period also includes the pandemic process which has evolved and differentiated education itself. In parallel with these changes, it is foreseen that there is a lot of development in design problems, design tools, and representations of projects.

Examining the graduation projects of the MEKAN competition was carried out in two steps. In the first step, the number of participants and their universities in the MEKAN between the years 2012-2021 have been determined. The aim of this general evaluation is to reveal the situation in the adoption of the competition culture in the field of interior architecture. It has been predicted as the increasing number of interior architecture departments in the universities in time, would cause an increase in the number of students and therefore the number of participants.

When the number of participants and participating universities in the MEKAN competitions which have been held between 2012 and 2021, it is possible to see the existence of an accelerated rise in these numbers in Table 1. There is a significant increase in the number of participants, especially in the years of 2020 and 2021.

***Table 1**: Number and university names of the participants in MEKAN*

| | University Names / Number | | Number of Participants |
|---|---|---|---|
| MEKAN 2012 | Istanbul Kültür University, Istanbul Technical University, Bahçeşehir University, Yaşar University | 4 | 22 |
| MEKAN 2015 | Kocaeli University, Istanbul Technical University, Mimar Sinan Fine Arts University, Okan University, Istanbul Kültür University, Marmara University, Bahçeşehir University, Çankaya University, East Mediterranean University, Hacettepe University, Karadeniz Technical University | 11 | 38 |
| MEKAN 2016 | Çankaya University, Hacettepe University, Bilkent University, Gediz University, Kocaeli University, Istanbul Technical University, Yaşar University, Istanbul Bilgi University, East Mediterranean University, Selçuk University, Marmara University, Istanbul Kültür University, Doğuş University, Bahçeşehir University, Karadeniz Technical University, Haliç University, Mimar Sinan Fine Arts University, Near East University, Avrasya University, Istanbul Gelişim University | 20 | 50 |
| MEKAN 2017 | Yaşar University, Selçuk University, Istanbul Technical University, Cyprus International University, East Mediterranean University, Istanbul Aydın University, Girne American University, TOBB University of Economics and Technology, Mimar Sinan Fine Arts University, Karadeniz Technical University, Kadir Has University, Marmara University, Istanbul Ticaret University, Bahçeşehir University, Hacettepe University, Altınbaş University, Istanbul Bilgi University, Başkent University, Avrasya University, Hasan Kalyoncu University, Fatih Sultan Mehmet Vakıf University, Istanbul Arel University, Istanbul Kültür University, Eskişehir Anadolu University, Beykent University | 25 | 64 |
| MEKAN 2018 | Izmir Economy University, Toros University, Bilkent University, Istanbul Kültür University, Kadir Has University, Eskişehir Technical University, Istanbul Bilgi University, Istanbul Technical University, Fatih Sultan Mehmet Vakıf University, Karadeniz Technical University, Bahçeşehir University, Istanbul Gedik University, TOBB University of Economy and Technology, Mimar Sinan Fine Arts University, Kocaeli University, Yaşar University, Marmara University, Altınbaş University, Işık University, Hacettepe University | 20 | 55 |
| MEKAN 2019 | Istanbul Okan University, MEF University, Istanbul Medipol University, Mimar Sinan Fine Arts University, Nuh Naci Yazgan University, Altınbaş University, Yaşar University, Atılım University, Istanbul Kültür University, Özyeğin University, Başkent University, Istanbul Technical University, Kadir Has University, Istanbul Sabahattin Zaim University, Istanbul Ticaret University, Karadeniz Technical University, Akdeniz University, Istanbul Arel University, Marmara University, Izmir Economy University, Fatih Sultan Mehmet Vakıf University, Istanbul Bilgi University, Kocaeli University, Çankaya University, TOBB Economy and Technology University, East Mediterranean University | 26 | 52 |
| MEKAN 2020 | KTO Karatay University, Yaşar University, Bilkent University, Selçuk University, Işık University, Istanbul Kültür University, Istanbul Arel University, Özyeğin University, Kadir Has University, Istanbul Technical University, Istanbul Ticaret University, Maltepe University, Izmir Economy University, Karadeniz Technical University, Eskişehir Technical University, Marmara University, Mef University, Bahçeşehir University, Başkent University, Çankaya University, Istanbul Medipol University, Haliç University, FMV Işık University | 23 | 73 |
| MEKAN 2021 | Selçuk University, Kadir Has University, Altınbaş University, Doğuş University, Haliç University, Bahçeşehir University, Karadeniz Technical University, Yaşar University, TOBB University of Economy and Technology, Mimar Sinan Fine Arts University, KTO Karatay University, Bilkent University, Istanbul Kültür University, Başkent University , Istanbul Esenyurt University, Istanbul Technical University, Eskişehir Technical University, Işık University, Marmara University, Mef University, Fatih Sultan Mehmet Vakıf University | 21 | 69 |

The most important reason for this can be considered the adoption of the MEKAN competition among interior architecture departments of the universities and students. There are very few competitions for evaluating the designs of the project courses, which are the focus of interior architecture education. One of these competitions is the IM competition (İçmimarlık Öğrencileri Proje Yarışması), where the projects of every semester are evaluated. IM competition (İçmimarlık Öğrencileri Proje Yarışması), which has a history of about four years, is similar in approach to the MEKAN. It contributes to the formation of the tradition in the field of interior architecture with its sustainability.

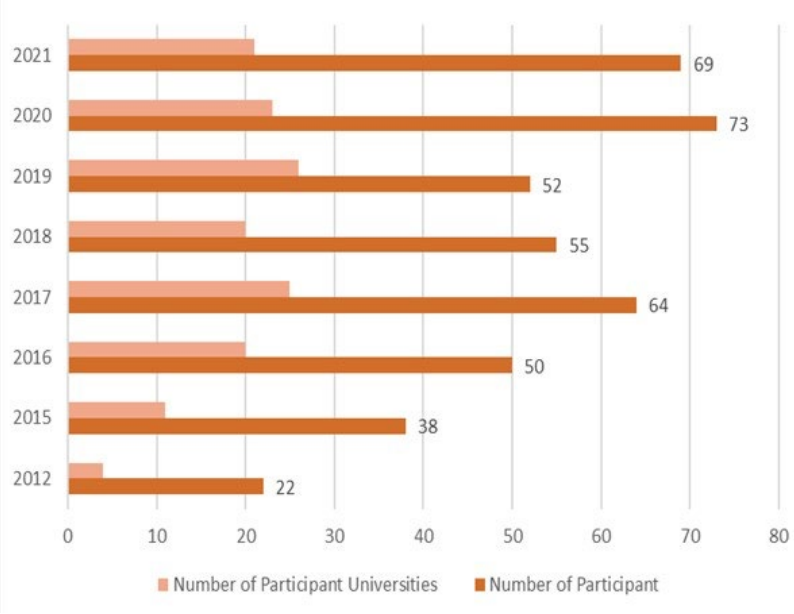


***Figure 2:*** *Number of the participants by years*

Another reason for the high participation is that the projects, which were hand-delivered in previous years, have been delivered digitally after 2020, considering the pandemic conditions.

Similarly, as can be seen from Table 1 and Figure 2, both variety and quantity have increased with the increase in the number of participants and their universities. The most participating universities in the MEKAN competition are Istanbul Technical University (49), Istanbul Kültür University (38), and Marmara University (30).

After this general evaluation, a detailed qualitative evaluation has been carried out on the award-winning projects such as 1st-2nd-3rd degrees, honorable mentions, and juries' encouragement awards in eight MEKAN competitions. It has been thought that the evaluations that have been made will be a source for rethinking interior architecture education.

In the second step of the study, the award-winning projects between the years 2012-2021 have been analyzed mainly on the parameters of:

- Subject of the project
- Context of the project
- Methods of intervention
- Proposal of function
- Level of the solution in terms of the design problem
- Presentation techniques
- Scale of the project

due to the conduction of this evaluation has been made through the outputs of the projects, decipherable and determinable parameters have been carefully chosen.

**Parameter-1: Subject of the Project**

Considering the subjects of the winning projects, it has been determined that education, culture, office, accommodation, and subjects with combined functions have been primarily studied. In addition, it has been understood that commerce, health, and production-oriented subjects are included in student projects. The

***Table 2:*** *Distribution of the award-winning projects in terms of function by year*

| | Partial construction/ destruction | New form in interior space | Surface interventions | New/anew creation of form | Preservation of the existing |
|---|---|---|---|---|---|
| MEKAN 2012 | 1 | 3 | 2 | 0 | 0 |
| MEKAN 2015 | 3 | 3 | 0 | 0 | 0 |
| MEKAN 2016 | 2 | 0 | 4 | 0 | 0 |
| MEKAN 2017 | 4 | 1 | 1 | 0 | 0 |
| MEKAN 2018 | 1 | 1 | 2 | 2 | 0 |
| MEKAN 2019 | 2 | 0 | 2 | 1 | 1 |
| MEKAN2020 | 0 | 3 | 1 | 2 | 0 |
| MEKAN2021 | 2 | 3 | 1 | 4 | 0 |

distribution of subject selection between 2012-2021 can be seen in Table 2.

When the projects that received degree awards and honorable mentions have been examined, the most studied subject is combined-function interiors which can be defined as having more than one function. While culture is the second, education and office functions are the third most studied subjects. It has been determined that subjects such as entertainment, food&beverage, transportation, and health are less preferred.

Especially in recent years, the rapid change experienced in education and office spaces has required specific solutions in terms of interior architecture, and this is thought to be reflected in graduation projects at the educational scale. The fact that interior architecture education in our country has focused on current issues related to the field can be considered as a positive achievement.

**Parameter-2: Context of the Project**

Within the scope of the study, "context" is another important parameter for the award-winning projects that have been evaluated since the "context" is important data in terms of designing in interior space scale as it is in architectural structure. The physical, social, cultural, etc. contexts of the project are considered important inputs of the design at the interior scale. Especially, in the perspective of interior architecture, the context of the project area is an important design input in the process of determining the spatial organization.

In the study, the issue of context has been handled at three levels. In the first level, context is the nature of the project area given to the student as "interior space, architectural space or


***Figure 3:*** *Graphic of the distribution of award-winning projects' functions*

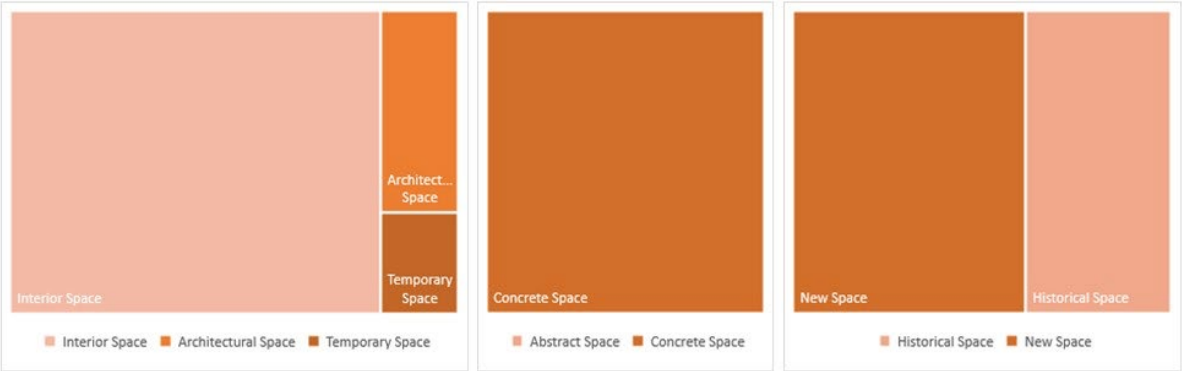


***Figure 4:*** *Graphic of the distribution of the award-winning projects' contexts*

temporary space". For the second level, it is considered as "abstract space or concrete space" and at the third level, it was analyzed as "historical space or new space".

In this sense, when the award-winning projects in the competition have been examined, it has been determined that students were mostly given study areas at the level of "interior" in terms of context. Moreover, "abstract space" was not preferred. In comparing historical and new spaces, the results can be stated to be close to each other. However, in this evaluation, it has been determined that new buildings have been preferred more as the project area. When the results of the analysis have been evaluated, it can be stated that the graduation projects are designed according to the students who are going to graduate at the end of the project. Due to that, the interior spaces of existing new buildings have been given to the students so that graduation projects have become a threshold between education and the profession.

**Parameter-3: Methods of Intervention**

Design in interior architecture can be realized in new buildings as well as reuse and re-functioning of existing buildings. Especially in historical buildings where collective memory is kept alive in terms of collective memory. In this respect, in interior architecture education, the student is taught how to intervene in existing historical buildings.

The interior intervention methods of the award-winning projects have been examined under five headings "partial construction/deconstruction, new form in interior space, surface interventions, new/anew creation of form and preservation of the existing".


***Figure 5:*** *Distribution of the award-winning projects' methods of interventions*

***Table 3:*** *Distribution of the award-winning projects' methods of intervention by year*

| | Partial construction/ destruction | New form in interior space | Surface interventions | New/anew creation of form | Preservation of the existing |
|---|---|---|---|---|---|
| MEKAN 2012 | 1 | 3 | 2 | 0 | 0 |
| MEKAN 2015 | 3 | 3 | 0 | 0 | 0 |
| MEKAN 2016 | 2 | 0 | 4 | 0 | 0 |
| MEKAN 2017 | 4 | 1 | 1 | 0 | 0 |
| MEKAN 2018 | 1 | 1 | 2 | 2 | 0 |
| MEKAN 2019 | 2 | 0 | 2 | 1 | 1 |
| MEKAN2020 | 0 | 3 | 1 | 2 | 0 |
| MEKAN2021 | 2 | 3 | 1 | 4 | 0 |

As can be seen in Table 3 and Figure 5, when intervention methods of the award-winning projects have been examined, it can be stated that students tried to create a new atmosphere in the interior with "partial construction/deconstruction, new forms, and surface interventions". On the contrary, "new/anew creations of forms" or "preservation of the existing" have appeared as undesirable levels of intervention. This situation has revealed the preference for creating a new space atmosphere by interfering with the interior space within the project structures without ignoring the space that has been given to them.

**Parameter-4: Proposal of Function**

As another parameter, the award-winning projects have been analyzed in terms of "proposal of function" under the headings of "primary (original) function, present (existing) function, and re-function".

Within the scope of the study, the primary function has been accepted as the original function of a building when it is built. The present function has been accepted as the existing function of a building which must be known to be different from the primary function. Lastly, re-functioning has been accepted as a new function for the space which differs from both primary and present functions.

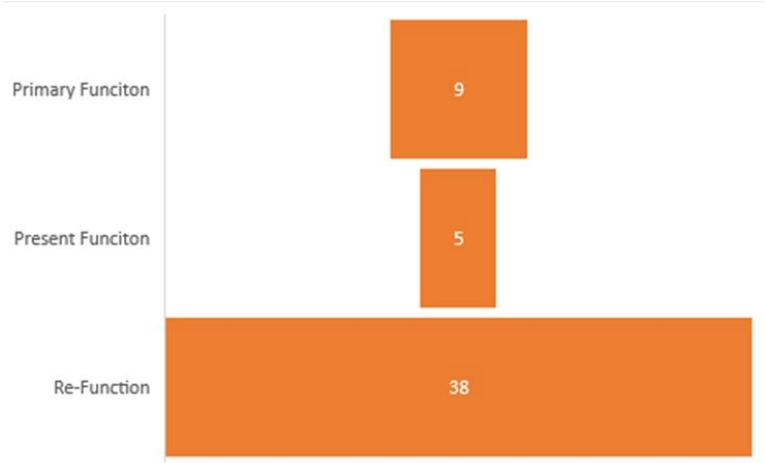


***Figure 6:*** *Graphic of the distribution of award-winning projects' proposal of functions*

Accordingly, the re-functioning approach has mostly been adopted as a proposal of function in award-winning projects. The reason for this can be stated as the students exhibited an attitude toward giving the interior a new function by analyzing the current function of the interior in the face of the given design problem in addition to considering the conditions of the environment and users' expectations. Due to the value loss of the functions in processes such as the physical aging of the structures, students have developed up-to-date approaches by understanding the nature of interior architecture in their graduation projects and ensuring the sustainability of the interior.

**Parameter-5: Level of the Solution in Terms of the Design Problem**

Within the scope of the study, the "level of the solution in terms of the design problem" has been selected as another important parameter. It has been tried to determine the solution levels (in terms of the given design problem) of the spaces suggested by the students under the headings of "concept, design, and application". The concept level has been accepted as an idea project which doesn't give any estimation for the spaces but explains only the main idea of the project with, mostly, diagrams. The design level has been accepted as the projects which have been giving an image of interior spaces mostly with technical drawings and 3D images. Lastly, the application level has been accepted as the projects which have detailed technical drawings (1/20 scale) for interior spaces or detailed joint combination drawings/diagrams with the scale of 1/10, 1/5, 1/2 for the furniture, forms, etc.

Accordingly, when the award-winning projects have been examined, the level of "design" has been determined with a significant difference. In the examination, where the "concept" solution level has been determined as weak, it has been revealed that the "application" level has an average value. The most important information that the results have shown in terms of interior architecture education is that the students who are on the verge of graduation are poorly equipped in terms of application. The reason for this result can be attributed to the scarcity of project courses containing application solutions in the education curriculum. However, in order to reach detailed information, research that includes examination in this respect is required. On the other hand, when the design is considered in terms of creating new ideas, it is thought that the obtained results are promising in terms of interior architecture education.

**Parameter-6: Presentation Techniques**

As a matter of course, interior architectural design has based on the clear and creative presentation of new ideas along with producing solutions. As well as the quality of the space, it is also necessary to present the space with contemporary presentation methods and creative tools. While the students are asked to express their designs with traditional methods in the first years of interior architecture

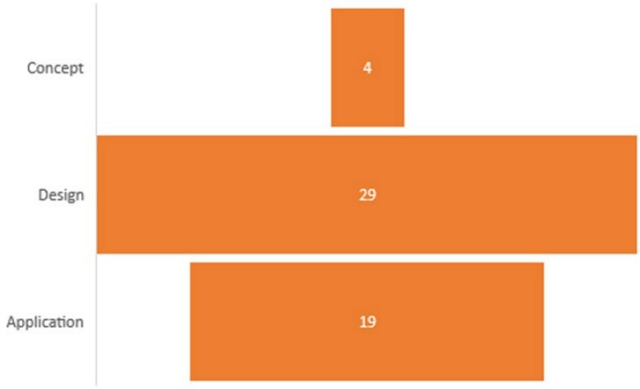


***Figure 7:*** *Graphic of the distribution of the award-winning project' level of the solutions in terms of the design problems*

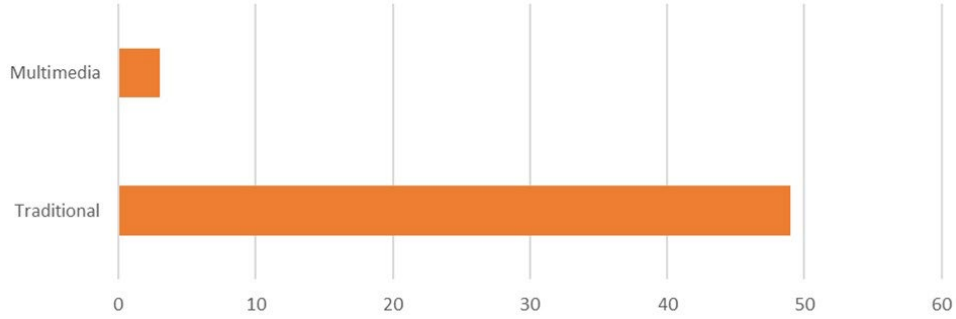


***Figure 8:*** *Graphic of the distribution of the award-winning projects' presentation techniques*

education, they are expected to use creative up-to-date tools in the upper years.

In this respect, the award-winning projects within the scope of the study have been examined according to the "presentation techniques" parameter which includes "traditional tools" and "multi-media tools".

As can be seen in the graphic, in the award-winning projects, students have mostly preferred traditional tools which can be stated as technical drawings, and three-dimensional expressions such as renders. On the contrary, presentation tools consisting of video, etc., which are defined as multimedia, have not been preferred. When these results have been evaluated in terms of interior architecture education, it is thought that traditional tools are used intensively in universities. However, when the education plans of some interior architecture departments have been examined, it can be known that presentation tools that trigger creativity and innovation are included in the curriculum within the scope of the courses also called "visual communication techniques". Nevertheless, the widespread use of these tools by students is in parallel with professional practices. It is thought that the preference for traditional tools in the sector, which also helps to establish communication with the customer, also directs the preferences of the students.

**Parameter-7: Scale of the project**

The scale helps to design spaces, objects, or buildings by understanding them at different levels of detail. It is important for the comprehension and representation of the

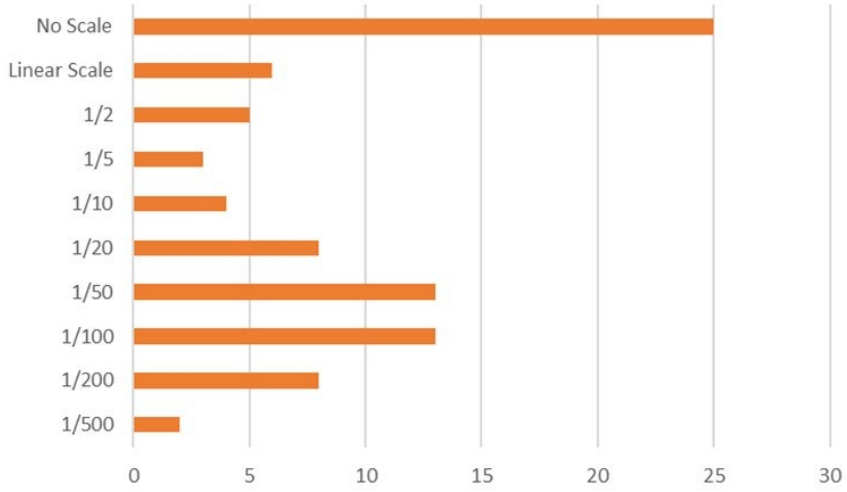


***Figure 9:*** *Graphic of the distribution of the award-winning projects' scale*

design. It is possible to talk about different scales in design disciplines. 1/100, 1/50, and 1/20 scales are used in interior architectural design, as well as 1/10, 1/5, and 1/1 scales in the system and manufacturing details. It is noteworthy that different universities exhibit different approaches in terms of scale in interior architecture education.

The award-winning projects within the scope of the study have been analyzed according to the "scale" parameter. With this analysis, it has been tried to reveal which scales had been used to present students' graduation projects.

As can be seen in Figure 9, an unusual situation in the use of scale has been detected. It has been observed that 25 of the 52 projects did not use any scales. It is rather a confusing result that the scale is not used while traditional presentation tools are highly preferred. This can be caused by the obligation to submit only two posters in the conditions/agreements of the competition. Due to that, it is possible to think that the participants may have placed the presentations of their projects, such as plans and sections, without scale.

However, when the posters with scaled expressions have been examined, it is possible to say that 1/50 and 1/100 scales are used the most. Although the interior design scale is accepted as 1/20 and 1/50, the result does not support this.

**Conclusion**

This study aims to examine the graduation/degree projects' approaches of the schools providing interior architecture education in Turkey and to evaluate their project outputs. Thus, quantitative analyses and qualitative evaluations have been made on the documents of the MEKAN/İç Mimarlık Öğrencileri Ulusal Bitirme Projeleri Yarışması (Interior Design Students National Graduation Projects Competition), which have served as an important archive.

In this respect, within the scope of the study, an inventory has been tried to be put forward by evaluating the competition processes through the participant projects between 2012-2021. Firstly, an analysis has been conducted on the numerical distribution of all the participant projects according to the years and the diversity of the participating schools. Then, by narrowing the sample group, a detailed analysis has been carried out on the award-winning projects.
With this research, the changes and developments in interior architecture education between the years 2012-2021 have been read through the graduation projects, which are important thresholds in interior architecture education.

Analyzing graduation/degree projects which are common courses in interior architecture education and are kept in a separate position by all the partners from other project courses, in the context of certain parameters, is also important in terms of revealing the approach to interior design. Since the only condition for gaining professional competence in Turkey is to have a diploma by fulfilling the graduation requirements. Whereas, in many countries abroad, admission and registration to the profession are based on various conditions. Due to the lack of such a system in Turkey, graduation projects should be seen as a critical threshold. With the analyses presented in this study, the minimum standards must be determined by all interior architecture education institutions and put into practice in terms of acquiring professional competence in interior architecture. Especially in terms of recognizing the interior architecture environment in our country at a global level, it should be ensured that the criteria related to graduation projects reach universal standards.

In the meantime, the structure of the graduation projects and the way the process works should be considered. Limited information has been reached since the examinations carried out within the scope of the study have been carried out with the final products. Considering that this study has been conducted with the award-winning projects of eight competitions, it is unlikely to make a generalization through these outputs while there are more than 80 universities with an interior architecture department. With the examination of the award-

winning projects, some implications have been made on the graduation project approaches of different universities. In this respect, the most important subject in the project courses can be stated as the planning of the process. It cannot be said it is sufficient to analyze the projects only through presentations without considering how the subject or the design problem is presented to the student. It is possible to conduct more comprehensive research by obtaining data on how the graduation project design problem is given to the students and how the institutions plan and implement the process.

The data obtained as a result of the analyzes made in the context of the parameters determined in this study also reveal the approaches of universities regarding project courses in interior architecture education. Analyzes that have been made on project presentations show that there are similar and different approaches. In fact, as mentioned above, more detailed research on the construction of the process can provide in-depth information on this subject. If further studies cover the design studio's process, methodology, and nature in more depth, more clear implications can be made about the graduation projects. Therefore, including the non-award-winning projects in the evaluation would have been more accurate. As a consequence, the second step of this study will be planned accordingly.

**References**

Brooker, G., Stone, S. (2012). İç Mimarlıkta Biçim+Yapı. Istanbul: Literatür Yayıncılık.

Chupin, J. P., Cucuzzella, C., & Helal, B. (Eds.). (2015). Architecture competitions and the production of culture, quality and knowledge: an international inquiry. Potential architecture books.

Dinç, P. (2009) Mimarlığa Yarışanlar, Ulusal Mimarlık Yarışmalarında Gazi'li Mimarlar. Ankara: Eflatun Yayınevi.

Garip, E., Garip, B. S. (2012). İç mimarlık eğitiminde yaratıcılık ve yarışmalar. In: İÇMEK / İçmimarlık Eğitimi 2. Ulusal Kongresi, 20 December 2012, İstanbul. Türkiye: İstanbul Kültür Üniversitesi Yayınları. pp. 24-33.

Guilherme, P.M.H.S., (2014). Competitions serve a larger purpose in architectural knowledge. Revista Lusófona de Arquitectura e Educação, l, 11, 425-451.

Güzelci, H., Terlemez A.K., Güzelci, O. Z. (2017). Mekan İç Mimarlık Öğrencileri Ulusal Bitirme Projesi Yarışması Üzerine Bir İnceleme, İÇMEK İç Mimarlık Eğitimi 4. Ulusal Kongresi, İstanbul Kültür Üniversitesi, İstanbul, Turkey.

Işıkgör, M. (2007). Bauhaus Ekolü Işığında Devlet Tatbiki Güzel Sanatlar Yüksekokulu ve Marmara Üniversitesi Güzel Sanatlar Fakültesinin Dünü Bugünü. Istanbul: MUGSF 50. Yıl Yayınları.

Kaptan, B. (1998). İçmimarlığın Oluşum ve Örgütlenme Süreci. *Anadolu Sanat*, 8(11), https://hdl.handle.net/11421/954

Kutlu, R., Usta, G., Erçetin, A., Güzelci, H., Güzelci, O. Z., Terlemez, A.K., (2018). Evaluation Of Multiple Design Criteria In Interior Design Projects/ The Case Of Mekan 2017 Competition. 4th International Conference on New Trends in Architecture and Interior Design, 11-13 May 2018, St. Petersburg, Russia

Özüer, M. O., Öktem Erkartal, P. (2019). Designing The New Into The Old Architectural Design Competitions For Historical Context. ICEARC'19: International Civil Engineering and Architecture Conference.

Yürekli, H., Yürekli, F., (1995). Öğrenci ortaktır. *Yapı Dergisi*. 168, pp. 65-68.

URL-1, (2022). Council for Interior Design Qualification. (1st July 2022). Definition of Interior Design Abbreviated Definition of Interior Design. Retrieved from https://www.cidq.org/_files/ugd/0784c1_16c47b1a47de44f7b8f3f87367e483ac.pdf

URL-2, (2022). IIDA. (1st July 2022). What is interior design. Retrieved from https://iida.org/about/what-is-interior-design

URL-3, (2022). (1st July 2022). Mimarlik, Peyzaj Mimarliği, Mühendislik, Kentsel Tasarim Projeleri, Şehir Ve Bölge Planlama Ve Güzel Sanat Eserleri Yarişmalari Yönetmeliği. Retrieved from https://www.mevzuat.gov.tr/MevzuatMetin/yonetmelik/7.5.4716.doc

URL-4, (2022). Istanbul Kultur University. (1st July 2022). Mekan İç Mimarlık Öğrencileri Ulusal Bitirme Projesi Yarışması. Retrieved from https://icmim.iku.edu.tr/tr/genel-bilgiler/mekan-ic-mimarlik-ogrencileri-ulusal-bitirme-projesi-yarismasi

# The Effect of Three-Dimensional Drawing on Learning Construction Detail Design in Interior Architecture Education

Soufi Moazemi Goudarzi
*Department of Interior Architecture and Environmental Design, Faculty of Fine Arts, Design and Architecture, Başkent University, Ankara, Turkey*
Emre Seles
*Ankara, Turkey*

Received: August 3rd 2022, Revised: August 26th 2022, Accepted: September 7th 2022.
Refer: Moazemi Goudarzi, S., Seles, E., (2022), The Effect of Three-Dimensional Drawing on Learning Construction Detail Design in Interior Architecture Education, Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 21-34,
S. Moazemi Goudarzi ORCID: 0000-0002-9367-2249, E. Seles ORCID: 0000-0001-8850-6847
DOI: 10.46474/jds.1153639 https://doi.org/10.46474/jds.1153639



**Abstract:** In the construction of the built environment, detailing is an important and inseparable part of the whole construction information. Giving practical construction information to interior architecture students is undoubtedly an important part of interior architecture education. Along with general building information, materials and detailing are included in the curricula of many interior architecture departments to strengthen students' understanding of interior architecture practice. On the other hand, the detailing solution should be considered as a design-decision model to create design alternatives according to the building elements and material properties.

The aim of this study is to show that structural and detailing problems should be considered in a holistic framework with the design in interior architecture education. The sub-purpose of this study is to show that the use of three-dimensional drawing techniques in interior architecture construction-detail education is effective in increasing a student's ability to notice and learn building details.

This study focuses on the use of three-dimensional drawing techniques in interior architecture education and the application-oriented solution of structural and detail problems. As a result, the method of the study suggests some design-decision modeling guidelines that will lead to better detail design-decision solutions for interior architecture students.

**Keywords:** Interior Architectural Details, Detail Design, Construction Elements, Three-dimensional Drawing.

## Introduction

Models and prototypes can be thought of as fundamental tools of design education, and as bridges between design ideas and their real applications in the physical world. Relatedly, the intended learning outcome of the Detail Studio course is to enable students to see the application details in interior architecture education as a part of space design and to produce original solutions in this context.

According to Charles Eames, details reveal both an industrial product and architecture (2015). Giving practical construction information to interior architecture students is undoubtedly an important part of interior architecture education. As well as general building

information, materials and detailing for interior manufacturing is also included in the curriculum of many interior architecture departments. In written literature (Ashcroft, 1992; Ballast, 2010; Berkin, 2021; Ching and Adams, 2015; Kilmer and Kilmer, 2016), this information is mainly explained with two-dimensional technical drawings or perspective drawings when necessary. It is not always possible for students to grasp the logic in the assembly of materials and to see the application of manufacturing details apart from the construction site internship. Although visual media resources such as YouTube contain videos for application, students' experience of productions in the third dimension in the classroom environment is limited within physical possibilities. However, virtual environments and computer-aided three-dimensional modelling programs provide tools to overcome such inadequacies. Therefore, this study suggests that the detailing solution should be considered as a design-decision model to create design alternatives according to the building elements and material properties (Deniz, 2019).

Thus, the application solutions of the building elements in the project can be developed in functional, aesthetic, and creative aspects together with the design, and alternative detailing design can be realized in interior architecture education. It is insufficient to seek solutions with only two-dimensional technical drawings for detail design problems that require three-dimensional thinking. It is not uncommon for students to have difficulties in perceiving both the manufacturing method and the solution of the detail problem. Students need to be supported with three-dimensional technical drawings so that they can more readily detect the detail problem according to the design features and produce solutions.

The purpose of this research is to demonstrate that education in interior architecture should focus on addressing structural and detailing issues within the context of a holistic framework along with the design. Both two-dimensional and three-dimensional representations could be used for practice, and they could both work together to support learning outcomes and teaching inputs (Figure 1).

The secondary objective of this study is to demonstrate that the implementation of three-dimensional drawing techniques in interior architecture construction-detail education is an efficient means of enhancing a student's capacity to recognize and acquire knowledge of building details.

**Considering Detail as a Design Issue**

A detail problem may have multiple solutions. To achieve innovative, functional, and long-lasting solutions, it is necessary to understand business logic and to produce the most appropriate solution for the project and design in technical and aesthetic terms, taking into account building physics, material properties, material size, application conditions, and cost. Detailing determines the order of design, materials, and building features. Detail is a blend of aesthetic and functional considerations for designers. According to Emmitt (2002, as cited in Erbil, 2019), the details serve as a tool for architects to control the construction phase

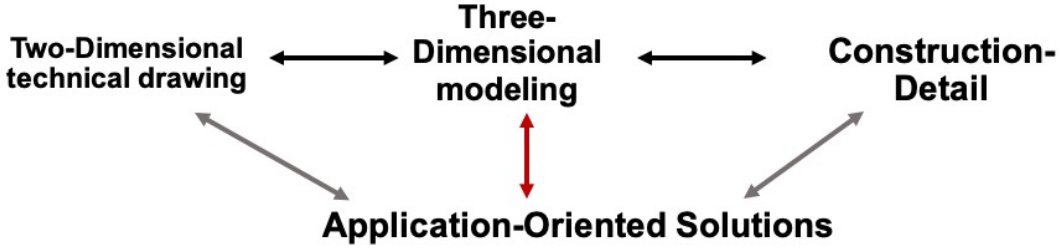


***Figure 1:*** *Application Oriented Solutions Diagram (Drawn by the Authors, 2022)*

of the building, so they should clearly show the connection between the components, the dimensions, and the information they carry (p.79).

Time, cost, functionality, feasibility, ergonomics, aesthetics, accessibility of materials, previously tried or tested details, designer's personal characteristics and architectural perception, environmental factors, and the competencies of professionals involved in the construction process are all effective parameters in the detail creation process of architects (Erbil, 2019, p.79).

Detail and material solutions are crucial factors for ensuring design-to-production continuity and one-to-one design implementation (Erbil, 2019, p.78). When a specific detail work for the design is not completed, significant disparities between the designed and applied detail appear. In other words, the outcome of a project in which the designed project differs from the actual project. No designer wants to be in this scenario.

Detail and material solutions are critical to achieving one-to-one design implementation and ensuring a seamless transition between design and manufacturing. As a result, in detail design education, students' problem-solving and suggestion development skills are required in addition to material and structure understanding (Erbil, 2019, p.78).

In this way, rather than copying and using pre-made details, students' ability to produce design-appropriate solutions is strengthened. Because the specifics vary depending on the chosen material and building features, environmental conditions, climatic conditions, and local architectural considerations. As a result, it is not possible, for example, to propose a single solution for the joint detail of two surfaces and adapt it to all designs. Students should understand the basic rules and think and draw according to the features of the existing design in order to consider the detail solution as a design rather than memorizing the subject. Given that the application is three-dimensional, students may struggle to grasp the essence and logic of the event if the education of this subject (both as a narrative and as a drawing) is only two-dimensional. They must eventually resort to using ready-made detail solutions. This situation results in the emergence of detail solutions that are similar to one another and are not appropriate for the application, without taking into account the structure, material, and design features. In this context, theory, detail information, material descriptions, and student drawings in interior architecture education should be supported by three-dimensional hand and computer drawings in addition to two-dimensional expressions. A lecture developed using application videos and three-dimensional manufacturing models is recommended for this. The student is expected to model the structure or construction to be made in 3D (for example, using a computer-aided modelling program) before creating the two-dimensional drawing, and to perceive the surfaces and layers in the structure through sections taken from the third dimension. After that, they create two-dimensional technical detail drawings.

Tadao Ando claimed that a detail is about the whole and its constituent components (Schittich, 2000, as cited in Erbil, 2019, p. 79). The idea of detail and design should be taken into consideration as a whole in order to create details intentionally. By asking students to solve the intricacies of the materials and building components of their own designs, it is hoped that students would better understand the difference between design and detail. A crucial step in the design process that has a tight relationship to reality is the production of the details. However, by using actual detail solutions, it will be possible to guarantee continuity between design and building (production). The goal of the detailing process is to combine the materials, parts, and aspects according to standards like function, aesthetics, practicability, originality, and sustainability (Erbil, 2019, p.79).

According to Erbil (2019), the process of creating details is influenced by the designer's personality and sense of architecture (p.84). The personal ideas and solutions that are perceived and interpreted should also be expressed in the

detail design, just as the designer's individual personality is reflected in the overall design.

The goal of detail design is to generate application solutions that are appropriate for the project's structure, materials, location, and cost. For detail design, architectural designers consult a number of print and digital media. Students studying interior architecture can use standards, regulations, firm brochures, information released on company websites, and information created by public agencies as examples. There is a distinction between using the source and copying it, though. It's crucial that they develop the project in accordance with the structure-material characteristics and take advantage of them to produce an original and innovative detail rather than replicating exactly (Aksu 2010, p. 54).

**Detail Design According to Materials and Structural Elements**

As consider from types of models, the word "model" can be said to be a very flexible word for an architect and a designer with its many functions. The models' primary purpose is to convey the design concept to the creator and to others. As their titles suggest, spatial, structural, and detail models are helpful for studying how spaces and masses, structures, and potential materials interact in an architectural design (Delikanlı, 2020, p.14).

Material, in addition to its physical performance, is now the most competent aspect that supports the developments in new architectural trends that are reflected in the designs. With new materials and new material technologies entering the world of materials on a daily basis, pioneering architectural structural systems are formed, structures move locations, and structures respond more to the environment (Sunalp Gürçınar and Abbasoğlu Ermiyagil, 2019). Understanding which material is utilized where and how gives the ability to comprehend the application procedure for material and specific information. By observing the manufacturing stage, it is believed that the subject of detail in this process would be comprehended more clearly (Gündüzlü, 2019).

Architecture faculties offer classes or studios for theoretical and/or practical application in detail design instruction. Deniz (2019) created a systematic design-decision-making methodology that may be used for the detailed design of architectural building elements. It is a preliminary analysis method for detail drawing generation, not an educational model. The suggested detail design model's outputs are aimed at discovering the most suitable detail design alternatives for the building elements, and it is anticipated that these outputs can be refined later and used as data in the process of detailing the building elements' junction points (Deniz, 2019, p. 646). Elgewely et al.'s (2021) study incorporates virtual reality and building information modelling (BIM) into AEC (Architecture, Engineering, and Construction) education by presenting a system that can function as a mainstream supplemental construction detailing learning method for architecture students. The suggested VR system enables a virtual construction site that fits learning goals by allowing students to explore and develop in a real-world context. Details of their proposed BIM based VR prototype are produced from specified materials previously uploaded in the system (Figure 2). This strategy may be limited, especially given the range of materials utilized in interior design.

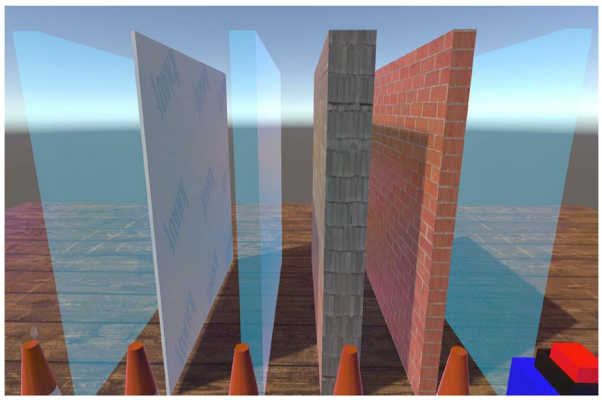

***Figure 2:*** *Showcase of construction material selection of BIM based VR prototype (Elgewely et al., 2021).*

Through an ethnomethodologically informed ethnography of North American design-build architecture education, Nicholas and Oak (2020) investigate the tension of the "make or break" aspects of architectural detail(s) in the learning and practice of design. The lessons of the detail, they contend, have ramifications for professional practice even though their work has only been centered on architecture education environments, where risk and failure are essential components of the learning process (Nicholas and Oak 2020, p. 51). According to Köknar (2019), the "Design and Make!" Studio at MEF University in Turkey offers first-year students the chance to engage in an enhanced and inclusive experience of learning by doing, which is an integral part of architectural education and the studio (p.42). This opportunity is provided by the faculty's architecture and interior architecture departments. Students gain knowledge through trial and error when working on projects that call for wooden materials, applying material, structure, and detail design.

In addition to computer-aided modelling, cardboard models, and sketches, one of the approaches utilized by architects when developing details is the "on-site trial" (1:1 scale mockup). In general, by creating a realistic model with three-dimensional design software, both the problem and the necessary answer may be easily observed. Working with the firms who make the material that will be utilized in the project and integrating the details they produce expressly for their own products into the project is also part of the detailing job. This procedure is not just carried out through drawing. Requesting a sample of the product from the manufacturer and seeing and touching the material is a crucial aspect of detail design (Erbil, 2019, p.86).

**Methodology**

This study has established a methodology for teaching interior architecture students about the adaption and unique detail designs stated above. In this sense, study focuses on demonstrating that the detail solution should not remain in two dimensions and the use of three-dimensional drawing techniques in interior architecture education and the application-oriented solution of structure and detail problems.

Models, which are key teaching tools in design education, can be categorized in a variety of analog and digital model-making methods, including scale models, 1/1 mock-up systems, and digital model-making, which takes into account flexibility, possibilities, time management, and material. Digital model-making was chosen for this research technique even though there are alternative options available because it allows for quick modification, intervention, and allows students to carry out different experiments (Acar, 2020, p.9). The value of the model-making process for design, structure, and detail education is increased by the fact that models serve as both a representation tool for designers as well as interaction tools (Delikanlı, 2020, p.14). In contrast to the model-making in design and computer drawing courses, the approach of this study uses a computer modelling feature that focuses on modelling the structural system detail in line with design and material.

These teaching techniques for detail design primarily highlight the research conducted in the architectural departments. There is no technique recommended in the literature for teaching detail design to interior architecture students in particular. As a result, this research provides a novel proposal. This study investigates the application of three-dimensional drawing techniques in the field of interior architecture education as well as the problem-solving strategies that are geared toward the practical implementation of structure and detail issues. The participants were third-year undergraduate students from Başkent University who took the İÇT311 coded Detail Studio course in the 2021–2022 Fall Term. This study analyzes the impact of the addition of three-dimensional modelling in detail design to two-dimensional technical drawing techniques in teaching. The analysis sets out to elucidate the efficacy of this dual approach on the students' perception skills and capacity for practical detail analysis.

Although being able to use three-dimensional drawing programs was determined as a prerequisite in this study, the contributing factor of the difference among the students' knowledge and skill levels is one of the limitations of this study. Another limitation was the students' reluctance to use this new method. Among students, there was a propensity to reach for ready-to-copy information instead of seeing detailing as a design problem.

The method of this study consists of two stages that are visualized in the diagram below (Figure 3).

The first stage can be defined as an explanation of the detailing drawing rules and techniques while the second stage consists of student drawings. In the first stage of the study, structural details and finishing material information were explained both with two-dimensional detail drawings and three-dimensional drawing samples (Fig 4).

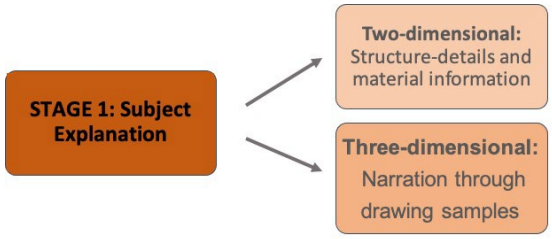


***Figure 4:*** *The first stage of the research diagram (Drawn by the authors, 2022).*

The goal of this stage is to introduce the topic, describe the material, explain the 2D and 3D details in accordance with the features of the material and the design, provide examples from actual construction sites during and after the application, and also introduce the resources that can be effectively used. Therefore, it is

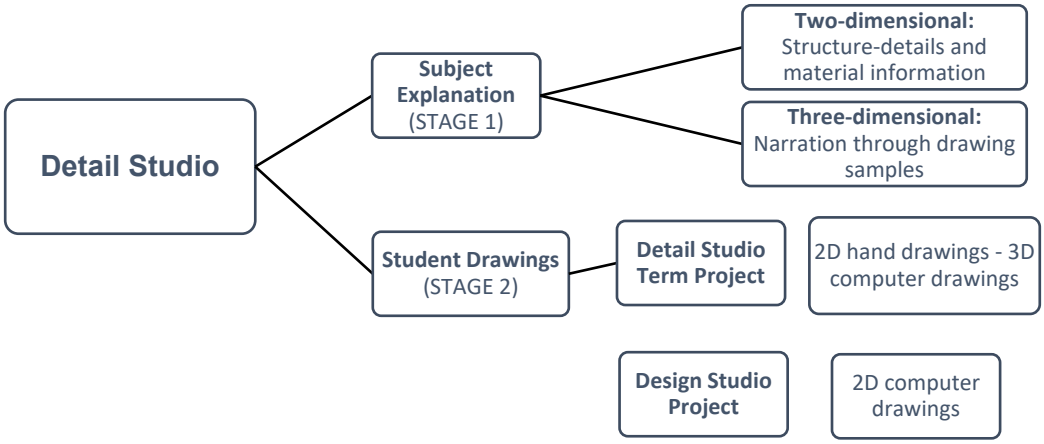


***Figure 3:*** *The stages of the research diagram (Drawn by the authors, 2022).*

anticipated that the supplied data will be used to produce the drawings and specific solutions required in the second stage (Figure 5 and Figure 6).

In the second stage, the students were required to design a bedroom with a study area that showed the three-dimensional layers of the structural system and their interior components. The participants used computer-aided drawing programs such as SketchUp or 3Ds Max for their three-dimensional models. Despite the fact that SketchUp is less user-friendly than other computer-aided modelling programs such as AutoCAD and Rhinoceros, a study comparing the usability perception of these three programs discovered that the majority of interior architecture students intend to use SketchUp as a three-dimensional modelling program in the future. (Yong, Kusumarini and Tedjokoesoemo, 2020).

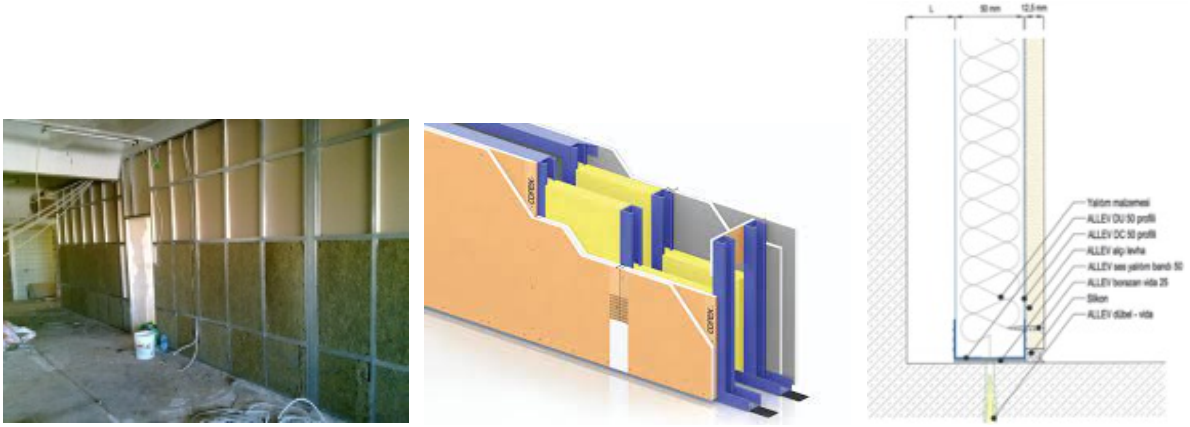

***Figure 5:*** *Samples of site application and 2D and 3D construction detailing models (Author 2 archive, 2021) (https://tr.pinterest.com/pin/367817494547579613/) (http://www.dalsan.com.tr/mimaridetaylar/Cizim?kategoriId=25)*

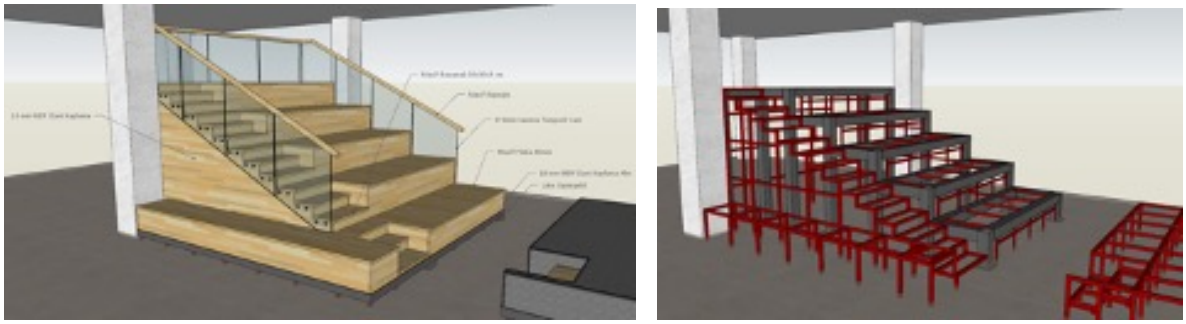

***Figure 6:*** *Samples of 3D construction detailing models (Modeled by the author 2, 2021)*

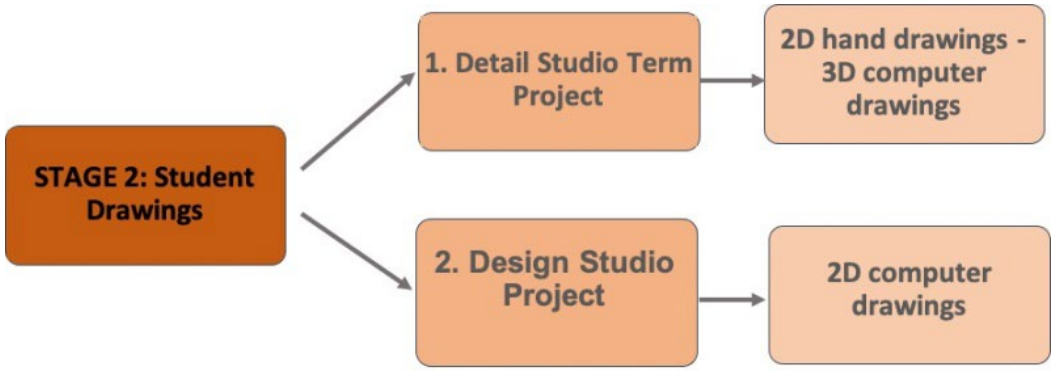


***Figure 7:*** *The second stage of the research diagram (Drawn by the authors, 2022).*

Moreover, in addition to the term project of the Detail Studio course, built-in-furniture and construction details of the Design Studio course project were required too. In this project, the students decided on the materials they would use in the interior space. Each student produced their own genuine design and required manufacturing detail solutions by modelling and three-dimensional drawings. While doing this, they examined the three-dimensional modelling samples given in the lecture part, that is, in the first stage of the study.

The goal of this strategy is to assist students apply their knowledge to the project they designed, to address detail issues as design problems. The following section will provide details and case studies on the two projects of second phase.

**Case Study and Findings**

Students can use three-dimensional drawing programs to create a realistic model using two-dimensional detail information, allowing them to see both the problem and the solution clearly. Material decisions are made based on the design characteristics, and the special details of the appropriate companies are incorporated into the project. Thus, in creating details in the studio, students benefit from the on-site trial method, three-dimensional sketching, and modelling methods.

Within the parameters of the Detail Studio course, two project assignments were provided to the students as term projects. The first project required students to create a rest and study area. There will be a separate bathroom/toilet area in this room with a 30 m2 total area, and the interior will have a 45 cm level difference between the resting and working functions. Plans and section drawings in 1/50 scale were created in addition to the overall room design. Every week after the lecture, the students created a three-dimensional model in SketchUp (or 3Ds Max) of the layer of interest (Figure 8).


***Figure 8:*** *Student 3D construction detailing model samples from the Detailing Studio room project (The projects of students Nursena Sandıkçı and Oğuzhan Dağdelen, 2021).*

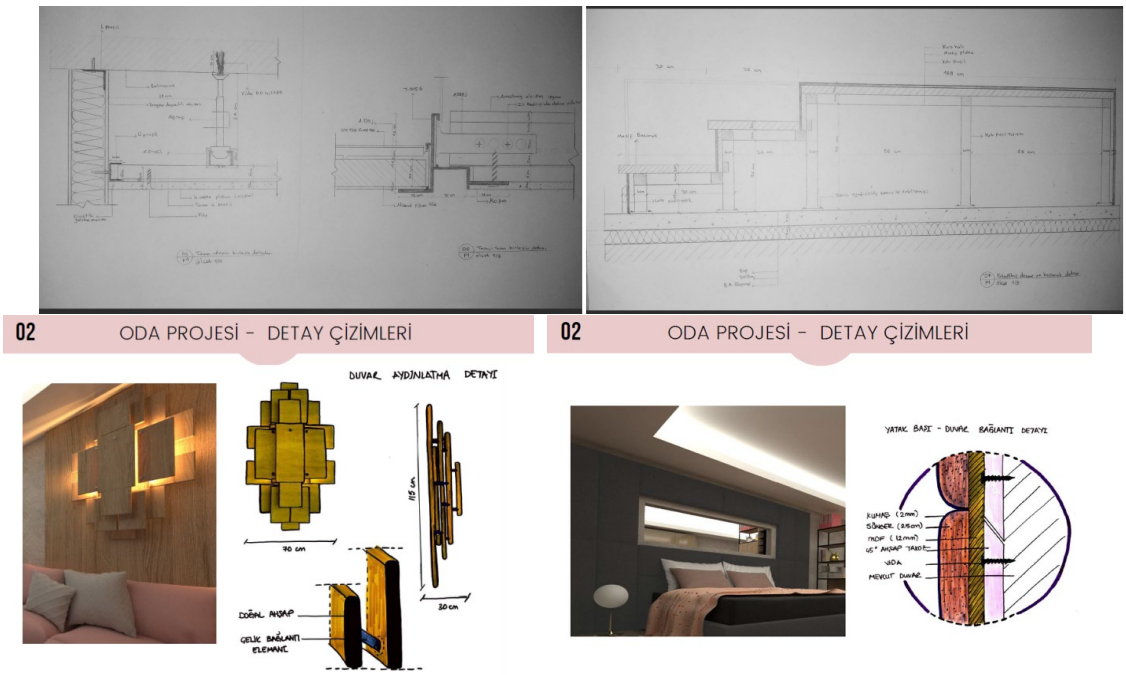


***Figure 9:*** *Student 2D technical detailing drawing samples from the Design Studio project (The projects of students Oğuzhan Dağdelen, Elif İlayda Yılmaz and Nursena Sandıkçı, 2021).*

Then, after learning about the layers and material characteristics, they created suitable detail solutions for two-dimensional detail problems. Here, students developed solutions to three-dimensional difficulties while learning to connect their two-dimensional technical drawings. They created unique detail designs by combining an evaluation of the structural components and the material attributes they utilize in interior design, keeping in mind the comfort and requirements of the customers (Figure 10).

With this strategy, they were able to obtain the detail solutions by modifying the material and form in the design at the essential stages since they were continually considering the integration between design and detail solution. The table below shows the link between the narrating and sketching stages (Table 1).

***Table 1:*** *Expression and drawing stages in the first project of the method (The room project) (Drawn by the author 1, 2021)*

| Structural elements | 2D Detail Explanation | 3D Detail Explanation | Design (Room Project) | 3D Drawing | 2D Drawing |
|---|---|---|---|---|---|
| **General Description** | Detail drawing rules | Detail drawing rules | Room design (work and rest section) | 3D modeling of the room (SketchUp / 3Ds Max) | 1/50 Scale Plan / Section (Hand drawings) |
| **Floor surface** | General flooring materials and combinations / raised floor details | Flooring application videos / Sample SketchUp models | Floor layers, material combinations and raised flooring | Modeling of flooring layers (SketchUp / 3Ds Max) | Flooring point details (Hand drawings) |
| **Wall surface** | General wall types, materials and finishes / skirting | Wall application videos / Sample SketchUp models | Design of wall surfaces (using different coatings and materials) | Modeling of wall layers (SketchUp / 3Ds Max) | Wall point details (Hand drawings) |
| **Column cladding / Niche / Door** | Column cladding / niche creation / door types and details | Column coating and door application videos / Sample SketchUp models | Niche application in a wall, door design, column cladding | Modeling of Column Cladding / Niche / Door layers (SketchUp / 3Ds Max) | Column cladding / Niche / Door point details (Hand drawings) |
| **Ceiling surface** | Types of suspended ceilings / coating materials and joint details | Suspended ceiling application videos / Sample SketchUp models | At least 2 suspended ceiling designs / connection solutions / wall connections | Modeling of suspended ceiling layers (SketchUp / 3Ds Max) | Suspended ceiling point details (Hand drawings) |
| **Furniture** | Built-in furniture details | Furniture application videos / Sample SketchUp models | Headboard, bookcase, structural table or seating unit design | Modeling of built-in furniture (SketchUp / 3Ds Max) | Built-in furniture point details (Hand drawings) |

As the final assignment, the students were asked to provide detailing solutions for the second project, the Design Studio project. The difference between this level and the previous one is that the project is a finished project drawn by the student within the scope of the Design Studio course. While the students were creating detail solutions without making any changes or interventions to the design, they first discovered that they needed to show the details that were appropriate for the existing design. They understood that they had to design according to the building elements, the material properties they chose, and the detail solutions that could be implemented from the very first stage of the project when they couldn't generate solutions based on structure, form, or material properties.

The most significant contribution of this learning process for the students was that they began to grasp the relationship between material qualities, production dimensions, and materials while drawing the three-dimensional detail layers of the spaces they planned. However, because it was their own project, they began to question material decisions during the detail solution process and produced original features based on the architectural aspects and material properties. During this method approach, students produced material and detail judgements based on user and function requirements. They have obtained the ability to make a link between design and manufacturing and to view design as a whole. Instead of replicating ready-made elements, they

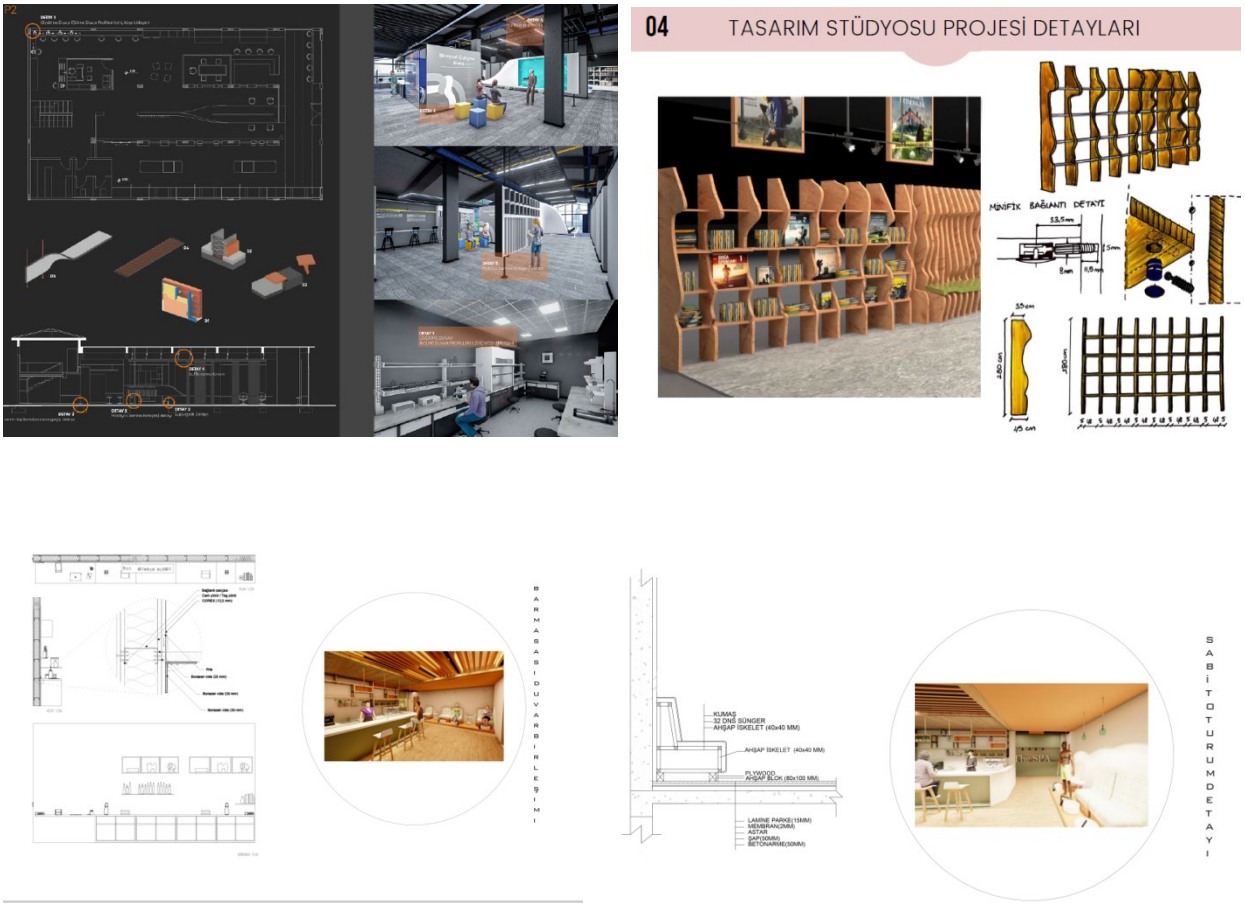


***Figure 10:*** *Student 2D technical detailing drawing samples from the Design Studio project (The projects of students Oğuzhan Dağdelen, Elif İlayda Yılmaz and Nursena Sandıkçı, 2021).*

recognized that detail design is a component of overall space design and sought new and appropriate solutions.

Students used three-dimensional drawing programs to turn their theoretical detail knowledge into a realistic model. They were able to clearly perceive both the problem and the solution this way. They selected material options based on the design qualities and tailored the manufacturing details of the companies they deemed suited for their ideas to their projects. As a result, pupils had the opportunity to virtualize their intricate designs. They used three-dimensional drawing and modelling in the studio setting to evaluate not only industrial items, but also production details of structural reinforcements that require unique manufacture.

In this study, it has been observed that students who cared more about three-dimensional detail modelling and perceived it as a detail design could give clearer information about manufacturing in two-dimensional detail drawings.

**Conclusion and Recommendations**

The three-dimensional modelling technique was used to illustrate to the students the design difficulty that constitutes the study's core problem, detailing. The students recognized the importance of considering elaboration without straying from the context of the overall design. Through 3D modelling, students learned how to modify pre-made details for their own projects or produce unique ones. They abandoned the notion that technical detail drawings are information to be memorized and embraced the notion that detailing is a significant design issue that expresses production and materials. This is seen by the students' precise layering of their 3D models, subsequent 2D drawings, and the focus on detail in their creations. It has been found that the suggested teaching strategy helps students understand how 3D manufacturing reality and its 2D technical expression are related.

The main objective and contribution of this study to the literature in this field is to propose a design-decision model for detailing in interior architecture education. In the development of the model, it was aimed to show the effect of the three-dimensional design details on the design-decision perception of the students. As a result, along with design, students' ability to think three-dimensionally about interior application solutions and their ability to produce details were strengthened and improved. Detail design is not limited to 2D drawings and expressions. The method used in this study differs from others since it increases students' speed in problem-solving and sketching, fosters 3D thinking abilities, and is customizable. Table 2 demonstrates the competencies that students should gain as a result of the proposed teaching strategy.

***Table 2.*** *Competencies that students should gain (Drawn by the author 1, 2021).*

| **Detailing in Interior Architecture** | **Design Decisions** | **3D Layers** | **2D Detail Solutions** |
|---|---|---|---|
| **Structural Elements** | ✓ | ✓ | |
| **Design Purposes** | ✓ | ✓ | ✓ |
| **Material Properties** | | ✓ | ✓ |
| **Unique Solutions** | ✓ | ✓ | ✓ |
| **Application and Construction** | | ✓ | ✓ |

This study suggests seven design-decision modelling guidelines as presented below, that will lead to better detail design-decision solutions for interior architecture students:

1. Students should develop both two-dimensional technical drawing and three-dimensional modelling of construction and detailing skills simultaneously.
2. When it comes to detail design, students should be shown with examples of three-dimensional models where alternative solutions are possible.
3. Students should develop their three-dimensional drawing techniques on larger scales in detail and construction courses in addition to design studio courses.
4. Students should strengthen their theoretical knowledge of the detail design of building elements, together with design and application, and their skills to produce solutions.
5. Students should be able to imagine and produce unique spatial solutions for structural and detail problems.
6. Students should create detailing solutions that are simple to read and comprehend.
7. Students should express their ideas, individual thoughts, and solution proposals in detail designs in order to develop original and inventive solutions.

Future research can examine the impact of this teaching strategy on students' perceptions of detail design. If this approach is used in other schools, it can be looked into whether similar results can be attained. In this way, one might aid in the advancement of this methodology.

**References**

Acar, S. (2020). Model architecture: A brief history of models as a design tool. Bekkering, J. D., Curulli, G. I., & van Hoof, J. J. P. M. (Eds.) *Architectural Models as Learning Tools*. (pp.9-13). Caleidoscopio.

Aksu, Ö. (2010). *Detay tasarim yöntemlerinin kullanilabilirliğinin deneysel olarak belirlenmesi*. [Master's Thesis, İTÜ Institute of Science and Technology].

Ashcroft, R. (1992). *Construction for interior designers*. Routledge.

Ballast, D. K. (2010). *Interior detailing: Concept to construction*. NJ: John Wiley & Sons.

Berkin, G. (2021). *İç mimarlıkta malzeme ve detay*. (3. Baskı) İstanbul: YEM Yayın.

Ching, F. D. K. & Adams, C. (2015). *Çizimlerle bina yapım rehberi*. (6. baskı) İstanbul: YEM Yayın.

Delikanlı, B. (2020). The role of digital model-making for design education. Bekkering, J. D., Curulli, G. I., & van Hoof, J. J. P. M. (Eds.) *Architectural Models as Learning Tools*. (pp.14-21). Caleidoscopio.

Deniz, Ö. Ş. (2019). Yapı elemanlarının detay tasarımı için bir tasarım-karar verme modeli. *Megaron*, Yıldız Teknik Üniversitesi Mimarlık Fakültesi. 14(4), pp. 623-648.

Eames, C. (2015). Eames contract storage. In D. Ostroff (Ed.), *An Eames anthology: Articles, film scripts, interviews, letters, notes, and speeches*. New Haven: Yale University Press, Original work published 1961.

Elgewely, M. H., Nadim, W., ElKassed, A., Yehiah, M., Talaat, M. A., & Abdennadher, S. (2021). Immersive construction detailing education: Building information modeling (BIM) based virtual reality (VR). *Open House International*, 46(3), pp. 359–375. https://doi.org/10.1108/OHI-02-2021-0032

Erbil, Y. (2019). Mimarların detay üretim süreci üzerine nitel bir araştırma. *Online Journal of Art and Design*. 7(3), pp. 78-88.

Gündüzlü, E. B. (2019). İç mimarlık eğitiminde meslek pratiği sorunları. *Modular Journal*, 2(1), pp. 70-81.

Kilmer, W. O. & Kilmer, R. (2016). *Construction drawings and details for interiors: Basic skills*. (3rd ed.) NJ: Wiley.

Köknar, B. S. (2019). Ağacın izinde: MEF FADA tasarla ve yap! stüdyosu, *Arredamento Mimarlık*, 335, pp. 42-45.

Nicholas, C., & Oak, A. (2020). Make and break details: The architecture of design-build education. *Design Studies*, 66, pp. 35–53. https://doi.org/10.1016/j.destud.2019.12.003

Schittich, C. (ed.) (2000). Detail(s): 16 Statements. *Detail*, 40(8), p.1437.

Sunalp Gürçınar, C. and Abbasoğlu Ermiyagil, M. S. (2019). İç mimarlık tasarım eğitiminde malzeme kullanımının değerlendirilmesi. *İdil*, 64: pp. 1705-1718. doi: 10.7816/idil-08-64-08

Yong, S. D., Kusumarini, Y., & Tedjokoesoemo, P. E. D. (2020). Interior design students' perception for AutoCAD, SketchUp and Rhinoceros software usability. In *IOP Conference Series: Earth and Environmental Science* (Vol. 490). Institute of Physics Publishing. https://doi.org/10.1088/1755-1315/490/1/012015

Journal of
**Design Studio**
spi:2 "**ICMEK-5 Rethinking**" October 2022

# Examining Workshops in the Intersection of Formal and Informal Architecture Education: The Case of "Bahar Atölyeleri"

Furkan Evliyaoglu
*Department of Interior Architecture and Environmental Design, Istanbul Kultur University, Istanbul, Turkey (Corresponding author)*
Koray Gelmez
*Department of Industrial Design, Istanbul Technical University, Istanbul, Turkey*

Received: August 4th 2022, Revised: August 21st 2022, Accepted: September 7th 2022.
Refer: Evliyaoglu, F., Gelmez, K., (2022), Examining Workshops in the Intersection of Formal and Informal Architecture Education: The Case of "Bahar Atölyeleri", Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 35-49,
F. Evliyaoglu ORCID: 0000-0001-6433-7903, K. Gelmez ORCID: 0000-0003-1306-2852,
DOI: 10.46474/jds.1154901 https://doi.org/10.46474/jds.1154901



**Abstract:** Today, it is known that formal education models alone are not sufficient for the complexity of design education. Thus, these models should be supported by informal methods. In contemporary architectural education, the formal structure is supported by various informal education tools such as competitions, workshops, and panels. However, although it is seen as two different education models, it is not possible to draw a clear boundary between formal and informal education. Because it can be said that today's formal education contains informality and informal education has various formal aspects. In this context firstly, formal, informal, and non-formal education models are examined. Furthermore, extracurricular, and co-curricular activities, which are a part of formal, informal, and non-formal education models, are explained. Secondly, the workshops, which are seen as an informal tool in architectural education, are examined according to their characteristics such as method, subject, actors, organizer, duration, and venue. Subsequently, this article discusses the formal and informal status of workshops according to these characteristics. The discussion is carried out over four workshops with different characteristics, organized by the Department of Interior Architecture and Environmental Design at Istanbul Kültür University under the name of "Bahar Atölyeleri" (Spring Workshops). Semi-structured interviews were conducted with four participants who participated in four different workshops. Thus, it was aimed to discover the formal and informal aspects of the workshops by conducting interviews with the participants.

**Keywords:** Architectural education, Formal education, Informal education, Workshops

## 1. Introduction

The word formal is of French origin and it means official; very correct and suitable for official or important occasions. As the opposite, the word informal is used in the sense of unofficially and not following strict rules of how to behave or do something.

The words formal and informal are frequently used in the field of education. The concept of formality/informality, which entered the literature as formal education, can be expressed as received in a school, college, or university, with lessons, exams, etc., rather than gained just through practical experience.

Formal and informal education concepts have been studied extensively in the context of design education. Accordingly, formal architectural education in the existing literature; is seen as all the theoretical and practice-based courses that a candidate architect must complete (Ciravoğlu, 2003). According to this, architectural studios, which form the cornerstone of architectural education, are considered as a part of formal education. Ciravoğlu (2019) defines informal structure as all learning environments except formal institutions (Figure 1). For architecture discipline, she frames these environments with competitions, workshops, and panels (Ciravoğlu, 2019).

However, it is getting harder and harder to specify a clear distinction within architectural education today. In this context, the main motivation of this study is to point out the disappearance or blurry nature of formal and informal boundaries in architectural education. In other words, it is possible to say that today's formal architectural education has become informal or that informal architectural education contains formalities.

This study that focuses on the blurring of the boundaries of formal and informal architectural education will seek answers to these questions: "What are the formal and informal methods used in architectural education?", "Do these methods have the potential to be formal and

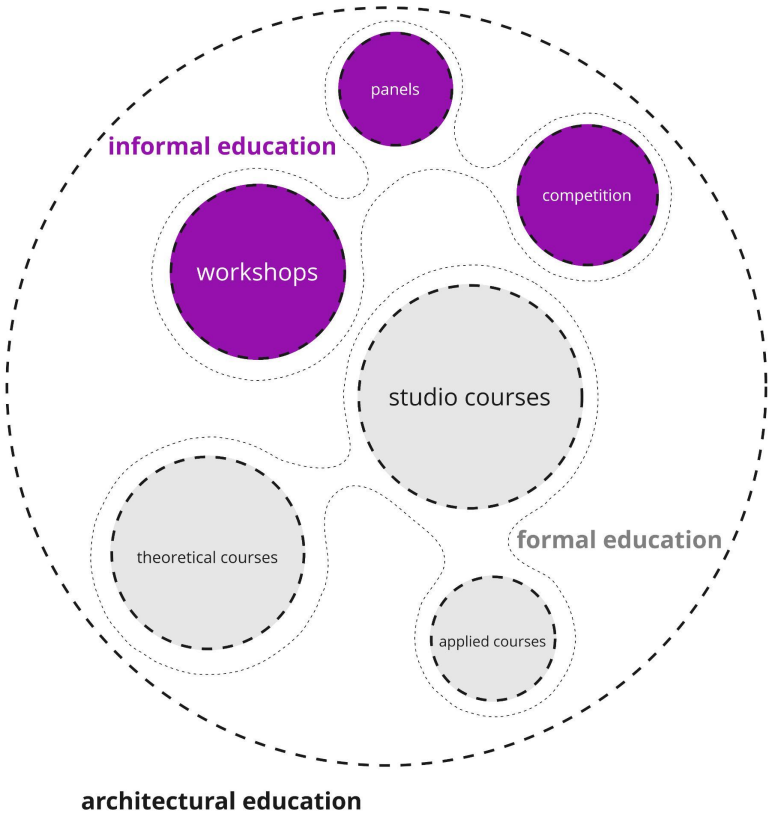


***Figure 1:*** *A diagram showing the formal and informal tools of architectural education based on Ciravoğlu's (2003) definition (A diagram by the first author).*

informal simultaneously?" and "What are the formal and informal aspects of architecture workshops in this context?". To seek answers to these questions, we will discuss the formal and informal status of workshops, which are excluded from formal architectural education and seen as an extracurricular informal activity supplementing the curriculum. In other words, the main purpose of the study is to investigate the potentials of workshops with different characteristics in terms of formality.

In this context, we will reveal formal, informal, and non-formal education models in the first phase of the study. The equivalent of these educational models in the discipline of architecture will be examined, and supplementary and additional activities to the curriculum will be evaluated. Then, the workshops, which are an important part of architectural education, will be discussed and the workshops will be evaluated according to their different characteristics.

In the second phase of the study, 4 different workshops organized by Istanbul Kültür University in the Spring Term of 2020-2021 under the name of "Bahar Atölyeleri" will be examined. In this direction, semi-structured interviews will be held with 4 different participants of the workshop. The data obtained will be discussed according to the workshop characteristics, and the formal and informal contexts of these workshops will be examined.

## 2. The Conceptual Framework for Workshops

It is possible to say that the education process, which continues from infancy to adulthood, has three basic forms that interact with each other. Coombs and Ahmed (1980) explain these forms as formal, informal and non-formal education. Among these, informal education is the lifelong process which constructs knowledge, skills, attitudes and insights from daily experiences and exposure to the environment- at home, at work, at play; from the example and attitudes of family and friends; from travel, reading, newspaper and books; or by listening to the radio or viewing films or television by every person (Coombs & Ahmed, 1980). Formal education can be expressed as highly institutionalized, chronologically graded and hierarchically structured (Coombs & Ahmed, 1980). According to these definitions, while formal education covers the process from primary education to higher education, informal education can be defined as a lifelong process. Non-formal education is any organized, systematic, educational activity carried on outside the framework of the formal system (Coombs & Ahmed, 1980).

It can be said that these three educational forms have different characteristics. These features vary depending on the structure rather than the process of these education forms (La Bella, 1982, p. 163). According to this; characteristic features of formal education; non-formal educational characteristics indicate that the activity must be separate from state-sanctioned schooling yet be pre-planned and systematic and be able to lead a particular group of learners toward some specific goals (La Bella, 1982, p. 163). The characteristics of informal education can be expressed as it emerges with environmental effects, daily takes place, but continues throughout life.

Although these education models have different characteristics, it is not possible to say that they are separate and disconnected from each other in terms of learning process. On the contrary, different teaching styles can occur simultaneously. Accordingly, in practice, formal, informal, and non-formal education should be viewed as predominant modes or modes of emphasis rather than as discrete entities (La Bella, 1976, pp. 21-22). In other words, it is possible to say that formal, informal, and non-formal education models include formal, informal, and non-formal forms.

Although these education models have different characteristics, it is not possible to say that they are separate and disconnected from each other in terms of learning process. Chuang (2021), who defines learning as an "internal cognitive activity because it depends on the structure of one's knowledge", stated that under the concept of constructivist learning theory, "people construct knowledge from activities and

reflections rather than passively absorb information". In other words, learning can take place through one's own experiences or through a social interaction by sharing knowledge. From this point of view, it can be said that formal, informal, and non-formal teaching styles can emerge simultaneously in the learning process.

Avcı (2019) explained this situation as when informality is considered as a way of establishing a relationship, it can be observed that informal education is also possible within the formal structure or informal education environments can sometimes take on a formal character. For example, while it is possible to talk about a formal education for a teacher who gives lectures in the classroom environment depending on the curriculum, peer learning that emerges with the conversations among students can be considered as informal education form. At this point, it can be said that the education style changes according to the perspective of the learner who examines the education process (La Bella, 1982, p. 163). Avcı (2019), on the other hand, stated that the instructor leaves the formal school structure, which is his comfort zone, and gives lessons in a public area where he is more vulnerable as the informalization of the space.

Ciravoğlu (2019) looks at the formal and informal education approach in architecture from a different perspective. Ciravoğlu (2019) stated that in architectural studios, which she defined as a fictional world, students are equipped with knowledge and skills and are prepared for the profession. Also, she defined this situation as the intra of architectural education or the formal structure of architectural education. She expressed the whole reality outside of this fictional world like her professional life as extra of education or the informal structure of architectural education (Ciravoğlu, 2019). With this definition, Ciravoğlu (2019) mentioned that it is impossible to give the essence of education only through formal education. In other words, the architectural education covers both formal and informal education.

In this context, we come across extracurricular activities, which are located in the intra and extra intersection of architectural education and constitute an important part of the educational experience. Extracurricular activities are defined as academic or non-academic activities that are conducted under the auspices of the school but occur outside of regular classroom time and are not part of the curriculum. Additionally, extracurricular activities do not involve a grade or academic credit and participation is optional (Bartkus et al., 2012). Various sports events, visual and artistic activities, exhibitions, talks, workshops, field trips, student clubs can be considered as extracurricular activities.

Additionally, extracurricular activities are considered outside the formal education structure, as they are restricted as an additional activity to the curriculum by its definition. In other words, lack of an academic credit for extracurricular activities or the lack of a grading at the end of the process causes these activities to break off from the formal context. In addition, the fact that these activities are limited with space and time can distract the formal structure. Despite all this, extracurricular activities are systematized, planned, and organized, which formalize these activities.

There are two types of extracurricular activities in literature; which are namely direct and indirect. While the activities defined as a direct extracurricular is one that is more closely associated with the student's major or program, an indirect extracurricular activity is relatively unrelated to the students' major or program (Bartkus et al., 2012). When we consider this in the context of architecture; we can see direct extracurricular activities for an architecture student to participate in an architecture competition or experience an internship related to his/her profession. The reasons why all these activities are considered as direct extracurricular are about being outside the architecture curriculum, voluntary participation, and staying in academic context even though there is no evaluation in the end. On the other hand, the student's participation in the school's travel club or performing in the school choir can be described as indirectly

extracurricular since it is more disconnected with the academic context.

At this point, a second concept emerges; co-curricular activities. A co-curricular activity requires a student's participation outside of a regular classroom time as a condition for meeting a curricular requirement (Bartkus et al., 2012). However, co-curricular activities are considered directly under formal education as they are part of the student's program. At this point, if internship is considered as a graduation condition for an architecture student, the student's internship activity can be classified as co-curricular activities, but if the student is doing this internship voluntarily, it can be classified as extracurricular activities. Here, determining the position of the internship activity; whether the activity is part of the curriculum or not and the student's voluntary or compulsory participation.

Ciravoğlu (2019) redefines future architectural education in terms of flexibility, adaptability and creativity and says that this can be achieved through informality. At this point, extracurricular activities, which are placed on a ground at the intersection of formal and informal education, undertake an important position. In addition, Yanpar (2018) states that extracurricular activities have the potential to increase students' leadership, organizational, interpersonal, and non-technical social skills such as teamwork (p. 25). Roulin and Bangerter (2013 as cited in Yanpar, 2018) added that students can participate in extracurricular activities to distinguish themselves in a job application from their competitors. Based on this interpretation, it can be said that extracurricular activities, as defined by Ciravoğlu (2019), make contributions both inside and outside of architectural education.

Workshops are defined as short and intense training activities that are organized in different fields and that can bring people from different professions, schools and even countries together (Yürekli and Yürekli, 2004). By another definition, "workshops are short-term learning experience that encourages active, experiential learning and uses a variety of learning activities to meet the needs of a variety of students" (Brooks-Harris and Stock-Ward, 1999 as cited in Milovanović et al., 2020, p. 8).

Architecture workshops can be defined as a model that complements the existing teaching structure and encourages creative and critical thinking (Milovanović et al., 2020). Architecture workshops can be a part of the curriculum as well as an additional activity to the curriculum. In other words, workshops can be classified as both extracurricular and co-curricular activities. In this direction, while participation in workshops that are considered co-curricular may be mandatory, an evaluation and grading is usually made at the end of the process. For example, "+10 Istanbul Araştırma Çalıştayları" (+10 Istanbul Research Workshop) organized annually by the Özyeğin University Department of Architecture can be considered as a co-curricular event (Hacıhasanoğlu, 2022). This activity which is included in the program of the students and is a compulsory research internship, is seen as a part of formal architectural education. On the other hand, studio-based education, the most common method of architectural education, is characterized by a high level of communication, exchange of ideas, physical modelling, and drawing (Schenkman, 1955 as cited in Milovanović et al., 2020). Architectural workshops with all these features are also very similar to studio education. In this context, architectural workshops can be considered as the most common extracurricular and complementary activity type (Milovanović et al., 2020). In addition, these activities, in which participation is based on volunteerism and there is no assessment and grading at the end of the process, are seen outside of formal education (Figure 2).

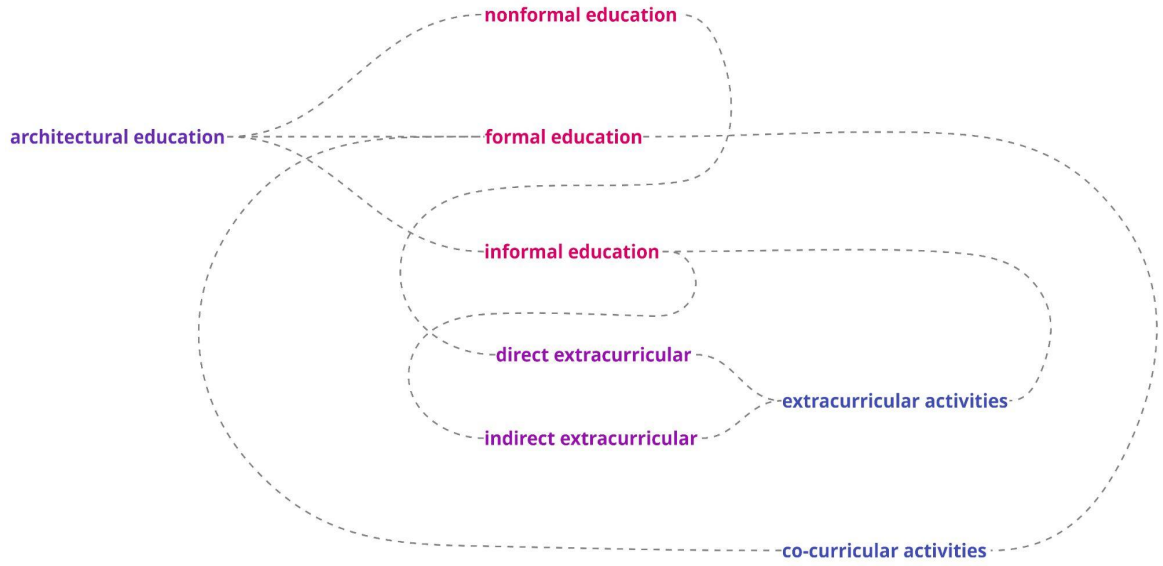


***Figure 2:*** *A diagram showing the conceptual framework of the article (A diagram by the first author).*

Ciravoğlu (2003) classifies the workshops, which can accommodate different situations, according to their method, organization, actors, subject, and duration/venue. According to all these classifications, workshops can take on formal or informal features (Figure 3).

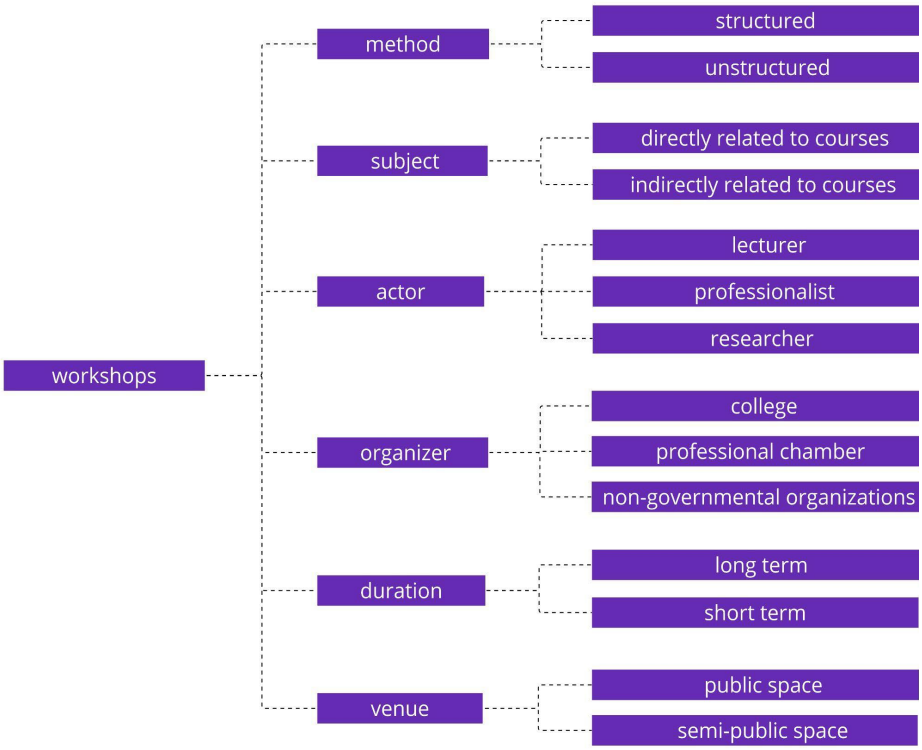


***Figure 3:*** *A diagram showing the components of workshops based on Ciravoğlu's (2003) definition (A diagram by the first author).*

Two different methods appear while conducting the workshops. First, these are the workshops where the process is planned and structured and this flow is followed throughout the process and at the end of the process. In these workshops, outputs are produced with limited tools. Secondly, these are the workshops where the flow is shaped according to the participants, although the main structure is clear. In these, products are made more freely and the process is more ambiguous and is shaped according to the participants. In Ciravoğlu's (2003) study, these workshops, which are examined with and without scenarios, can contain formal and informal features according to their methods.

According to their subjects, the workshops can be seen in two different ways as those who directly relate to the course and those who indirectly relate. Accordingly, the subject of the workshops that directly relate to the discipline may vary depending on the educational issues of the relevant period (Ciravoğlu, 2003). In addition, participants in this workshop can be expected to have sufficient knowledge about the subject in advance. If there is no such expectation, a briefing on the subject can be given at the first stage of the workshop. The direct or indirect relationship of the workshop with the discipline plays a significant role in defining the workshops as a direct or indirect extracurricular activity.

Third, the actors of the workshops can be discussed. It can be said that the workshops have two different actors, namely the participants and the facilitator(s). One of these actors, the facilitator (s) can be a faculty member of a university, a researcher or a professional from within the sector, or it can be a professional person from another discipline. This position of the facilitator affects whether the process is formal or informal. At this point, Ciravoğlu (2003) says that there is no formal relationship with the director in architectural workshops and that the project does not have to be appreciated by the facilitator and describes the workshops as a free environment. The other actors of the workshops can be a university student, a researcher, or a practitioner. Yanpar (2018) states that people who are common to or interested in design research, ideation, thinking and methods such as designers, design students, people from business participate in design workshops. In this direction, the position of the participants, who are another actor of the workshops, in the discipline affects whether the workshops are formal or informal.

As an organization, workshops can be organized by official institutions such as universities, as well as by various non-governmental organizations and professional chambers. Ruohoi (2016) stated that there are mainly two design workshop models for colleges: one is held by some colleges on the occasion of the academic meeting opportunity, and the other one is held by creative industrial parks or creative corporations (p. 778). Accordingly, the positions of the institutions or organizations that organize the workshops cause the workshops to gain formal or informal characteristics.

Finally, the duration and venue of the workshops can be mentioned. The duration of the workshops varies between one day and three weeks (Ciravoğlu, 2003). In this context, short-term workshops differ from formal education, which consists of certain periods. In terms of venue, workshops can be held in a semi-public space such as a university's atelier or classrooms, or in a public space such as an urban area. The publicization of the place where the workshop is held also affects the formality of the event.

## 3. An Intersection: The Case of "Bahar Atölyeleri"

"Bahar Atölyeleri" is an extracurricular event organized by Istanbul Kültür University, Department of Interior Architecture and Environmental Design in 2020-2021 Spring Semester. The event was first launched on the website and social media accounts of various platforms such as Arkitera, Mimarizm, Yapı Dergisi, until February 21st, 2021, to accept the workshop proposals that will be held online by the facilitators of different design and art disciplines due to the COVID-19 pandemic.


***Figure 4:*** *"Bahar Atölyeleri" call poster for the facilitators (URL-1).*

In the call text (Figure 4) for the facilitators, the workshops were evaluated both as an informal education and as an experimental education approach. In addition, the call text also states that workshops support formal education. In other words, although the workshops organized take place in an informal context, this event takes place at the intersection of formal and informal education. For this reason, "Bahar Atölyeleri" is a potential example for answering the research questions of the study.

It was decided to organize 11 workshops within the scope of "Bahar Atölyeleri", among the workshops proposed by different facilitators until February 21st, 2021. The subject, content and method of these workshops are left entirely to the facilitators. In addition, the quotas,

istanbul kültür üniversitesi | iç mimarlık ve çevre tasarımı bölümü | bahar atölyeleri


***Figure 5:*** *"Bahar Atölyeleri" call poster for participants and posters of 11 workshops (A poster by the first author)*

duration, and dates of the workshops are left to the facilitators, provided that they are limited to the months of March, April and May.

Announced on the Department's Instagram account and on CATs the official distance education platform, the "Bahar Atölyeleri" were opened only to the students of Istanbul Kültür University, Interior Architecture and Environmental Design Department (Figure 5). A total of 112 students participated in the event, which was open to applications between 11th-17th March 2021.

All 11 different workshops were organized online by Istanbul Kültür University (Figure 6). The duration of the workshops varied between one and two days. In this context, while the

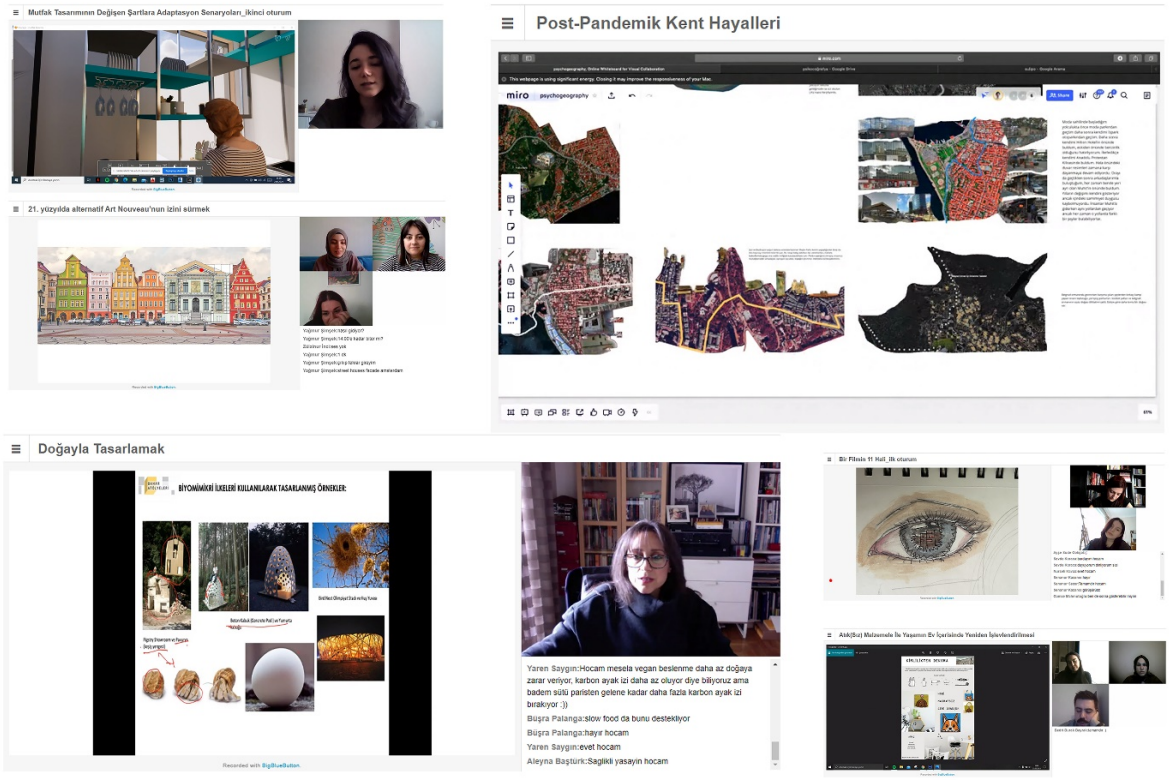


***Figure 6:*** *A collage of online workshops held as part of the "Bahar Atölyeleri" (A collage by the first author).*

workshops had similarities in terms of organizer, duration, and venue; they differed from each other in terms of method, subject, and actor. Semi-structured interviews were conducted with one participant from four workshops. The person to be interviewed was randomly selected among the participants who attended the workshops.

The questions in the interviews were prepared with reference to the classifications made for the workshops in the literature section of the study. Accordingly, the questions can be categorized into five basic groups.

First of all, the participants were asked general questions about the workshops and their motivations for participation. According to these questions; Participant 1 defined the workshops as the process of "coming together, socializing, producing together" and considered them as extracurricular activities. In addition, participant 1 explained the reason for attending the workshop was because the instructor requested. Participant 1 said that he showed himself to his teacher by using his workshop preference in favor of the workshop conducted by his teacher, who made attendance mandatory. Participant 2 stated that he voluntarily participated in this workshop due to his interest in the history of art and architecture. In addition, participant 2 considered the workshops as an extracurricular activity, saying that she saw them as a hobby. Participant 3 stated that she participated in this workshop by making a common decision with their friends. Participant 3 said that she did not see the workshops as an extracurricular activity because she used the cumulative knowledge she learned at school. However, she added that there

was no grade anxiety in the workshops and that participation was on a voluntary basis, adding that it was different from the classes. Participant 4 stated that she attended the workshop with the motivation of receiving a certificate at the end of the workshop and added "I do nothing during the pandemic period, at least I wanted to attend a workshop and write it on my CV".

The workshops were first discussed according to their methods. Accordingly, all participants stated that the workshops had a certain flow and this flow was shared with them. In this sense, it can be said that all workshops were pre-structured. Again, all participants stated that the representation tools and methods used throughout the workshop process were left to the participants. Participant 3 expressed that "all the decisions were left to us during the production, there were no limitations such as having a concept poster as in studio lessons". Participant 4 added that there was no grade anxiety in the workshops, and accordingly, the facilitator left the participants free. Similarly, participant 1 added that the criticisms she/he received in the workshops were more constructive and therefore she/he was more comfortable during the workshop process. Participant 2 said that in this process, unlike the project courses, they did not experience situations such as getting their work appreciated or approved.

Secondly, the workshops were discussed according to their subjects. The workshops that participant 1, 2 and 4 attended were directly related to the discipline of architecture and started with a lecture. The workshop attended by participant 3 indirectly establishes a relationship with the discipline of architecture. In this direction, participant 3 said that "our workshop topic was not a grounded subject like our studio topic, it was a more subjective work" and said that the facilitator release them free. Participant 2 stated that there was a subject about Art Nouveau within the scope of the workshop and that this subject was also explained in formal education. When comparing these two lectures, participant 2 stated that she had exam and grade anxiety during formal education and noted that she took notes on everything her teacher said during the lecture. On the other hand, participant 2 added that she focused only on the visuals during the presentation at the workshop, as they would produce a visual composition within the scope of the workshop. Participant 1 said that he had the idea of designing an industrial kitchen while attending the workshop. However, he stated that he designed a residential kitchen by moving away from this idea, since the lecture in the workshop focused directly on the residential kitchen. Participant 4 said that the lecture given in the first stage of the workshop was directly related to the work they made and stated that they would not have been able to produce it if this lecture had not been made.

Thirdly, the workshops were opened to discussion according to their actors. The participants were asked about their relations with facilitators. Accordingly, participant 1 stated that his facilitator was also an instructor from whom he took lessons. Participant 1 explained that "we had a lesson with our facilitator the next day, an event we experienced in the workshop, the failure of the process or a mistake we made could have caused our teacher to prejudice us against us in the lesson" and said that this situation limited him. Participant 3 said that its facilitator was a research assistant at the university. However, unlike participant 1, participant 3 said that it was a positive situation to work with a facilitator she knew. Participant 3 summarized "I knew our facilitator, I knew her/his approach and reactions, I would be more afraid to work with someone I do not know, even while choosing elective courses, I am hesitant to take lessons from someone whose name I have never heard of". Participant 2 evaluated the workshop environment as friendly, saying that she saw the facilitator as close to her, since she was close in age, and she was not a lecturer at her university. Participant 2 also stated that she would have been more cautious and attentive if she had attended a workshop organized by one of her teachers.

Fourthly, the workshops were examined according to the organizing institution. However, since all the workshops were organized by Istanbul Kültür University, the

workshops could not be compared within themselves. Despite this, participant 4 stated that "it is important for me to do a quality job, even if the workshop was organized by another institution, nothing would have changed". Participant 2 said that it is an advantage to attend the workshop organized by the institution of which she/he is a student and added that she/he knows that she/he can get help from the university and the department in every subject related to the workshop.

Finally, questions were asked about the duration and venue of the workshops. According to this; participant 3 stated that a group was formed from an online messaging program prior to the workshop and that they agreed on the workshop time together. Participant 3 commented that "all the decisions regarding the workshop were left to us, we even set the time". In this sense, participant 3 emphasized that the workshop he attended was different from the project course and was freer. Participant 4 stated that the workshop period was extended because there were participants who could not complete their studies.

In addition to all this, participant 3 said that the studios continued for 14 weeks and after a while they got overwhelmed. Participant 3 described the workshops as shorter and more exciting. Similarly, she added that the limited time in participant 2 made them more productive. Participant 1 stated that they work more intensively due to the limited time and thus they are more productive. However, participant 1 said that the limited time prevented the final product from reaching sufficient maturity and considered this situation as a disadvantage.

When the workshops were analysed spatially, participant 2, 3 and 4 of the participants evaluated the workshops conducted online due to the COVID-19 pandemic as a positive situation. Participant 2 said that "I was involved in the process from my own home, I forced myself to do better because I knew that I was always alone" and said that being away from the workshop environment made her/him more productive. In addition, participant 2 stated that they could not see the work of other participants during this process. Participant 2 evaluated this situation positively and said that the participants were not affected by each other. Participant 3 explained that "if we had attended this workshop at school, nothing would have changed, even being at home made us more comfortable, we can leave the computer whenever we want". Participant 4 said that in this online process, her facilitator could not be very involved in her work and thus improved her own working method. Participant 4 thinks that in this way, she has done a more qualified job. Despite all these comments, participant 1 said that there was no cooperation and discussion environments during this workshop and evaluated this online workshop as a negative side.

## 4. Conclusion

As a result, according to Ciravoğlu's (2013) classification, the workshops were classified under five main headings. Accordingly, the four workshops organized within the scope of "Bahar Atölyeleri" were evaluated as follows:

The workshops were first examined according to their methods. According to this, it was observed that all workshops were pre-structured by the facilitators and this flow was followed throughout the workshop process. In other words, it can be said that the workshops have curriculum-like contents. Having a specific content/curriculum leads these workshops to have formal characteristics. However, as almost all participants stated in the workshops, the fact that participation is on a voluntary basis, no grading or approval of the facilitator places the workshops in an informal context. However, although it is not a compulsory event, the participation of some participants in the workshops due to various obligations formalizes this informal situation. Again, releasing the participants during the workshops and leaving the representation language and tools to the participants are not the situations that we encounter in formal education. In this context, it can be said that these workshops carry both formal and informal features as methods and processes.

Secondly, when the workshops are handled according to the subject, it was seen that the workshop, which did not have a direct relationship with the discipline, was far from the formal education structure. However, it can be said that the other three workshops that have a direct relationship with the discipline have informal characteristics. According to the statements of the participants, we can see that the lectures made in discipline-related workshops were different from the lectures made in formal education. The lack of grading and exam anxiety of the participants during these lectures informs these lectures. Therefore, we can argue that all workshops have more informal education characteristics in terms of their subjects. In addition, it can be said that these expressions directly affect or even limit the productions.

Thirdly, a review was made according to the facilitators, who are among the actors of the workshop. It can be said that the facilitators play a significant role in the formal and informal character of the workshop. The participants who attended the workshops organized by their course instructors stated that the workshop process had parallels with formal education. On the other hand, the fact that the facilitator is out of school makes the workshop more informal. However, it cannot be said that this is the only criterion. In this context, the academic title, age, and perhaps even gender of the facilitators affect the relationship with the participants. In summary, workshops gain formal and informal features according to the characteristics of the facilitators.

Fourthly, when the workshops are examined according to the organizer; although the organization of all workshops by a formal institution such as a university affected the character of the workshops, the inability to make a comparison between different workshops prevented reaching a clear finding.

Finally, one can say that the workshops, which are considered as duration and venue, have informal characteristics in terms of duration. Some of the participants said that the start and end times of the workshops were changed, and the duration was extended. In this direction, it is known that such flexibility does not exist in formal education, which covers a period of 14 weeks. In other words, the fact that they have a more flexible structure in terms of time brings informal features to the workshops. In addition, it can be said that the workshops held in limited times make the participants more dynamic and more productive. In this sense, the prolongation of the time generally causes students/participants to get bored with the study.

Workshops held online within the scope of COVID-19 measures were evaluated positively by the participants. The participants stated that participating in the workshops from their own home environment caused them to work more comfortably. From these statements, it can be said that the fact that the participants have moved away from formal working environments such as ateliers and classrooms reflect positively. Despite all these positive statements by the participants, online workshops are disadvantageous in some respects. According to Milovanović et al. (2020, p. 11) "the main characteristic of workshop involvement is certainly teamwork, specifically focused on collaborative practice and a think back approach". However, the fact that facilitator(s) and participants are not in the same environment reduces this cooperation and collective working environment in online workshops. This is one of the negative features of online workshops. Another negative situation is the decrease in communication between the facilitator and the participant in online workshops. Again, Milovanović et al. (2020) stated that one-to-one, one-to-many, many-to-one and many-to-many communication modes in the workshop create the workshop learning environment. However, it is not possible to see all of these communication modes in online workshops.

To sum up, it is seen that the workshops, which place them directly in an informal context in the current studies in the field of design, can be placed in different positions according to the characteristics that Ciravoğlu (2013) classifies. In other words, the different features of the

workshop can be evaluated in formal or informal contexts. This is also valid for design studio education, which is evaluated within a formal framework, or for other types of education. In this respect, we can argue that contemporary education models contain both formal and informal features and the discipline should be supported by both formal and informal education.

**Notes:**
"This article, written within the scope of the Design Pedagogy course given by Assist. Prof. Koray Gelmez in ITU 2020-2021 Spring Term, was presented as a verbal notice by the responsible author at the 5th ICMEK International Congress on Interior Architecture Education. The extended abstract presented within the scope of the congress has been converted into an article with the contributions of Koray Gelmez."

**References:**
Avcı, O. (2019). Enformel Eğitimin Formelliği Üzerine. *Betonart*, 63, 30-33.

Bartkus, K. R., Nemelka, B., Nemelka, M., & Gardner, P. (2012). Clarifying The Meaning of Extracurricular Activity: A Literature Review of Definitions. *American Journal of Business Education*, 5(6), 693.
doi: 10.19030/ajbe.v5i6.7391

Brooks-Harris, J. E., Stock-Ward, S. R. (1999). *Workshops: Designing and Facilitating Experiential Learning*. SAGE Publications Ltd.: Thousand Oaks, CA, USA.

Chuang, S. (2021). The Applications of Constructivist Learning Theory and Social Learning Theory on Adult Continuous Development. *Performance Improvement*, 60(3), 6–14. doi:10.1002/pfi.21963

Ciravoğlu, A. (2003). Mimari Tasarım Eğitiminde Formel ve Enformel Çalışmalar Üzerine. *Yapı Dergisi*, 257, 43-47.

Ciravoğlu, A. (2019). Mimarlık Eğitiminin İçi-Dışı… In G.Özorhon, G. Sarman, I. Bayraktar (Eds.), *+10 İstanbul Araştırma Çalıştayları 2019*, (pp. 17-23). Istanbul, Ozyegin University Publication.

Coombs, P. H. & Ahmed, M. (1980). *Attacking Rural Poverty: How Noriformal Education Can Help*. Baltimore: Johns Hopkins University Press.

Hacihasanoglu, O. (2022). +10 İstanbul Research Workshops 2019. *Journal of Design Studio*, 4 (1) , 113-115 .
doi: 10.46474/jds.1139785

La Bella, T. J. (1976). *Nonformal Education and Social Change in Latin America.* Los Angeles: UCLA Latin American Center.

La Bella, T. J. (1982). *Formal, Nonformal and Informal Education: A Holistic Perspective on Lifelong Learning*. Los Angeles: UCLA Latin American Center.

Milovanović, A., Kostić, M., Zorić, A., Đorđević, A., Pešić, M., Bugarski, J., Todorović, D., Sokolović, N. & Josifovski, A. (2020). Transferring COVID-19 challenges into learning potentials: online workshops in architectural education. *Sustainability*, 12(17), 7024. doi: 10.3390/su12177024

Roulin, N., Bangerter, A. (2013). Students' Use of Extra-curricular Activities for Positional Advantage in Competitive Job Markets. *Journal of Education and Work*, 26(1), 21-47. doi: 10.1080/13639080.2011.623122

Ruohui, L. (2016). *The Exploration of Modes for College Design Workshops Based on Cloud Platform*. In J. E. Guerrero (Ed.), In 2016 Eighth International Conference on Measuring Technology and Mechatronics Automation (pp. 778-781). doi: 10.1109/ICMTMA.2016.189

Schenkman, A. S. (1955). The Workshop Idea Exported. *The Journal of Higher Education*, 26(6), 305-341.

URL-1, *Bahar Atölyeleri* (2021, 02, 05). Retrieved 08, 18, 2022, Retrieved from https://icmim.iku.edu.tr/tr/haberler/2021-bahar-atolyeleri

Yanpar, Z., D. (2018). *The Relation Between Extracurricular Design Workshops and The Educational and Professional Developments of Industrial Design Students* [Unpublished master thesis). Middle East Technical University.

Yürekli, İ., Yürekli, H. (2004). Mimari Tasarım Eğitiminde Enformellik. *İTÜ Dergisi/a*, 3(1), 53-62.

Journal of
**Design Studio**
spi:2 "**ICMEK-5 Rethinking**" October 2022

# A Case Study on Online Design Workshop Experience: Gamification and Space

Derya Karadag
*Department of Interior Architecture, Faculty of Arts, Design and Architecture, FMV Isik University, Istanbul, Turkey*
Simge Gulbahar
*Department of Interior Architecture, Faculty of Arts, Design and Architecture, FMV Isik University, Istanbul, Turkey*
Betul Ozar
*Department of Interior Architecture, Faculty of Arts, Design and Architecture, FMV Isik University, Istanbul, Turkey*

Received: July 31st 2022, Revised: August 28th 2022, Accepted: September 7th 2022.
Refer: Karadag, D., Gulbahar, S., Ozar, B., (2022), A Case Study on Online Design Workshop Experience: Gamification and Space, Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 51-63,
D. Karadag ORCID: 0000-0002-8935-6403, S. Gulbahar ORCID: 0000-0002-0461-7628, B. Ozar ORCID: 0000-0003-1245-0044
DOI: 10.46474/jds.1151774 https://doi.org/10.46474/jds.1151774



**Abstract:** Design schools consist of three main axes; courses that provide knowledge in various fields of design, studio courses and internships. Besides, the indisputable fact is the importance of design competitions and informal workshops that feed the designer candidate to gain experience in different fields of the discipline. In addition, another importance of informal workshops is the contribution of researchers in this field to the development of design education. The effects and potentials of Information and Communication Technologies (ICTs) are also another area of research on design education, in particular design studio courses. The use of ICTs in the field of design education has led gamification to come to the fore as an ascending concept. A series of methodologies and tools have been developed, such as gamification, as well as the different kinds of Virtual Learning Environments to ensure the motivation of students and avoid the lack of attention in online courses. In this study, an online workshop, "Gamification and Space", is investigated as a case study. The contribution of the concept of gamification to design education has been evaluated in line with the observations and experiences gained. The data was gathered from the workshop presentations held on the last day and the final manuscripts of the workshops. The collected data was analyzed by the workshop coordination team, and classifications were made regarding the aspects of the gamification used during the workshop. In addition, it is aimed to discuss the potentials of ICTs in design courses. The observations show that the use of gamified elements has the potential to enrich instructional methods, especially when we consider online education, virtual learning environments and visual collaboration tools.

**Keywords:** Online workshop, Gamification, Interior design education, Informal learning environment, Game-based learning.

## 1. Introduction

The informal workshops are interaction-oriented platforms where students, moderators and instructors participate voluntarily. The most significant benefit to design education is that it provides experience in subjects beyond the limits of the curriculum and offers a kind of design education research environment. The workshops remove the limits of disciplinary education and provide an interdisciplinary atmosphere to be dissolved about a specific problem or theme and go beyond restrictions of curriculum. It also helps to create an environment that supports peer learning while embodying creative mental activity.

Being informal education areas, workshops became suitable for expanding the learning

environments of the participants with the help of today's Information and Communication Technologies (ICTs). In recent years, online platforms are in demand in order to conduct meetings, lectures due to the widespread use of ICTs in many fields. Furthermore, students are actively using digital interfaces in both formal and informal design studio environments to meet each other, to access educational materials and to produce projects. Regarding design education and design studio courses, ICTs stand out not only for being a communication and sharing platform, but also for its contribution to the developments of design thinking and methodologies. In this context, "gamification", which can be defined as 'using game components and game dynamics for a specific purpose' in non-game environments, has emerged as a popular phenomenon for instructional methods of design studio and has an effect to increase student motivation and augment the learning process.

In this research, "Gamification and Space" which is an informal online summer workshop with the participation of 11 workshop groups, 23 instructors and 49 students, is investigated as a case study. The workshop theme "Gamification and Space" has been selected to contribute to educational research in various design disciplines, with a particular focus on spatial design. The informal workshop themes not only help in limiting the problems related to the subject to be discussed in the working environment, but also form the main axis of the research to be obtained at the end of the process. For this reason, the results of the workshop were evaluated as the experiences of the students and the instructors, as well as the gamification aspects of workshop experiences.

The data gathered from the final day presentations and the final manuscripts of the workshops. These collected data were analyzed by the workshop coordination team, and classifications were made regarding the strategies used in the design education process by the concept of gamification. In addition, it was aimed to discuss the potentials of ICTs enabling online interaction between instructors and students. Accordingly, the findings were analyzed under three headings in line with the mentioned above experience types: student, instructor, and workshop.

## 2. Workshops as an Informal Learning Environment in Design Education

In interior architecture education, design studios are the backbone of the curriculum. The creative ideation and production process, which are established in studio education, becomes an atmosphere where intellectual sharing between students and course instructors are ensured. Due to the nature of the design process, students deal with complex problems and different areas of expertise. The design studio content includes different areas of expertise, but in some cases, it may not meet the criteria of interest, at an equal distance to each student. In addition, besides the limited perspective and evaluation process in curricular education, there is a need for the existence of different and free perspectives and design methods. In this respect, the workshops provide support for a collaborative working culture and a free workshop environment.

The workshops contribute to design education by creating an informal learning area (Figure 1). The workshop environment is defined as an experience and interaction-oriented platform

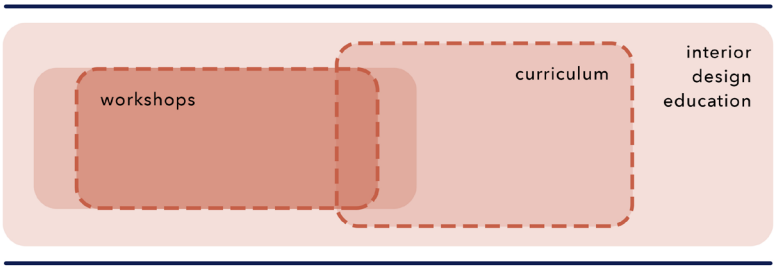


***Figure 1:*** *Relations of workshop and curriculum in the interior design education*

where students participate voluntarily, goes beyond formal education restrictions, and depends on the curriculum developed in line with measurement and evaluation systems (Ciravoğlu, 2003; Yürekli & Yürekli, 2004). The workshops allow restrictions of disciplinary education to be dissolved through a specific problem or theme as well as support peer learning and creativity as being educational tools developed to create an understanding strategy for defining and exploring design problems in a short period of time (Turgut & Cantürk, 2015).

Kılıç and Arabacıoğlu (2021) define workshops added to the course contents as a dynamic working environment with the feature of continuous interaction between the instructor and the student. The use of the knowledge and methods obtained from informal workshops, within the 14-week design studio, in order to enable the student to gain experience in the determined subjects, gains importance in terms of the connection that design education will establish with current design issues and innovative technologies.

### 2.1. Information and Communication Technologies (ICTs) in Collaborative Design Workshop Environments

The characteristics of the working environment have a significant impact on the interactions and social presence in the design studio. By the development of the Information and Communication Technologies (ICTs) in the 21st Century, digital tools and virtual reality provide a major contribution to the studio structure and content of design schools by creating new learning environments. Studies investigating the use and contributions of technological innovations in design education and design studio are becoming widespread. These studies are usually carried out experimentally within the scope of informal workshops or design studio courses.

Gül et al. (2008), have developed and experienced a course named "Designing Virtual Worlds", and their experiences shows that 3D virtual worlds have the potential to make a major contribution to design education as constructivist learning. Similarly, Liu (2017) has also proposed the use of virtual environments such as Second Life to enhance the limits of Virtual Learning Environment (VLE) which is mainly defined as a system for delivering learning materials to students via web.

Olmos (2006) has studied the potentials of the virtual learning environment in an introductory design course and mentions that the training model based on the use of virtual learning environment has proven to be an effective tool in the context of virtual design studio. However, the limitations of these studies are common; these experimental courses are non-repetitive experiences in the context of a single course and its scope. Peimani & Kamalipour (2021) mentions that the acceptance of online, blended and hybrid models for course delivery has accelerated the evolution of higher education due to the emergence of COVID-19 pandemic. In other words, after the emergence of Covid 19 pandemic, online design education has become widespread.

The instructors and students start using digital interfaces actively in both formal and informal studio environments. In this way, the number of applied research and shared experiences has increased in online collaborative design studio environments. Gogu & Kumar (2021) has conducted a study focusing on the social connectedness of design students and instructors in virtual design courses during the sudden shift that design schools in India had to make from traditional face to face classes to online classes. The most noteworthy result of the study is the need for practical research to find solutions for online design studios to enhance the students and instructors' social connectedness. Alawad (2021) has worked on online interior design studios to determine the efficient experiences to improve and ensure the quality of design education by using a VLE such as Blackboard. This study emphasizes the importance of creating an online studio culture. (Sadovets et al., 2022) underlines that the opportunities for the use of games in learning technologies have emerged and expanded due

to the global digital transformation of higher education.

It is an undeniable fact that all studies contribute to online design education from different fields, and publishing and sharing such experiences as research are of great importance. The effects of technology cause many significant developments in the structure of design studios. The use and spread of new approaches and methods has great potential to improve the quality of studio education. In addition to this, as a result of the widespread use of ICTs in many fields to gain the attention of researchers of different design disciplines, 'gamification' has emerged as a popular phenomenon that is used in learning processes.

### 2.2. Gamification of Learning and Instruction in Design Education

Koster (2005) defines "game" as a system in which players take a challenge defined by rules, interactivity, and feedback, that results in a significant outcome and has strong effects on players feelings. Kapp (2012) defines gamification as "a careful and considered application of game thinking to solving problems and encouraging learning using all the elements of games that are appropriate". Today, gamification finds use in training workers, educating students, solving problems, and creating new ideas and concepts in different fields ranging from business schools or government organizations to improving surgeon hand-eye coordination. Gamification of learning has an effect that increases student motivation and augments the learning process (Behl et al., 2022) which is a growing trend, and methods on how to use gamification in a non-game context need to be developed.

Mekler et al. (2013) emphasizes that "disassembling gamification into its components and implementing it in different non-game contexts, we may gain a deeper understanding of how gamification works and how it may be applied to solve real-world problems". To make a game which is motivational and exciting, game designers use game elements. Nah et al. (2014) identifies eight game design elements that are used broadly in the educational and learning contexts based on their review of the literature: points, levels and stages, badges, leaderboards, prizes and rewards, progress bars, storyline, and feedback. Werbach and Hunter (2012) defines game elements under three headlines.

- game components such as achievements, avatars, badges, levels, points,
- game dynamics such as constraints, emotions, narrative, relationships,
- game mechanics such as challenges, chance, competition, feedback, rewards and win states.

A game system consists of a set of interconnected elements that occur within the "space" of the game, and includes actions and limitations integrated with the game elements. From the instructional point of view, the players of the game are actually the learners. The "space" of the games is an abstraction of reality, and the game elements form the essence of a selected situation. To create a game-based design workshop, the instructors can use a system in which learners engage an abstract challenge, defined by rules, interactivity, and feedback that results in an outcome revealing an emotional reaction such as motivation and excitement.

Kapp (2012) underlines that the gamification process is more than just a superficial game element such as prizes, points, and badges; but to set clear and specific goals and a set of rules to guide students. In addition to this, using time as a motivator, providing as much feedback as possible, storytelling and allowing failure can create efficient learning experiences. According to Kapp's (2012) research based on the findings from the various meta-analysis studies, the effective way to use gamification for educational purposes can be summarized as follows:

- Targeting specific content and precisely defining goals
- Providing information and feedback for students to understand
- Providing instructional support to help students understand how to use the game

- Involving instructional designers in the educational game development process
- The rewarding game elements such as points and badges can have intrinsic value if it provides feedback to the player/learner

Roy et al. (2021) have used gamification design methodology and its implementation for creating awareness of ancient cultural heritage, and they concluded that gamification is an efficient and powerful educational tool which is also helpful to increase student awareness, motivation, participation, and community building.

In a design studio, students experience the design process within the framework of a design problem. The short form of the design thinking process can be articulated in five steps or phases: empathize, define, ideate, prototype and test. Aşkın (2019) worked on the potentials of gamification during the design process of interior architecture education, and the study shows that gamified method increased the students' motivation and was used as a tool in the problem determination process. It is very important to remake these studies in various ways and to ensure that the advantages of gamification in the field of education are also used in the design studio. For this purpose, the main theme of the summer workshop held at Işık University in 2021 was determined as "gamification and space".

## 3. Case Study: Gamification and Space Workshop

For this research, an informal and online workshop which was organized with the theme of "Gamification and Space", hosted by Işık University in the Department of Interior Architecture and Environmental Design, between 26th-30th July 2021 is investigated as a case study. The framework of the study is designed as an informal educational environment, which is a voluntary learning environment where grading is not used as an evaluation and success criterion.

Within the scope of the theme of gamification, a call for the instructors and researchers, who wanted to organize a workshop group in the context of "gamification and space" theme, was made for the workshop with certain questions as listed below:

- What kind of interfaces can be developed to increase the interaction between the designer-user-space with gamification?
- How can the perception of the city and the recording of historical processes be made accessible to everyone in an easy and lively way?
- How can online and face to face courses and design research be enriched by using gamification methods?
- What kind of potential does the interaction between gamification elements and spatial elements have?
- What can be designed based on "gamification" in order to understand and create the space?

After the call for the workshop groups, the timeline of the workshop started with the applications of the instructors. 23 workshop instructors contributed to the workshop with 11 different workshop themes. 53 students applied as participants and 49 completed the workshop. It should be underlined that only 8 of them were included in this study because data could not be obtained from the other workshops. Among 8 workshop groups, 5 workshops (W.01, W.02, W.04, W.05, W.08) were scheduled weekly, and 3 workshops (W.03, W.06, W.07) were scheduled as single-day. Students who participated in the weekly workshops were allowed to attend single-day workshops at the same time, upon their request. On the first day of the workshop, two seminars titled "Gamification and Space" and "Gamification for the Conservation of Historical Sites and Awareness" were held. On the last day of the workshop week, the process and the results of the workshops were shared by the instructors and participants (Figure 2).

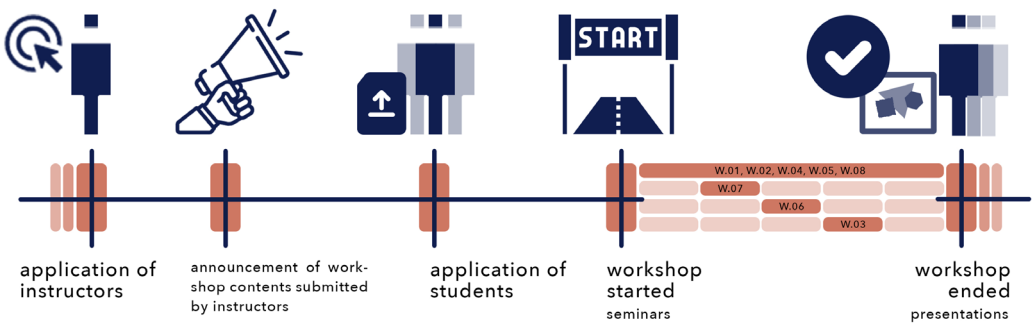


***Figure 2:*** *Timeline of gamification and space workshop*

The themes of the workshops addressed by the academics who responded to the call in the context of gamification and space consisted of a wide range of fields from archeology and the preservation of historical sites, user-oriented design, urban design, and space-body studies. The diversity of the workshop subjects and approaches demonstrated that the concept of gamification has a great potential on design education and design thinking. In the framework of the workshop timeline, the instructors' applications were received firsthand, after that each workshop title was determined. Following this process, the call for participation was launched by targeting to receive students' applications.

On Blackboard Platform, which is a well-known Virtual Learning Environment system used by most universities in online education, collaboration sessions were opened for each workshop group. Besides the workshop groups support Blackboard collaboration systems by some other virtual meeting and working environments such as Miro or Zoom when needed.

### 3.1 Data Collection

Data for the evaluation of the workshops were collected from the following sources:

- The final presentations made by the instructors and the participant students,
- The workshop evaluation texts.

The groups that completed the workshop to the end and submitted full evaluation texts were included in the evaluation process. Therefore, eight workshop groups were included in the evaluation of the research.

### 3.2 Analysis

As stated in the literature, our main aim is to reveal and share the potential of informal workshops on the contribution of education, technology use and gamification to design education, with the evaluations made under three main headings: student experiences, instructor experiences and workshop experiences. The results of the first data collection procedure on course contents were analyzed using qualitative research methods. In particular, the coding method as described by Strauss and Corbin (1990) was followed for qualitative data analysis. This way we were able to analyze the student experiences and instructor experiences in the context of informal workshops, the use of online tools and the contribution of the gamification concept.

Through this conceptualization, the representations and gamification aspects in different workshop groups were compared with each other, and similar ones were collected under the same category. Each category was, then, defined as a separate theme, and in-depth analysis was made under these themes. The definitions and classifications have been prepared by using Kapp (2012), Nah et al. (2014) and Werbach&Hunter (2012).

Three distinct approaches have been identified that have emerged specifically on the concept of gamification. These three different approaches, which we categorize as gamification aspects of workshop experiences, are as follows (Table 1).

***Table 1:*** *Categorisation of gamification aspects of workshop experiences*

| gamification of the design process | gamification of the learning process | using the concept of gamification as a design theme |
|---|---|---|
| Using game elements and gamification techniques to create a frame and methodology for the design thinking process. | Using game elements and gamification techniques for teaching a specific subject to student or raising their awareness on a concept. | Designing a product or space that has game elements and gamification mechanics. |

- Gamification of Design Process
- Gamification of Learning Process
- Using the concept of gamification as a design theme.

By evaluating the different gamification methods used by the instructors separately, we were able to discuss the potentials of the game elements and gamification methods in the context of design studio education under the different gamification aspects of workshop experiences.

## 4. Findings

### 4.1 Student Experiences

The experiences of the participant students were evaluated both socially and theoretically. The fact that the workshop provided an informal experience and was based on volunteerism required the participant students to demonstrate their self-discipline. In addition, the instructors stated that they observed that the informal working environment helped students feel freer and behave comfortably during the design process.

The online structure of the workshop affects the social interactions of the workshop participants. During the workshop, students benefited from the opportunities offered by the online environment. For this reason, students both learned to produce with digital tools and tried to solve the problem of transferring the products they produced with physical tools to an online environment. Thus, they gained experience in combining different design and visualization tools.

The approach of the workshop groups to the concept of gamification from different perspectives contributed to the formation of different theoretical foundations. Thus, the participants were given the opportunity to experience different ways of thinking and producing by obscuring the boundaries of their own disciplines.

In the one-day workshops, working areas such as performance art and computational thinking were carried to the design processes, thus expanding the perspectives of the participants. Characteristics which are positive impact on participants of workshop are summarized below:

- Gaining new technical knowledge,
- Presentation skills through virtual environment and digital interfaces,
- Interdisciplinary criticism
- Teamwork,
- Experience in different ways of thinking and producing,
- Expanding the viewpoints on performance art, computational thinking, and motivation to choose the content they are interested in.

However, some difficulties of being online in the social context have created handicaps for communication. In one workshop, being online created inconsistencies in workshop participation for some participants. For this reason, the workshop group study was discontinued.

### 4.2 Instructor Experiences

Workshop groups have instructional processes designed by the instructors based on the concept of gamification. The instructors put the concept of gamification and game elements in their instructional process within their discipline or area of expertise. Additionally, they work with students who want to improve their skills in the instructors' area of expertise.

On the closing day of the workshop, the works produced by workshop groups were presented by the instructors and students to all participants. Thus, instructors living in different cities had an opportunity to come together and share their knowledge. The establishment of these sharing environments is important in terms of providing potential for future interdisciplinary scientific studies. There are positive impacts of the workshop on instructors such as meeting a wide range of student profiles who have interests; creating a communication platform among instructors who are living in different locations; and increasing sharing knowledge about a particular topic.

### 4.3 Workshop experiences

The fact that a workshop is based on a specific theme enables all participants of it to approach the same subject from different perspectives. In terms of workshop experiences, it was examined in which aspects of the concept of "gamification" was included in the design of the instructional structure of the workshop groups. In this context, workshop presentations and manuscripts demonstrated that gamification differs in terms of the chosen instructional method. As a result of the data gathered from the manuscripts, the workshop groups using similar approaches and methods were divided into three separate categories as gamification aspects of workshop experiences; gamification for the design process, gamification for the learning process; using the concept of gamification as a design theme. Under the framework of the analysis of the workshop texts, the context of differing gamification approaches, and the effects of the gamification methods on students, as well as included types of the game elements in the instructional process are discussed. The characteristics and potentials of these three categories were analyzed in depth and the following results emerged (Table 2)

***Table 2:*** *Gamification aspects of workshop experiences*[1]

| workshop no. | gamification aspects | instructional strategies | gamification elements | outcomes |
|---|---|---|---|---|
| W.01 | gamification of the design process | analyzing sample, organizing, elaboration. | rules, do over, feedback | systematization of the process, increase motivation, creating a base for the design product. |
| W.02 | gamification of the learning process | theoretical presentation, discussion, case study, visualization, mind mapping, checklist, repetition. | storytelling, instant feedback, levels, reward structures, leader board, goals, replay, role play, badges. | facilitating the use and transfer of knowledge, increasing the visibility and perceptibility of knowledge. |
| W.03 | gamification of the learning process | discussion, asking questions, speculating, conceptualization. | cooperation | promoting collectivity and interactivity, creation of simultaneously shaped performance products. |
| W.04 | gamification of the design process | discussion, conceptualization, representation. | storytelling cooperation | supporting holistic thinking, creating different perspectives |
| W.05 | gamification of the design process | case study, analyzing sample, encouraging participation, group moderation. | role play, rules, goals, points, badges, leader board, characters. | increase motivation and excitement, facilitating compromise and cooperation with gamification elements |
| W.06 | gamification of the learning process | theoretical presentation, discussion, observation, sketch. | goals, rules. | criticizing, evaluating, transforming the current situation, Increasing awareness of ergonomic design. |
| W.07 | gamification of the design process | inductive method, theoretical presentation, analyzing sample. | goals, rules. | strengthening interdisciplinary interaction, supporting the holistic thinking, learning and development process. |
| W.08 | using the concept of gamification as a design theme | inductive method, case study, group moderation, conceptualization. | role play, storytelling, feedback, rules. | using alternative design and presentation tools, increasing experience and interaction through the design product. |

[1] The definitions and classifications in the table have been prepared by using Kapp (2012), Nah et al. (2014) and Werbach&Hunter (2012).

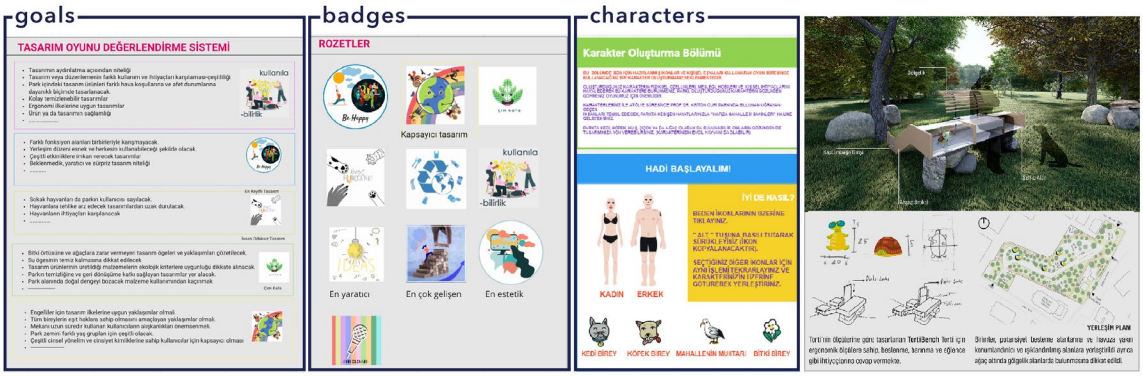


***Figure 3:*** *Gamification elements used by W.05 and sample student project*

Four workshop groups, (W.01, W.04, W.05, W.07) classified as gamification for the design process used game elements and gamification techniques to create a frame and methodology for the design thinking process to motivate creativity and ideation. The instructional process designed with this approach has been workshops that include product design, spatial narrative, practices for spatial perception, and conceptual design.

Considering the characteristics of the concept of gamification, it has been beneficial for the participants to realize the design process is more enjoyable and motivated in workshops where a product is actually designed. In addition, the instructional process has included experiences that will increase empathy with the user through role-playing elements. In the workshops on spatial narrative and conceptual design, in-group integration was maintained by the participants through graphic representation methods and gamification.

In the context of gamification's contribution to the design studio, it is concluded that using the gamification for the design process has the following potential.

- Systematization of the design process,
- Creating a framework for the design process and product,
- Supporting holistic thinking,
- Creating different perspectives,
- Facilitating compromise and cooperation between students with gamification elements,
- Strengthening interdisciplinary interaction,
- Supporting the learning and development process.

To create a framework by gamification for the design process, rules, badges, goals, points, leaderboards, feedback, do over and characters is used as game elements as well as storytelling, cooperation and role playing (Figure 3)

Workshop groups (W.02, W.03, W.06) under the category of gamification for the learning process, are investigated in order to find out how the process of workshop contributes to the learning activity of students. Three workshop groups used game elements and gamification techniques for a specific subject such as archeological areas and conservation to students or raising their awareness on a concept. Thus, gamification themes were used to become a holistic framework for the accurate and analytical transfer of information. In this way, learning ability is supported to explore and inhale the dimensions of space. In these workshop groups, various suggestions were presented on the use of gamification elements for the transfer and reproduction of a theoretical knowledge.

In the context of gamification's contribution to the design education, it is concluded that using the gamification for the learning process has the following potential.
- Facilitating the use and transfer of knowledge,
- Increasing the visibility and perceptibility of knowledge,

- Promoting collectivity and interactivity, creation of simultaneously shaped performance products.

To create a framework by gamification for the learning process, storytelling, instant feedback, levels, reward structures, leaderboards, goals, replay, role playing, badges, cooperation and rules is used as game elements.

Workshop group (W.08) was using the concept of gamification as a design theme to design a product for a public space. The expectations from the students were to design a product for a public space with game elements and gamification mechanics. Concept of gamification ensured that design products were creatively produced as original pieces.

In the workshop where the design product was gamified, the participants created a requirement list suitable for their own scenario. In this way, the user-space relationship was strengthened, and the ground was prepared for cooperation.
As seen from the results of workshop experiences which are categorized as gamification for the design process, using the concept of gamification as a design theme emerged as a process-oriented approach. Continuing the interaction of the design product with the user through the concept of gamification offered a different method proposal.

In the context of gamification's contribution to the design education, it is concluded that using the gamification as a design theme has the following potential.

- Using alternative design and presentation tools,
- Increasing experience and interaction through the design product.

To create a framework by using the gamification as a design theme, role playing, storytelling, feedback and rules is used as game elements as well as the inductive method, case study, group moderation and conceptualization for instructional strategies.

## 4. Discussion & Conclusion

In the study, the potential contributions of the concept of gamification to design education were evaluated in line with the observations and experiences achieved during the workshop. Besides, the informal structure of the workshop and the current potentials of ICTs that allow online interaction were discussed.

In line with the previous studies, continuation of the workshop in an informal environment provided the positive effects as it has been observed that the level of knowledge and experience of the students has increased with different approaches of design disciplines in a more independent and creative environment.

The ICTs used in the workshop groups were varied throughout the workshop process. The Blackboard Platform was used as a well-known Virtual Learning Environment in the beginning of the online studio process. After that, in line with the requirements of the workshops, instructors added online meeting interfaces such as Zoom or online whiteboards for visual collaboration such as Miro to support their studio works. Besides, it has been observed that workshops which are supported by computer-aided design tools and methodologies contribute to enriching the informal learning.

The fact that the workshop was held online has a positive impact in terms of facilitating the meeting of coordinators and students from different cities. However, there is a risk of disruption in the progress of individual or group work when the session time schedule is not followed. It is necessary to develop methods to strengthen the communication between the students and the instructors in online platforms. On this basis, we conclude that it's important to regulate the instructional methods for online design education with the data obtained from applied research revealed by the evaluation of various design courses and informal workshop results. Future research on online design education might extend the use of ICTs and computer-aided design technologies in this context as well as a comparative analysis between online and face-to-face learning environments is necessary.

The literature review demonstrates that the theme of gamification was mostly used to motivate the instructional process. Besides, using gamified elements in the learning process has a great potential especially when we consider online education, virtual learning environments and visual collaboration tools. The inclusion of gamification in design education and studio courses with various methods gains importance in this context. Within the scope of the "Gamification and Space" workshop, game elements and gamification methodologies are used for the instructional process of workshop groups in an informal environment.

The findings of this study can be understood as using various online tools and interfaces in a design studio environment with the help of gamified strategies has promising potentials for the development of online design education. Eight workshop groups have dealt with the gamification theme through different approaches. The concept of gamification is observed to be mainly associated with processes considering the instructional and design methods of the workshop groups. In conclusion, it would appear that by analyzing the instructional approaches of the groups in comparison with each other, three separate categories of gamification aspects of workshop experiences emerged: gamification of design process, gamification of learning process and using gamification as a design theme.

Overall, it might be concluded by underlining that our results demonstrate a strong effect of game elements and gamification on the design thinking process and design process of workshop groups. Four out of eight groups use game elements to create a framework for the design process to increase creativity and motivation. From the results, it is clear that in the workshop groups using gamification for the design process, the game elements that form a design studio framework were role-playing, storytelling, rules and goals, while points, badges and leaderboards motivated peer assessment and increased the interaction and excitement about the design process.

Three of eight groups use gamification for the learning process during the theoretical presentations and discussions as well as analyzing samples and encouraging participation. In these workshops, game elements such as storytelling, role-playing and instant feedback increased visibility and perceptibility of theoretical knowledge, while goals and rules strengthened the interdisciplinary interaction.

One of the workshop groups used the concept of gamification as a design theme. To compose creative experiences and increase interaction through the design product, the workshop group used role-playing, storytelling, feedback, and rules as game elements. As revealed in Mekler et al (2013)'s research, the results of the workshops also showed that the use of the gamification context for instructional purposes can also be the use of some of the game elements partially.

In conclusion, the gamification concept seems to improve various design education and studio methodologies. Future studies might fruitfully explore this issue further by organizing informal design workshops in the context of gamification or fourteen-week design courses with this framework. In addition to this, the methodology has potential for constructing informal activities that feed theoretical lessons as it offers the opportunity to experience theoretical knowledge in applied fields. Comparative analysis between the online and physical environment of the workshops is necessarily a topic for future studies in order to explore their contributions to the educational environment. Further studies should investigate the development of digital interfaces suitable for the design education. It is especially important that the interfaces provide interactivity/synchronization and have a customizable interface, supporting the creativity of both the instructors and the students.

**Notes:**
1. This study has been presented with the title of "Online Workshop Experience As An Informal Learning Environment: Gamification And Space" as an extended abstract at the İÇMEK 5th Congress in June 2022.

**Acknowledgements:**
The authors would like to thank all instructors and all participants of the Gamification and Space Workshop.

**References:**
Alawad, A. (2021). Evaluating Online Learning Practice in the Interior Design Studio. *International Journal of Art & Design Education*, 40(3), 526-542.

Aşkın, G. D. (2019). Gamification of design process in interior architecture education: Who? with whom? where? how?. In SHS Web of Conferences (Vol. 66, p. 01040). EDP Sciences.

Behl, A., Jayawardena, N., Pereira, V., Islam, N., Giudice, M. D., & Choudrie, J. (2022). Gamification and e-learning for young learners: A systematic literature review, bibliometric analysis, and future research agenda. *Technological Forecasting and Social Change*, 176, 121445. https://doi.org/10.1016/j.techfore.2021.121445

Ciravoğlu, A. (2003). "Mimari Tasarım Eğitiminde Formel ve Enformel Çalışmalar Üzerine", *Yapı Dergisi*, sayı:257, s. 43-47.

Gül, L.F., Gu, N., & Williams, A. (2008). Virtual worlds as a constructivist learning platform: evaluations of 3D virtual worlds on design teaching and learning. *ITcon*, Vol. 13, pg. 578-593.

Gogu, C. V., & Kumar, J. (2021). Social Connectedness in Online versus Face-to-Face Design Education: A comparative study in India. *In Design for Tomorrow*, Volume 2 (pp. 407-416). Springer, Singapore.

Kapp, K. M. (2012). The gamification of learning and instruction: Game-based methods and strategies for training and education. Pfeiffer Wiley, San Francisco.

Kılıç, S. and Arabacıoğlu, B. C. (2021). Lisans Düzeyinde Uzaktan Eğitim ile Gerçekleştirilen Çalıştay: Temel Tasarım Dersinde Örüntüye Dayalı Parametrik Model Kullanımı. *Modular Journal*, 4(2), 131-151.

Koster, R. (2005). *A theory of fun for game design*. Scottsdale, AZ: Paraglyph Press, p. 34.

Liu, Z. (2017). Exploring the use of virtual environment for international creative education (art & design).2017 IEEE 6th International Conference on Teaching, Assessment, and Learning for Engineering (TALE),414-419. IEEE. doi: 10.1109/TALE.2017.8252371

Mekler, E. D., Brühlmann, F., Opwis, K., & Tuch, A. N. (2013). Disassembling gamification: the effects of points and meaning on user motivation and performance. In CHI '13 extended abstracts on human factors in computing systems. 1137-1142.

Nah, F.FH., Zeng, Q., Telaprolu, V.R., Ayyappa, A.P., Eschenbrenner, B. (2014). Gamification of Education: A Review of Literature. In: Nah, F.FH. (eds) HCI in Business. HCIB 2014. Lecture Notes in Computer Science, vol 8527. Springer, Cham. https://doi.org/10.1007/978-3-319-07293-7_39

Olmos, F. (2006). A training model to develop design skills in the virtual design studio. *WIT Transactions on Information and Communication Technologies*, 36.

Peimani, N., & Kamalipour, H. (2021). Online Education in the Post COVID-19 Era: Students' Perception and Learning Experience. *Education Sciences*, 11(10), 633.

Roy, S., Singh, P. P., & Padun, A. (2021). Game-based learning for the awareness of Culture & Tradition: An exploratory case study on the Indigenous Naga Tribe. *Design for Tomorrow*, Volume 2, 293–304. https://doi.org/10.1007/978-981-16-0119-4_24

Sadovets, O., Martynyuk, O., Orlovska, O., Lysak, H., Korol, S., & Zembytska, M. (2022). Gamification in the informal learning space of higher education (in the context of the digital transformation of education). *Postmodern Openings*, 13(1), 330–350. https://doi.org/10.18662/po/13.1/399

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research*. London: Sage publications.

Turgut, H., & Cantürk, E. (2015). Design Workshops as a tool for informal architectural education. *Open House International*, 40(2), 88–95. https://doi.org/10.1108/ohi-02-2015-b0012

Werbach, K., Hunter, D. (2012). *For the Win: How Game Thinking Can Revolutionize Your Business*. Wharton Digital Press, Philadelphia.

Yürekli, İ., Yürekli, H., (2004). "Mimari Tasarım Eğitiminde Enformellik", *İTÜ Dergisi/A Mimarlık, Planlama, Tasarım*, 3(1), pp. 53-62.

Journal of
**Design Studio**
spi:2 "**ICMEK-5 Rethinking**" October 2022

# Using Video Games for Design Education: An Example of Developing Earthquake Scenarios for Home Environments

Merve Oksuz
*Department of Interior Architecture, Faculty of Architecture, Istanbul Technical University, Istanbul, Turkey (Corresponding author)*
Ozge Cordan
*Department of Interior Architecture, Faculty of Architecture, Istanbul Technical University, Istanbul, Turkey*

Received: August 4th 2022, Revised: August 29th 2022, Accepted: September 7th 2022.
Refer: Oksuz, M., Cordan, O., (2022), Using Video Games for Design Education: An Example of Developing Earthquake Scenarios for Home Environments, Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 65-73,
M. Oksuz ORCID: 0000-0002-1015-1545, O. Cordan ORCID: 0000-0002-9347-1746,
DOI: 10.46474/jds.1155669 https://doi.org/10.46474/jds.1155669



**Abstract:** The heart of interior design/architecture education is design studios. As a design-based graduate program, the main objective of the International Masters of Interior Architecture and Design Program-(IMIAD) in Istanbul Technical University Graduate School is to produce new disciplinary information and knowledge for design (Cordan, 2017). Additionally, the main objective of the Interior Architecture Project III, which is the third design studio blended with the thesis studies in the IMIAD Programme, is to guide students in their study based on research-based design approach. In this study, one example was presented to explain how the research-based design process conducted. This study was based on developing a game scenario for experiencing earthquakes in an experiential box. The earthquake scenario was developed for a bedroom situation at home environment by using virtual reality and gamification methods. The educational use of video games through serious games helps designers and design students understand real situations and raise public awareness by experiencing them in virtual environments. Besides, the study will fill the gap in the literature by using video games as an educational tool in design to develop scenarios for natural disasters such as earthquakes, the study will help educators for developing new ways of teaching and students for solving design issues using video games. Different scenarios can be developed for different natural disasters and cases in the future for further studies.

**Keywords:** Awareness, Design studio, Earthquake, Gamification, Video games

## Introduction

Earthquakes, which can happen anytime, anywhere, cause approximately 60 percent of the loss of lives due to disasters (Ministry of Interior Disaster and Emergency Management Presidency (AFAD), 2022). Turkey is in one of the most active earthquake zones, which requires a multidisciplinary study in architecture, design, planning, sociology and psychology because of its location. For this reason, it is essential to make our lifestyle responsive to disasters and create awareness about safe living. Being prepared for natural disasters is the most fundamental way to protect people against hazards and reduce possible risks.

Considering the panic effect of earthquakes in society, the main aims of this study are threefold: First, being aware and informed for reducing the risks occurring in natural disasters such as earthquakes in public; second, raising public awareness through video games, and third, using video games for educational purpose for design students and producing new design knowledge using video games. The declaration of 2021 as the Year of Disaster Education in Turkey promotes the feasibility of this study. Thus, this study focuses on using video games as educational tools to raise design students' awareness for reducing the risks occurring in natural disasters such as earthquakes. Accordingly, the research questions of the study are: 'What is the role of video games, specifically serious games, in design education for educating designers, design students and the public?' and 'How can we produce realistic design scenarios for reducing the risks of earthquakes using serious video games?' Thus, the study will fill a gap in the literature by using serious video games as an educational design tool to develop realistic scenarios for natural disasters, such as earthquakes.

**Video Games as an Education Tool**

The millennium and post-millennium generation's attention and interests have shifted towards digital resources which are shown as an alternative to primary sources that are accepted as reliable information and possible to interact with directly. As cited by Özer and Çatak (2021, 141) that "traditional instructional methods may be less effective in delivering ideas to the learners, whereas introducing gaming adds energy and interest to the learners" (Sardone & Devlin-Scherer 2016). Additionally, using games for educational purposes can be beneficial both for the learning and motivation of design students and for the public (Özer, 2021).

Video games have gained importance and captured the attention of educators to create new environments that permit learners to observe, experience, and interact individually or collectively. In other words, the computer games' ability to attract students' attention has become a subject of interest for educators in creating new learning, experiencing and interacting environments. Their aim is to create learning environments by using new interactive technologies that provide an opportunity to actively involve students in problem solving (Garris et al., 2002), to directly experience the physical properties of objects such as shape, size, distance, and time duration (Antonietti & Cantoia, 2000), and to engage with the task physically (Price & Rogers, 2004, as cited in Wrzesien & Raya, 2010). According to Ritterfeld & Weber (2005) "Video games also allow for interaction with and intelligent reactions by the system" (p. 401). Thus, this pedagogical approach also provided an opportunity to improve and practice new methods in the form and dissemination of knowledge (Varinlioğlu et al., 2019).

In this context, serious games, which are defined as video games in the literature, have also gained importance for educational purposes (Bayraktutan, 2009). Considering the process of gaining knowledge and skills, serious game types that serve different ages and groups can be classified in different categories. Preschool, K12 and Kids games designed to improve student's cognitive and problem-solving abilities, edugames also known as educational games or learning games specifically designed to focus on one component or topic of education. Social impact games or games for change aim to give a message about personal growth or emotion or political messages on a global scale (Özer, 2020). On the other hand, serious games have a primary objective of education rather than pure fun (Djaouti, et al., 2011). Serious games help players to discover through trial and error the purpose of the game and what to do, and to decode the game's rules. Thus, the game environment is explored, and the user gains experience with what the rules of the game allow them to do and how to react to inputs. As stated by Buratti et al (2021, 32) that "this explains the link between learning and technology." In other words, the player/user has an active role in the virtual world for gathering and processing data and dealing with the

decision-making processes and activities that lead the game scenario and narration processes.

**Methodology**

The earthquake scenario, which was experienced in a 3 m x 4 m (9 ft 10in x 13 ft) experiential box, was developed for a bedroom situation in a home environment by using virtual reality and gamification methods regarding serious video games. The minimum space required for room-scale setup was identified as 2 m x 1.5 m (6 ft 6 in x 5 ft).

The interaction with virtual reality (VR) objects takes place in the play area which also defines the virtual boundaries. Thus, a headset, a base station, and a controller that supports room-scale setup was used for experiencing the proposed design scenario. The developed game in CAD mode is based on the player/user experiencing the situations, which are before and during the earthquake, with one-on-one interaction. In the light of the information obtained from AFAD, the non-structural arrangements that should be made before the earthquake are provided for interior setting of the game. Thus, the player/user has change the interior setting with manipulation tools and rearrange the bedroom in accordance with the earthquake regulations.

**A Design Studio Case: Developing Earthquake Scenarios for Home Environments**

The heart of interior design/architecture education is design studios, which aim to find appropriate solutions to design problems at both graduate and undergraduate education levels. In other words, the studio is the main mechanism in teaching design for developing a student's skill (Tekeli, 2004, as cited in Birer, 2022). Due to ever-changing needs and facts, both locally and globally, educators need to imagine new learning and teaching methods for design education. As a design-based graduate program, the main objective of the International Masters of Interior Architecture and Design (IMIAD) Programme at Istanbul Technical University is to produce new disciplinary information and knowledge for design issues (Cordan, 2017). Additionally, the main objective of the Interior Architecture Project III course in the IMIAD graduate programme is to guide students in conducting their thesis study with an integrated design project through the research-based design, which "offer a creative environment not only for redefining and transferring architectural knowledge to avoid using existing clichés and templates but also a productive environment opens to the use of information from other disciplines" (Cordan, 2017, 17). Within this course, this study was based on the development of a serious game for experiencing an earthquake scenario, which was experienced in an experiential box, for a bedroom situation at home, for production of new experiential knowledge.

The hazards of earthquakes while inside the building, in the open area and/or in the vehicle show similarities and differences according to the locations. In this sense, it is possible to develop design scenarios with serious games for what can be done before, during and after the earthquakes. According to the proposed design scenario (1), the players from X and Y generations who constitute the user/player were chosen. As a game environment, the bedroom was used for considering the usage habits of those generations. In the experiential box, there is a bed, bedside table, cupboard, desk and chair as VR objects in the bedroom's interior (Figure 1).

***Figure 1:*** *Interiors of proposed bedroom (produced by Merve Öksüz)*

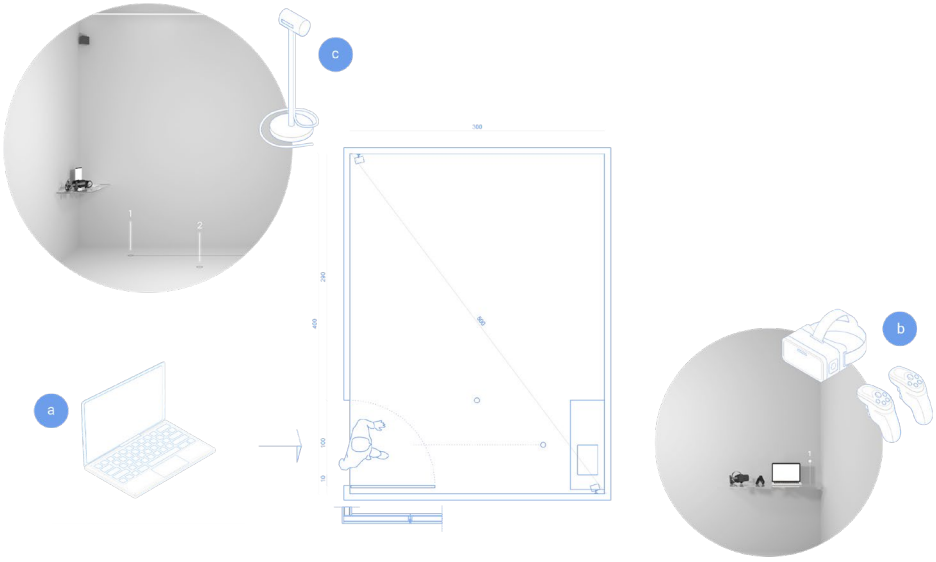


***Figure 2:*** *Technical equipment and their location in the experiential box (produced by Merve Öksüz)*

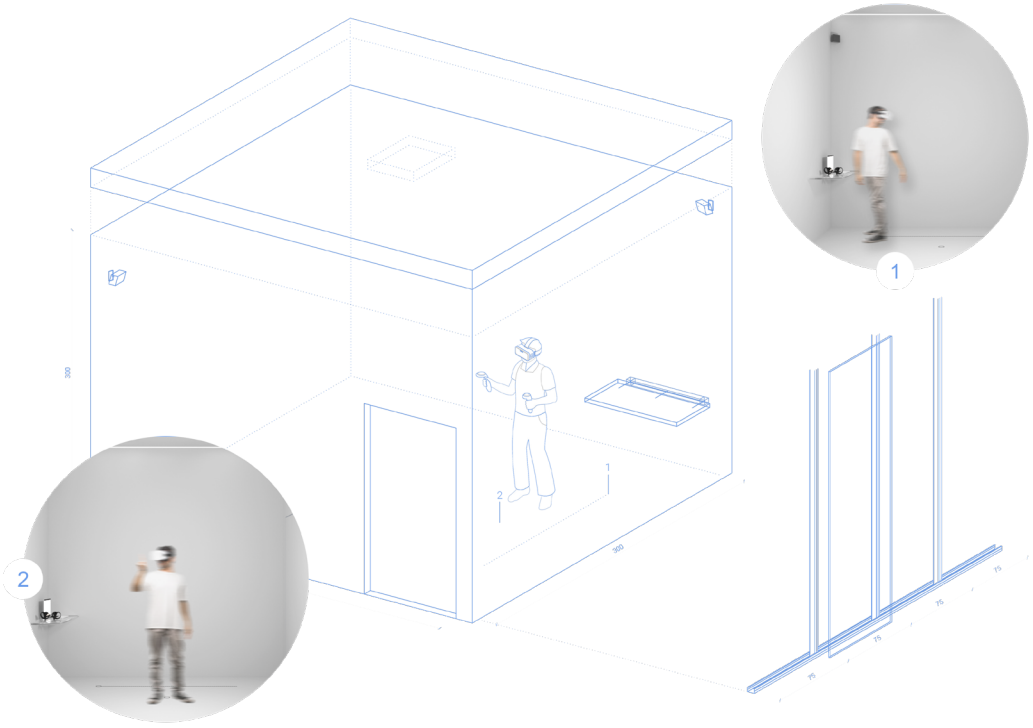


***Figure 3:*** *Starting point of the video game in the experiential box (produced by Merve Öksüz)*


***Figure 4:*** *Instructions for cabinet solutions against earthquake hazards (produced by Merve Öksüz)*

The first step of the experience was to access the technical equipment in the box (Figure 2) and then to reach the area determined as the starting point of the video game (Figure 3) with the guidance of the digital assistant that helped to carry out the tasks.

The user/player was provided to explore the space in order to be protected from the damages caused by non-structural components during an earthquake. In addition, the placement of daily life objects in the interior environment, what to do in case of an earthquake and solution suggestions were given to the user/player. Thus, users/players were informed that possible injuries and damages during an earthquake can be prevented by fixing or arranging furniture and other items. e.g.; beds should be away from windows that pose a hazard, such as broken glass. The user/player explores the space by moving around before the earthquake situation and reveals the defined problems by interacting with VR objects. For example, when the player interacts with the cabinet, the game informs the player about fixing the unsecured cabinet doors or offers options on how the furniture will be designed (Figure 4). Then, the player examines the best options to form the triangle of life and is also informed about key earthquake safety tips (URL-2, 2022).

While the game scenario provides a spatial arrangement for the triangle of life, which is the sheltered and protected area needed for a person's survival during an earthquake, it also presents information through boards about what to do before and during an earthquake situation (Figure 5 and 6).

**Discussion**

Designers can take a more active role in the process of raising public awareness of disasters and increasing their response capacity through sustainable and socially/culturally sensitive design solutions (Aman et al., 2022). In this sense, research-based design gains importance in terms of producing different forms of knowledge while solving problems on design issues (Cordan, 2017). In this study, an inquiry-based design approach over micro-learning steps (Tüker & Çatak, 2021) was used for problem solving: First, the game environment


***Figure 5:*** *Information for preventing hazards against earthquake (produced by Merve Öksüz)*


***Figure 6:*** *Information for solving problems against earthquake (produced by Merve Öksüz)*

(bedroom situation) was examined from the character's point of view. Second, the game is provided to inform the player/user about the game and the situation in CAD mode. Thus, the player/user is provided with the opportunity to improve the designs by changing the game environment, and manipulation tools or solutions are provided to rearrange the bedroom situation according to the earthquake.

Providing the player to manipulate the game environment with design tools increases the player's interaction with the game and facilitates the learning of knowledge through experience and involvement. In this sense, this study provides the users/players with the necessary information for survival of people through a bedroom scenario in case of an earthquake through serious video games as an experience and learning environment, and enables them to experience and internalize the information by offering various design suggestions. Additionally, the study enables design students to learn through experience and interaction in problem solving and increase their motivation. It also helps to generate new experiential knowledge through video games and to raise public awareness about natural disasters such as earthquakes.

**Conclusion**

This study has focused on serious video games used for educational purposes and to produce new experiential design knowledge through gamification methods and to raise public awareness. By analyzing the narrative and game mechanics of the serious game, a video game proposal was presented with virtual reality and gamification methods in an immersive experience. Thus, it was achieved that the educational use of video games through serious games helps designers and design students understand and experience real situations through video games. It can also be concluded that video games raise public awareness by experiencing them in virtual environments.

During the later stages of the study, the game proposal will be introduced to interior architecture students in a workshop to test the usability of the game and diversify its possible scenarios through experiments. Thus, the game

will be developed according to the obtained data from the design students. It is also intended to introduce the developed game to the AFAD, municipalities, and experts to develop public awareness strategies against natural disaster's hazards.

Considering the diversity of natural disasters, different scenarios can be developed for different cases that have already happened or may happen for different target groups. It is also critical to diversify scenario generation to see which gamification method will be effective for a particular target group. The fact that the exemplified case is limited to a home scenario, specifically for a bedroom situation, constitutes the limit of the study. The study results will help educators for developing new ways of teaching/learning and students for solving design issues using video games through experience and interaction. In addition, it will help authorities to find better ways to raise public awareness for natural disasters such as earthquakes.

**Notes:**
(1) This Project was proposed by Merve Öksüz as an IMIAD student under the supervisor of the Assoc. Prof. Dr. Özge Cordan as thesis instructor in the Interior Architecture III course in the fall semester of 2020-2021 academic year.

**Acknowledgement:**
We would like to thank the organizing committee of the ICMEK5th Congress.

**References:**
Aman, D. D., Güler, A. C., Ganic Sağlam, N., Tekçe, I., Tunç, H., Hacıhasanoğlu, O. (2022). Disaster Awareness and Education Center-Park Design: Investigation of Outdoor Spaces on Graduation Project of Architecture Students, *Journal of Design Studio*, spi:1 "Landscape Research", 19–33.

Antonietti, A., Cantoia, M. (2000). To See a Painting versus to Walk in a Painting: An Experiment on Sense-making through Virtual Reality, *Computers & Education*, 34, 213–223.

Binark, M., Bayraktutan-Sütcü, G., Fidaner, I. B. (2009). Dijital Oyun Rehberi - Oyun Tasarımı, Türler ve Oyuncu. Kalkedon.

Birer, E. (2022). Critical Reading in Architectural Education, *Journal of Design Studio*, 4 (1), 21-37.

Buratti, G., Costa, F., Rossi, M. (2021). An Educational Path on Universal Design. Video Games as Learning Tools. In Ö. Cordan, D. A. Dinçay, Ç. Y. Toker, E. B. Öksüz & S. Semizoğlu (Eds.) Game and Design Education: Proceedings of PUDCAD 2020 (pp. 21-34). Springer.

Cordan, Ö. (2017). Research-based Design: IMIAD Design Studios, *International Journal of Design Education*, 11(3), 15-27.

Garris, R., Ahlers, R., Driskall, J. E. (2002). Games, Motivation and Learning: A Research and Practice Model, *Simulation & Gaming*, 33(4), 441–467.

Özer, P., Çatak, G. (2021). Using Board Games as a Method for Improving Awareness and Empathy in Inclusive Design: PUDCAD Game Case Study. In Ö. Cordan, D. A. Dinçay, Ç. Y. Toker, E. B. Öksüz & S. Semizoğlu (Eds.) Game and Design Education: Proceedings of PUDCAD 2020 (pp. 133-142). Springer.

Özer, P. (2020). Using Video Games To Teach Inclusıve Design Principles In Design Education: PUDCAD Case Study [Unpublished master's thesis]. Bahçeşehir University, İstanbul.

Price, S., Rogers, Y. (2004). Let's Get Physical: The Learning Benefits of Interacting in Digitally Augmented Physical Spaces, *Computers & Education*, 43, 137–151.

Ritterfeld, U., Weber, R. (2005). Video Games for Entertainment and Education. Playing video games: Motives, responses, and consequences (pp. 399–413). Lawrence Erlbaum Associates Publishers.

Sardone, N. B., Devlin-Scherer, R. (2016). Let the (Board) Games Begin: Creative Ways to Enhance Teaching and Learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 89(6), 215–222.

Tekeli, İ., (2014). Mimarlık Eğitimi, Türkiye Yükseköğretim Stratejisi Bağlamında Mimarlık Eğitimi Üzerine Düşünceler, Mobbig 38 Toplantısı Konuşma Metni.

Tüker, Ç., Çatak, G. (2021). Improving Awareness and Empathy with Video Games: A Qualitative Analysis Study of PUDCAD Game. In Ö. Cordan, D. A. Dinçay, Ç. Y. Toker, E. B. Öksüz & S. Semizoğlu (Eds.) Game and Design Education: Proceedings of PUDCAD 2020 (pp. 121-132). Springer.

Varinlioğlu, G., Alankuş, G., Aslankan, A., Mura, G. (2019). Dissemination of Digital Heritage through Game Based Learning, *METU Journal of the Faculty of Architecture*, 36(1), 23-40.
http://jfa.arch.metu.edu.tr/archive/0258-5316/articles/metujfa2018209.pdf

Wrzesien, M., Raya, M. A. (2010). Learning in serious virtual worlds: Evaluation of learning effectiveness and appeal to students in the E-Junior project. *Computers & Education*, 55(1), 178-187.
https://doi.org/10.1016/j.compedu.2010.01.003

URL-1. Ministry of Interior Disaster and Emergency Management Presidency. (2018, March 5). Afete Hazır Türkiye: Deprem Öncesi, Anı Ve Sonrası Alabileceğiniz Önlemleri Biliyor Musunuz?. Retrieved 26.08.2022, from https://www.afad.gov.tr/deprem-oncesi-ani-ve-sonrasi-alabileceginiz-onlemleri-biliyor-musunuz

URL-2. AFAD Disaster Statistics (AFAD Afet İstatistikleri), Retrieved 10.06.2022, from https://www.afad.gov.tr/kurumlar/afad.gov.tr/e_Kutuphane/Kurumsal-Raporlar/Afet_Istatistikleri_2020_web.pdf

URL-3. Earthquake Country Alliance (2022). Retrieved 01.08.2022, from https://www.earthquakecountry.org/library/ECA_Step_1_SecureYourSpace_Document-EN.pdf

Journal of
**Design Studio**
spi:2 "**ICMEK-5 Rethinking**" October 2022

# On the Interaction Between Shared Design Studios and Interior Architecture Students: A New Spatial Experience with Extended Reality for Supporting Place Attachment

Gizem Corluluoglu
*Department of Interior Architecture and Environmental Design, TOBB University of Economics and Technology, Ankara, Turkey (Corresponding author)*
Ahmet Fatih Karakaya
*Department of Interior Architecture and Environmental Design, TOBB University of Economics and Technology, Ankara, Turkey*

Received: July 27th 2022, Revised: September 11th 2022, Accepted: September 15th 2022.
Refer: Corluluoglu, G., Karakaya, A.F., (2022), On the Interaction Between Shared Design Studios and Interior Architecture Students: A New Spatial Experience with Extended Reality for Supporting Place Attachment, Journal of Design Studio, V.4, spi.2, ICMEK-5 Rethinking, pp 75-86,
G. Corluluoglu ORCID: 0000-0002-7349-2259, A.F Karakaya ORCID: 0000-0002-4656-3074
DOI: 10.46474/jds.1149634 https://doi.org/10.46474/jds.1149634



**Abstract:** Place attachment is one of the basic psychological needs in the human-space relationship. It is known that the characteristics of the shared design studios have a direct effect on the space adaptation of the user. Place attachment occurs simultaneously with the space adaptation process of the students, therefore these two concepts have a direct relationship with each other. Open and flexible activities in shared design studios reduces the adaptation and working efficiency of the students. It can be said that this situation will cause problems in the sense of belonging to that kind of learning environments. It is known that the user of the shared workspace tends to personalize the studios as a result of the need for belonging in the place adaptation status. The process of the study is trifold; first the concept of shared design studios was examined and researches on the concepts of personalization and belonging were conveyed through literature reviews in order to reveal the interior design students and shared design studio relationship. Then using literature data, a spatial belonging scale was presented to interior design students to determine their place attachment status and augmented reality was used to test the tendency to customize shared studio spaces accordingly. Lastly their affiliation in the hybrid environment and their tendency to personalize the space were analyzed.

**Keywords:** Shared design studios, Place attachment, Extended reality, Personalization, Interior architecture education

## Introduction

Shared design studios emerge when students from different disciplines share the same space at different times, which is especially common in design education. It is well known that these studios foster students' creativity by encouraging collaborative work, and that the multidisciplinary interaction environment they foster is extremely beneficial to students' multiple thinking and problem-solving skills (Lueth, 2008; Aydınlı, 2014; Samson, 2015). However, few studies have been conducted on the sub-psychological effects of multiple use in these locations and the resulting lack of personalization on students. Even if students demonstrate spatial motivation in places where personal interventions are not possible, they will not be able to fully develop their spatial belonging, which will negatively affect their

interaction with the space in the long run, resulting in negative orientations on the work done and the user's mood (Demirbaş, et al. , 2000 & Scupelli, 2016).

A new spatial experience is sought to solve the spatial belonging problem by enabling the virtual personalization of the user on the space through hybrid spatial interventions supplemented with virtual layers, which can be built using new generation augmented reality technologies. The main purpose of this research is to create a hybrid space for students, which we consider as a solution to this place attachment and lack of personalization shortcomings, consisting of a combination of virtual and real and provide a new interactive spatial experience between shared design studio and interior architecture students.

The concepts directly related to the subject are examined in connection with each other; place attachment, design studios and augmented reality technologies will be mentioned with literature reviews. The relationship between interior architecture students and studio spaces has been analyzed and examined in the context of the sense of belonging that occurs in the process of human-space interaction. Consequently, different situations that may arise on the user and in design studios are emphasized and considered as problems to solve. Then, new generation technologies are discussed, including their usage patterns, differences, and usage areas. This explanation provides a clear definition of extended reality as a solution tool and evaluates its positive potential for solving the problems described in the previous sections. Do interior architecture students show a place attachment in shared studios? Will virtual changes have an impact on the interaction between shared design studios and interior architecture students? In order to seek answers to the research questions, first of all, a sense of belonging scale was applied to the students, after which a pilot study on digital personalization with 10 determined students and then semi- structured interviews were carried out to measure the effect of students on this experience and place attachment.

**Place Attachment**

The place attachment is one of the basic psychological needs in the human-space relationship (Baumeister & Leary, 1995). It is known that the characteristics of the work spaces have a direct effect on the space adaptation of the user (Wells, 2000). During this interaction, the person attributes a number of meanings to the place where he spends time. Perceived space is formed in the mind of the individual. The place attachment occurs simultaneously in this process of perceiving space. Therefore these two concepts have a direct relationship with each other. It is known that the open and flexible working function in public or semi-public spaces reduces the adaptation and working efficiency of the user (Lepley, 2000). It can be said that this situation will cause problems in the sense of belonging to that place. It is known that the user of the shared design studios tends to personalize the space as a result of the need for belonging in the adaptation process with the space.

The concept of belonging is crucial in human-space interaction and the spatial adaption process. As a result, identifying the problem of attachment that occurs in interior architecture students and presenting a new spatial experience proposal to this problem through the changing of the space via extended reality (XR) technologies will serve as a source for future research in the field of due diligence and original solution proposal covered by the study. When spatial experiences are improved, especially in shared design studios in design education, these working spaces will become more accepted by students. With this solution, it is possible for students to spend more and more productive time in these areas.

Modern education includes design studios, which are widely utilized by students in interior architecture school. It is a significant phenomenon. The most fundamental aspect of design studios is not the finished product, but the design process itself. These shared studios stand out as collaborative settings in which an interdisciplinary 'thinking and behavior style' is imposed on the student. The design studio was established in architectural education in 1819 at

the Ecole des Beaux-Arts in Paris (Figure 1). Formal architecture education began in Europe and eventually moved to North America created the system's framework (Ashraf, 1995).

***Figure 1:*** *Ecoles des Beaux-Arts, design studio. URL-1*

In 1919, Bauhaus School in Germany introduced a new approach to design education by presenting an alternative collective education. Bauhaus education model is intended to place architectural originality at the forefront, trying to free students from all forms of technical training and promoting creativity and individual expression style. The educational method is collaborative and hands-on, taking place in students' actual workplaces (Figure 2).

***Figure 2:*** *Bauhaus School, foundation course with Tomás Maldonado at HfG Ulm, 1955. URL-2*

Current design education is conducted in the context of these two historical ecole. The shared design studios (Figure 3) still exist as interdisciplinary teaching environments that play an important role especially in design education process. Shared design studios cannot be customized. Therefore, it creates some negative situations for the students.

***Figure 3:*** *Middle East Technical University, Faculty of Architecture, design studio Photo: Nicolai Steinø. URL-3*

Design studios, which are multipurpose and actively used by design students from several disciplines and an anonymous character is presented which cannot be personalized for a group or an individual. According to studies (Demirbas & Demirkan, 2000, Busato, et al., 2000) design students create orientations based on their privacy demands when using these places. Students' attitude to these studios includes the inclination to create an individual place to work alone or alone and the tendency to utilize or increase the divider to ensure privacy between the desks (Scupelli, 2016). As a result of these two behaviors, design reveals that students need to increase their privacy levels by making individual involvement in these shared working areas.

Among design students and educators share same idea that the physical components of the shared working environments play a supportive role in learning. Subjective evaluations of geniality and preferable classroom spaces, physical variables of learning environments lighting level, seating comfort, degree of interior complexity, the size of the space, the absence of a view of the outside, seating arrangement and cascading more convenient

were found to be associated (Douglas, et al., 2001). These studies demonstrate that feasible individual involvement and adjustments in the interaction between design students and design studios are
very essential and effective in the learning process.

With changing lifestyles, technology has a significant impact on the differentiation of individual demands. Many tasks that have lately undergone conceptual transformation have become more communication and interaction oriented. However, beyond physical demands, user needs that have been reshaped in a

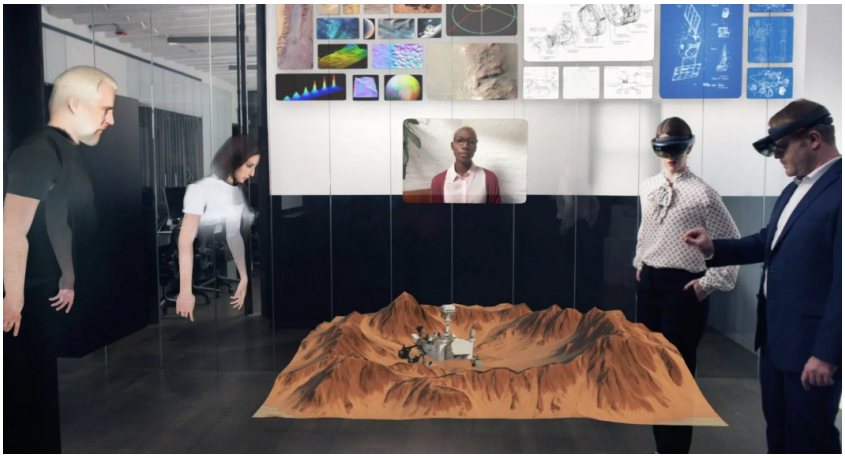

*Figure 5: An example of the usage of extended reality (XR). URL-5*

**Extended Reality Tools and Their Spatial usage**

Technology is both a producer and a product of social change; the evolution of communication technologies has brought new technological tools and boosted the convenience of living conditions. While previous products in this field were made up of interfaces and interactive tools that were completely independent of physical spaces, today's products include the human body and the physical environment in the interaction, can be articulated to existing physical conditions, and allow the virtual and real environments to exist in an integrated structure, increasing the interaction between the individual and the environment (Figure 4).

***Figure 4:*** *An Example of extended reality (XR). URL-4*

dimension independent of time and physical space have begun to develop through technology-oriented experiences (Figure 5).

Simultaneously, technology-based solutions were assessed in order to satisfy rapidly changing user needs, making it easier for the user to create a relationship with the space and becoming a key aspect in establishing the user-space relationship. Because of these effects, technologically enhanced apps were developed with the goal of creating new spatial experiences and began to be widely used by acting as a tool in the distinction of the perceptual dimension of space. An XR experience makes it possible to achieve this integrated state of perception. XR is the simultaneous use of 3 different virtual reality technologies. These Technologies are; VR: Computer simulation creates 360-degree perceptible virtual environment experiences. AR: The incorporation of virtual objects into physical space - the start of the user's true spatial experience. MR: Real-time interaction between the physical and virtual worlds.

With the widespread use of extended reality technology in education, new generation, experience-based learning processes have

emerged. It has been determined that knowledge gained through this XR technology is more long-lasting in design education (Freitas & Campos, 2008). Furthermore, it has been observed that students in courses supported by XR technologies pay more attention to the courses (Shelton & Hedley, 2002) (Figure 6).

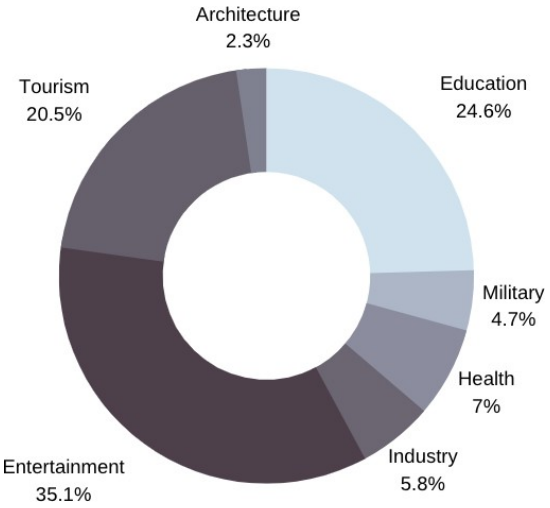


***Figure 6:*** *URL-6 Forecast distribution of the augmented and mixed reality market worldwide in 2022.(2016).Statista: https://www.statista.com/statistics/610066/worldwide-forecast-augmented-and-mixed-reality-software-assumptions/*

With the incorporation of this intensive use of extended reality technologies in the field of education, as well as its potentially promising side in the field of architecture, it will have served as a new tool to support education in interior architecture education.

According to studies, XR technologies are on the rise, particularly in the post-2020 period, thanks to the effect of Covid 19, and this output will rise by 18% between 2021 and 2028. These expected outcomes reinforce the notion that XR technologies should be developed and varied to meet new demands outside of their usual applications. According to the literature and resource reviews, there is no academic study on customizing the learning environments of interior architecture students with XR. This technological potential was realized, particularly for the studio spaces shared in design and architecture education and for future architects and the research foundation was formed accordingly.

In the interaction diagram of the research (Figure 7); by developing a hybrid individual space with virtual additions in the physical space, we can create an efficient place experience in interior architecture education by emphasizing the concept.

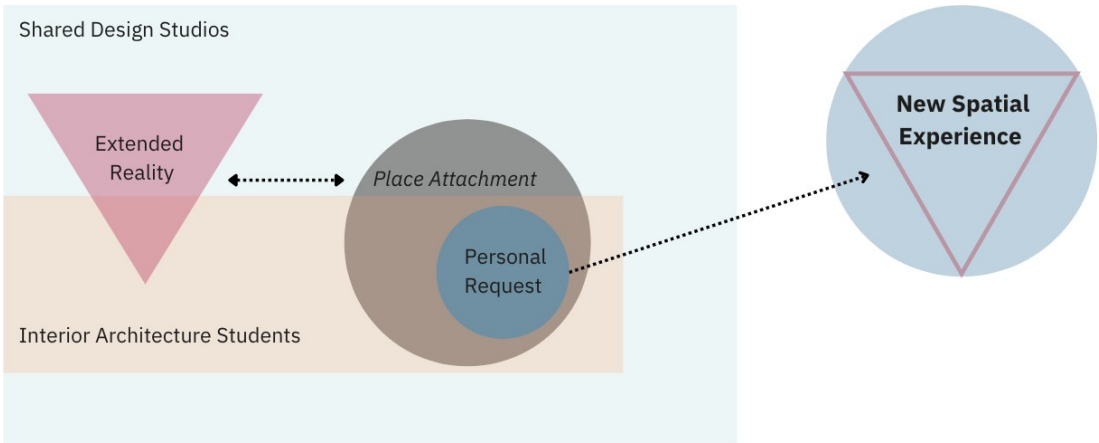


***Figure 7:*** *The interaction diagram of the research.*

| | 1ST STAGE | | | 2ND STAGE | | |
|---|---|---|---|---|---|---|
| **WORKING GROUP** | **17** FEMALE 2nd Grade Interior Architecture Students | **13** MALE 2nd Grade Interior Architecture Students | | **4** FEMALE 2nd Grade Interior Architecture Students | **6** MALE 2nd Grade Interior Architecture Students | |
| **CONTEXT** | SPECIFIED SHARED DESIGN STUDIO | | | SPECIFIED SHARED DESIGN STUDIO | | |
| **QUESTIONNAIRE** | **5** 1st PART Demographic | **11** 2nd PART Place Attachment | **4** 3rd PART Place Personalisation | PILOTING | | Semi Structured Questionnaire |

***Figure 8:*** *The method diagram.*

## Methodology

Methodology of the study consists of two stages (Figure 8). In the first stage we tried to understand the existing place intentions of the students to the shared design studios. In the first, a questionnaire and a pilot study were conducted and semi-structured interviews were conducted with the students over this study. The first stage of study was conducted using a questionnaire consisting of three different parts. The first part of the questionnaire consisted of multiple choice questions in which just one answer could be given for a single question. Initially, some demographic information was collected. Using Williams & Roggenbuck's (2021) place attachment scale, 11 questions were created for students to answer. With the following 4 questions, it was determined if the participants needed personalization elements in the space. Additionally, it was determined how they perceived the behavioural elements in the space. There were 30 participants, of whom 17 (56%) were female and 13 (44%) were male. All participants are students who took the same design studio course in the 2nd grade of interior architecture education. For this reason, all students regularly use the same design studio 2-3 times a week at the same or different times.

The second stage of the study involved conducting a pilot study and then semi-structured interviews with 10 students chosen based on their responses to the 1st questionnaire. In the semi structured interviews, 4 open-ended questions were asked, followed by 10-minute interviews with each of them. All interviews were recorded to ensure the validity of the evaluation.

The pilot study investigated whether interior design students demonstrated change behavior during the co-design studio and how these changes affected them. During the pilot study, Microsoft Hololens was used for creating the hybrid place. With the holograms application in HoloLens, students' existing design studios can be changed in size, location, existing; separator, plant, table lamp, floor lamp and art object were placed. Students were expected to make personal changes from this standard objects (Figure 9).


***Figure 9:*** *The image of the mixed reality tool, application and the virtual objects which has been given during case study to interiors design students from the researcher.*

Based on the standard deviation values in the survey responses in the 1st stage, we selected the specifically 10 students for pilot study (Figure 10). The study was taken during a studio course in the existing studio, where interior architecture students take weekly design courses (Figure 11).

**Results**

The results of the study consist of answers given by the students to the 1st questionnaire and semi structured interviews after the pilot study. In the first part of the study, it was aimed to determine the place attachment status of the students and their personal demands and place attachment attitude on the existing place. The students' place attachment attitude was positive in the majority, contrary to our expectation. In terms

***Figure 10:*** *The images of the students and the place where the case study was conducted during the research.*

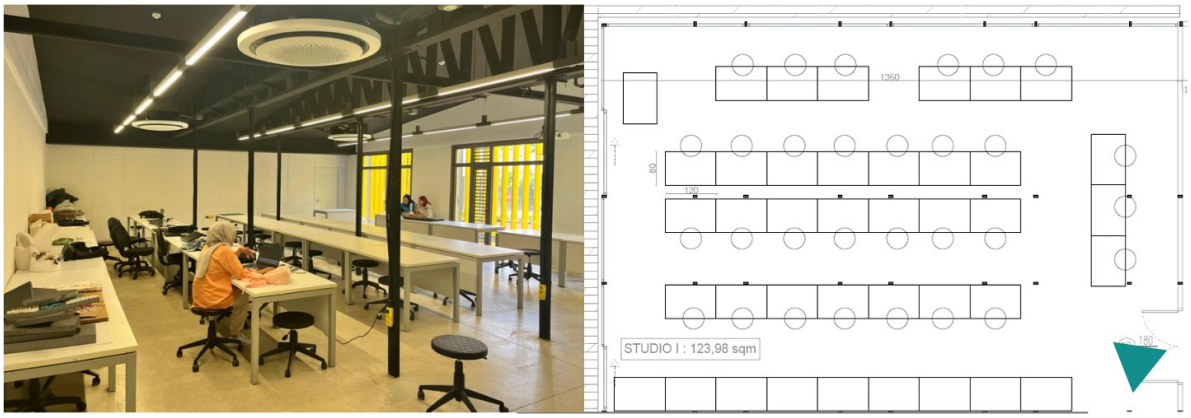


***Figure 11:*** *The photograph & layout plan of the specified shared design studios where the case study was conducted during the research. The layout plan is not to scale.*

of the reliability of the research, the Cronbach alpha value was measured as 0,816. According to the data obtained from 4 following questions about the personalization of the space, 47% of the students stated that they want to see objects belonging to them in the space, 42% of them stated that they want to determine the equipment and colors in the studio as per preferences. Additionally, 31-36% of respondents agreed with the statement that their computers and desks were to be separated so that other users cannot see it (Table 1).

The answers were analyzed with the Likert scale as follows;
1: I Strongly Disagree
2: I Disagree
3: No Idea
4: I Agree
5: I Strongly Agree

The answers given to the questionnaire about personalization in the first part were discussed together with the answers obtained from the semi-structured interviews. According to the answers given to the first statement "I would

***Table 1;*** *Descriptive statistics of the 1st stage (Attachment Scale) of the study.*

| Question | | Mean | Std. Deviation | Variance |
|---|---|---|---|---|
| 1 | Do you use this design studio regularly? | 1,1333 | 0,34575 | 0,120 |
| 2 | How often do you use this design studio? | 1,9667 | 0,18257 | 0,033 |
| 3 | This place is a part of me. | 3,9000 | 0,84486 | 0,714 |
| 4 | This is a very special workplace for me. | 3,8333 | 1,08543 | 1,178 |
| 5 | I can identify myself with this workplace. | 3,5000 | 1,07479 | 1,155 |
| 6 | I am very attached to this place. | 3,3333 | 1,06134 | 1,126 |
| 7 | This workplace means a lot to me. | 3,6333 | 1,06620 | 1,137 |
| 8 | This is the best place to work. | 3,7333 | 1,20153 | 1,444 |
| 9 | No other field of study can compare with this one. | 2,8667 | 1,38298 | 1,913 |
| 10 | This workplace makes me happy. | 3,9000 | 0,84486 | 0,714 |
| 11 | Working here is more important to me than working elsewhere. | 3,2333 | 1,00630 | 1,013 |
| 12 | I wouldn't prefer any other workplace instead of this one. | 2,7000 | 1,02217 | 1,045 |
| 13 | I enjoy working here more than anywhere else. | 3,4667 | 1,07425 | 1,154 |
| 14 | I would like my desk and computer to be separated so that other users cannot see it. | 3,3333 | 1,26854 | 1,609 |
| 15 | I would like to be able to change the color of the desk I work on according to my own preferences. | 3,5333 | 1,16658 | 1,361 |
| 16 | I would like to see my individual objects that I brought from my own working environment on the desk where I work. | 3,8000 | 0,92476 | 0,855 |
| 17 | The level of privacy here makes me feel good. | 3,0000 | 1,25945 | 1,586 |

***Table 2:*** *Findings of question, I would like my computer and desk to be separated so that other people cannot see it.*

| | | I would like my desk and computer to be separated so that other users cannot see it. | | | | | |
|---|---|---|---|---|---|---|---|
| | | I Strongly Disagree | I Disagree | No Idea | I Agree | I Strongly Agree | Total |
| What is your gender? | Female | 1 | 5 | 4 | 5 | 2 | 17 |
| | Male | 1 | 2 | 3 | 2 | 5 | 13 |
| Total | | 2 | 7 | 7 | 7 | 7 | 30 |

like my computer and desk to be separated so that other people cannot see it." (q.14) no distinct orientation was noted. On the other hand, during the semi-structured interviews, they stated that they were positively impacted by the level of privacy and digital separation in the hybrid environment (Table 2). The responses to the second statement "I would like the ability to change the color of the desk on which I work " (q. 15) was "I agree". In semi-structured interviews conducted after a hybrid setting, participants indicated that they could have a positive impact by changing the colors of some spatial elements (Table 3). The majority of respondents agreed that they would prefer to have their own objects on the desk where they study. The students expressed that they wanted to be able to carry their own personal belongings, including their personal goods. There was also a desire for more virtual objects with better visual perception level (Table 4). To the contrary of our expectations, the majority of responses to "The level of privacy here makes me feel good'' (q.17) were "I agree". However, in the semi-structured interviews, they reported that the virtual separators in the hybrid environment positively affect their sense of personal space and privacy (Table 5).

I would like to be able to change the color of the desk I work on according to my own preferences.

***Table 3:*** *Findings of question, I would like the ability to change the color of the desk on which I work.*

| | | I would like to be able to change the color of the desk I work on according to my own preferences. | | | | | |
|---|---|---|---|---|---|---|---|
| | | I Strongly Disagree | I Disagree | No Idea | I Agree | I Strongly Agree | Total |
| What is your gender? | Female | 1 | 4 | 2 | 8 | 2 | 17 |
| | Male | 1 | 1 | 1 | 7 | 3 | 13 |
| Total | | 2 | 5 | 3 | 15 | 5 | 30 |

***Table 4:*** *Findings of question, I would like to see my individual objects that I brought from my own working environment on the desk where I work.*

| | | I would like to see my individual objects that I brought from my own working environment on the desk where I work. | | | | | |
|---|---|---|---|---|---|---|---|
| | | I Strongly Disagree | I Disagree | No Idea | I Agree | I Strongly Agree | Total |
| What is your gender? | Female | 1 | 2 | 0 | 9 | 5 | 17 |
| | Male | 3 | 1 | 4 | 4 | 1 | 13 |
| Total | | 4 | 3 | 4 | 13 | 6 | 30 |

***Table 5:*** *Findings of question, I like the level of privacy here.*

| | | The level of privacy here makes me feel good. | | | | | |
|---|---|---|---|---|---|---|---|
| | | I Strongly Disagree | I Disagree | No Idea | I Agree | I Strongly Agree | Total |
| What is your gender? | Female | 4 | 2 | 3 | 8 | 0 | 17 |
| | Male | 1 | 4 | 2 | 4 | 2 | 13 |
| Total | | 5 | 6 | 5 | 12 | 2 | 30 |

**Discussion and conclusion**

This study focused on identifying personalization and belonging problems in the interaction between students' existing shared design studio and providing a digital solution for this problem. This study revealed that the students felt a sense of belonging to the existing design studios. According to the secondary study and semi-structured interviews conducted on these questions, different interior architecture students have different spatial expectations in design studios, as well as a place attachment. According to semi structured interviews, students had needs and feedback they weren't able to articulate clearly in the first stage, as evidenced by repeated questions after the hybrid space study. In this context, personalization of the space is an important requirement, which supports the study's solution proposal. Study enrichment was enhanced by the unexpected contradiction of the results.

It has been observed that the users have developed a place attachment in general. Furthermore, they stated that they wanted to make personal changes to the existing objects in the shared design studios based on their privacy and personal space levels, and to adjust them based on their preferences. According to the interior architecture students, the customized hybrid space would boost their motivation and positively affect their reasons and frequency for choosing the place. However, the students reported difficulties with the technological equipment and application as well. The study demonstrates that students can spend more time being motivated if the problems associated with hybrid spaces are resolved. In this regard, the use of extended reality tools in shared design

studios may have positive effects on the education of interior architecture students.

Further research should consider other technical factors, such as the use of acoustics and lighting, which can increase satisfaction through personalization, in addition to behavioral factors. The study was limited to personalize shared design studios in line with technological and technical possibilities with a general virtual tool without interfering with physical data. In the future, it should be re-evaluated and eliminate the problems with existing technical infrastructure applications in order to obtain more positive results.

**References:**

Akyol, D., Çiğdem, A., & Düzenli, T. (2017). Toplumsal Değişim Sürecinde "Kamusal Mekân"ın Dönüşümü. *The Journal of Academic Social Science*, 5 (56), 545-554.

Ashraf, S. (1995), New Trends in Architectural Education: Designing the Design Studio, Endorsements by Henry Sanoff and Jon T. Lang.

Aydınlı, S. (2014). "Paralaks oda: 'Öğrenmeyi öğrenme' ortamı olarak stüdyo", Semra Aydınlı ve Burçin Kürtüncü (der.), *Paralaks Oda*, İstanbul: Yapı Endüstri Merkezi, s.10-31.

Baumeister, R. F., & Leary, M. R. (1995). The Need of Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 17(3), 497-529.

Busato, V.V., Prins, F.J., Elshout, J.J. & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher education, *Personality and Individual Differences*, 29 (6), 1057-1068

Çimen, T. (2008). Teknolojik Gelişmelerin Sonucunda Değişen Üretim İlişkilerinin, Ofis Yapılarına Etkisi ve Ofis Mekanları. Master Dissertation, İstanbul: İstanbul Technical University.

Çelik Agcadağ, İ. (2021). Esnek Çalışma Mekânları: Paylaşımlı Ofisler. *The Journal of Academic Social Science*, 2021 (112), 90-106.

Demirbas, O., Demirkan, H., (2000). Privacy Dimensions: A Case Study in the Interior Architecture Design Studio, *Journal of Environmental Psychology*, 20 (1), 53-64.

Douglas, D., Gifford, R., (2001), Evaluation of the physical classroom by students and professors: a lens model approach, *Educational Research*, 43 (3), 295-309.

Forecast Distribution of the Augmented and Mixed Reality Market Worldwide in 2022. (2016). Statista: https://www.statista.com/statistics/610066/worldwide-forecast-augmented-and-mixed-reality-software-assumptions/

Freitas, R., & Campos, P. (2008). SMART: A System of Augmented Reality for Teaching 2nd Grade Students. Proceedings of the 22nd British HCI Group Annual Conference on HCI 2008: People and Computers XXII: Culture, Creativity, Interaction (2), 1-5.

Gustafson, P. (2001). Roots and Routes Exploring the Relationship between Place Attachment and Mobility. *Environment and Behavior* 33 (5), 667-686.

Göçer, Ö., Karahan, E., & Oygür İlhan, I. (2017). Esnek Çalışma Mekânlarının Çalışan Memnuniyetine Etkisinin Akıllı Bir Ofis Binası Örneğinde İncelenmesi. *Megaron*, 13(1), 39-50.

Lepley, M. (2000). Office Clutter or Meaningful Personal Disp- Lays: The Role of Office Personalization in Employee and Organizational Wellbeing. *Journal of Environmental Psychology*, 20 (3), 239-255.

Liamas, R. T. (2021). Worldwide Augmented and Virtual Reality Hardware Forecast Update, 2021–2025: IDC: https://www.idc.com/getdoc.jsp?containerId=US48277021

Lueth, P. L. O. (2008). The architectural design studio as a learning environment: a qualitative exploration of architecture design student learning experiences in design studios from first-through fourth-year. PhD Dissertation, Iowa State University.

Samson, P. L. (2015). Fostering Student Engagement: Creative Problem-Solving in Small Group Facilitations. *Collected Essays on Learning and Teaching*, (8) p.153-164

Scupelli, P., & Hanington, B. (2016) Design Studio Desk and Shared Place Attachments: A Study on Ownership, Personalization, and Agency. 2016 Conference of the Design Research Society (DRS2016), 27-30 June, Brighton, United Kingdom.

Shelton, B. E., & Hedley, N. R. (2002). Using Augmented Reality for Teaching Earth-Sun Relationships to Undergraduate Geography Students. The 1st IEEE International Augmented Reality Toolkit Workshop, Darmstadt, 29 September 2002, p.8 http://dx.doi.org/10.1109/ART.2002.1106948

Yılmaz, Z. (2007). Hannah Arendt'te Özel Alan-Kamusal Alan Ayrımı ve Modern Çağda Toplumsal Alan. PhD Dissertation, Erzurum: Atatürk University.

Wells, M. M. (2000). Office Clutter or Meaningful Personal Displays: The Role of Office Personalization in Employee and Organizational Well-Being. *Journal of Environmental Psychology*, 3(20), 239-255.

URL-1: (2021), Drawing Metter. (2021, April 29). The Beaux-Arts Tradition. Retrieved from https://drawingmatter.org/the-beaux-arts-tradition/

URL-2: (2021), Bauhaus Imaginista. (Ed.3). On Behalf of Progressive Design Two Modern Campuses in Transcultural Dialogue. Retrieved from https://www.bauhaus imaginista.org/articles/2950/on-behalf-of-progressive-design

URL-3: (2021), Research Gate. The Hybrid Studio-Introducing Google+ as a Blended Learning Platform for Architectural Design Studio Teaching. Retrieved from https://www.researchgate.net/figure/The-traditional-architecture-and-design-studio-Middle-East-Technical-University Faculty_fig1_325973241

URL-4: (2021), Unity. (2021). Inspiring examples of extended reality. Retrieved from https://unity.com/pages/industrial-stories

URL-5: (2021), Wired. (2020, May 13). You Can Now Attend VR Meetings—No Headset Required. Retrieved from https://www.wired.com/story/spatial-vr-ar-collaborative-spaces/

Journal
of
**design**
**studio**

# special issue 2
# ICMEK-5 Rethinking



spi:2
2022 october

ISSN 2687- 2838