

Evaluation of Distance Education and Formal Education on Architectural Design Studio Practices and Student Perception with Comparative Analysis: Antalya Bilim University

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Abstract: Due to the worldwide Covid pandemic in 2020, it has undergone compulsory in universities, including distance education architectural education. Universities in Turkey were affected by Covid too, with the decrease of the pandemic effect, even though it has been back to formal education, an earthquake occurred and affected 10 cities in Turkey, causing to passed of distance education again. In the 2023 period, the process; continued as a hybrid, both remotely and face-to-face. Also, the design studio culture, which is the backbone of architectural education, evolved with the changes in the distance education process of components such as drawing, sketches, and the desk critiques tradition of architectural practice.

In this sense, the study aims to create a base for a provision for the future of architectural education with student-centered assessments. The research comparatively evaluates the effects of distance education and formal education on architectural studio practices through course evaluation questionnaires applied to students and student comments. In this study, the questionnaires and comments filled by approximately a total of 120 students for each term between 2018-2022 within the Department of Architecture of ABU were analyzed. To determine the points where students get the most efficiency and feel inefficient; Both positive and negative outcomes were observed, including difficulties with the concepts of proportion and scale, the benefit of being able to view other students' projects online, and the chance to continue learning additional modeling and drawing software until graduation. This example shows how hybrid education for the architectural design studio can be evaluated when weighing the benefits and drawbacks of online learning versus face-to-face teaching.

Keywords: Architectural design studio, Education, ISO quality, Distance education.

1. Introduction

Online education has been forcibly applied for approximately 1,5 years in Turkey due to the decision to online education for the whole country contains universities and higher

design courses which count as one practical course, students' drawings, sketches, maquet, and similar assignment activities have been held via digital programs and far from the instructor, causing some disabilities but at the

same time bringing some advantages. And in the year 2023, because of the earthquake disasters that occurred and affected 10 different cities, again the decision to online education shows us online education will be applied in the future as an alternative approach to be not affected by the negative circumstances. In this frame, it is important for architectural education to note the evaluation of assignments in the studio environment. Many courses in architectural education held in the studio environment require tracking the class. For this reason, critiques via digital programs or platforms are one of the cautions that makes it harder. Without touching or being eye to eye, living through a screen has destroyed the touching surfaces in architectural education. And it may be caused to a loose definition/concept of scale/proportion in spatial or void masses for the students. According to the results of the surveys filled by the students in the 2022 term, shows that distanced education allows students can watch each other's critiques or shared ideas such as Zoom, mic. Teams; from the freshman's level; instead of working on a maquet; through 3D modeling programs students can share Project details that have affected their creativity in a good way. The same situation when observed for the sketching phase, Uçar and Sağsöz pointed out that students have recorded some level of sketching in formal education; directly starting to design by using digital programs without initial sketching in distanced education caused some missings according to formal education. According to Ahmad (2020), while interior design education tends to demand o one interactive communication between the instructor and student; he argued how difficulty in distance education transformed into an opportunity according to the desired project topic in the studio course (Ahmad et al., 2020). Saving time in the lessons, accelerating the exchange of information, and facilitating the digital connection to the instructors in various ways can also be considered positive situations in distance education. Besides communication of the students with their instructors, the sharing of knowledge and transferring the information among students themselves increase creativity and efficiency in applied courses. (Kılınç vd., 2021; Erzen, 1976). According to Eceoğlu, periodic sessional meeting for knowledge

exchange in traditional systems in which computers are not used is eliminated, and a digital synchronized communication environment is provided between the people working in the design team, regardless of time and place. hus, the opportunity to use time more efficiently arises, since information exchange is provided at every stage of the design, it increases the speed of decision-making, and group/common work becomes more efficient (Eceoğlu, 2012). This shows that it is efficient among students as well. It has been observed that this change in the education system is easier and more practical for the generation born in the age of technology, and they prefer technology-based learning (Oktay et al., 2021). The fact that applied courses are not like theoretical courses shows that the student depends on concentration, environment, communication, and some other factors that trigger creativity. Within the scope of studio design courses, creative thinking and application practices are assisted by the instructor for students to reveal their creativity and develop it through lessons. Geyyas Gören and Şenyurt (2021) argue that incorporating digital tools and virtual environments into traditional design education is crucial in our current era. They also suggest the creation of new hybrid design education models and curriculum options. With the recent implementation of compulsory design courses with distance education in Turkish universities, students are now exposed to three different education systems: formal education (the traditional method), compulsory distance education, and hybrid education. The 2021-2022 academic year saw the emergence of a new situation, where students transitioned to a hybrid system and continued to participate in both online and formal systems simultaneously. However, there is a gap in the literature regarding the evaluation of this process, including a comparative analysis of the efficiency of students in project courses across formal education, distance education, and hybrid education. This study aims to address this gap by evaluating the student's performance in design studio courses between 2018-2019 (fall and spring formal education), 2019-2020 (fall formal and spring semester distance education), 2020-2021 (fall and spring distance education), and 2021-2022 (fall post distance education).

The course evaluations of the students in the design studio courses, including formal education, will be compared. Survey data from students in the architecture department will be analyzed to evaluate the effectiveness of the different education systems.

This study focuses on the remote management of design studios, which form the foundation of architectural discipline education, in the Department of Architecture, at Antalya Bilim University, in response to the Covid-19 pandemic. The study identifies the benefits and drawbacks of the learning environment that fosters design studio culture and the process of conducting online distance communication between students and instructors through v

The fundamental purpose of design studios is to establish a learning environment that enables students to understand the multidimensional nature of design practice, despite the complexity of the design problem at hand. However, learning tendencies may differ significantly among individuals due to various factors. In this study, we aim to evaluate and compare the face-to-face, hybrid, and distance education processes by analyzing questionnaires distributed to students enrolled in project design studios. These questionnaires are a mandatory requirement of the ISO Quality System and were administered at the end of each semester. Through this comparative analysis, we hope to gain insights into the effectiveness of each education process for the design studio context discussed within the scope of this study.

The study comprised all students enrolled in the Department of Architecture, ranging from the first to the fourth year of their program. Before the onset of the pandemic, satisfaction surveys were conducted among students starting from the 2018-2019 academic year. Throughout the pandemic period, including the 2019-2020 academic year (fall formal spring term distance education) and the 2020-2021 academic year (fall and spring distance education), students continued to participate in satisfaction surveys regarding their courses. Subsequently, based on the survey results obtained during the 2021-2022 academic year, which commenced after the pandemic period, the satisfaction rates of

students enrolled in courses offered between 2018-2022 were evaluated, taking into consideration the data for both distance and formal systems. A total of 120 students participated in the survey for each semester, encompassing students from both education systems. The study included 10 multiple-choice questions, which prompted students to provide their opinion on various statements, with options such as "strongly agree", "agree", "neither agree nor disagree", "disagree" and "strongly disagree". The survey questions were formed according to the following assumptions for the research:

- Studio courses are used more effectively in distance education than formal education due to class times being appropriate with planned time in the syllabus and creating a comfortable environment.
- Studio course materials, necessary equipment, and new technology were used effectively by the instructor in distance education, thanks to online programs.
- In distance education studio courses that are recorded and can be listened to again; Instructors' method of expression in session critiques, were impressive easy to understand, and tempting.
- The studio course was as stimulating, thought-provoking, intriguing and encouraging for active participation in distance education as it was in formal education.
- In formal education, research-supporting, rote-free, analytical thinking, and problem-solving skills were developed together with the critiques given face to face that provide focus in the studio courses.
- Studio courses held with formal education gained the ability to analyze and interpret information and critical perspective.
- Personal and vocational skills, producing alternative solutions when faced with complex problems, and innovative and creative thinking skills developed both in formal and distance education.
- Academic literacy skills were further developed in formal education in terms of directing more time and avoiding distractions.
- Oral-written communication and

presentation skills in the mid-term and end-of-term juries of the studio course were both more encouraging and improving in formal education than in distance education.

Formal education has enabled the students to provide to grasp the lesson and learn permanently, and it has a positive effect on succession.

2. Architectural Design Studio Culture and Changing Communication Forms in the Distance Education Process

Architectural education follows a process in line with the presentation of the forms of design, construction, and representation in the process of transferring the design idea into the physical space. Starting from the first year of their education, students try to find solutions to design problem that is becoming more and more complex and to convey their design ideas. This process, in which the theoretical and applied courses of the versatile components that make up the design are added to the design practice, takes place in architectural design studios. In this sense, architectural design studios constitute the backbone of architectural education with the highest duration and high evaluation rate in architectural education.

To understand the way architectural education is handled today, it is necessary to examine its development in the historical process. As Karamaz and Ciravoğlu stated, architecture has been defined by building production activities until recently, and the knowledge of the architectural discipline has been constructed as a master-apprentice relationship focusing on the field of construction. (Karamaz and Ciravoğlu, 2017). In this sense, in the periods when architecture was applied as a practice, the apprentice learned the necessary technical knowledge through the transfer of experience and knowledge from the master-apprentice relationship. With a one-way transfer of information flow from master to apprentice, it is possible to say that although architecture does not have a theoretical and conceptual field, there is no school of architecture. (Celik and Arabacioglu, 2022)

The French Royal Academy was the first place

where architecture was not just an act of building products, but the discipline was placed on a theoretical basis, and the architect's state of being a thinker other than craftsmanship was mentioned. (Karamaz and Ciravoğlu, 2017).

Architecture students enrolled in the Paris school were placed in different ateliers or studios managed by an architect or master in their design studies. The primary tool of teaching starts with the first draft solution shaped around the design problem and continues with the other stages of project development. Students progress by winning design competitions, and after earning certain points in competitions for graduation, they had to win additional competitions, complete a thesis, and gain one year of work experience. (Anthony, 2012) The tradition of the studio was started in 1819 at the Ecole des Beaux-Arts (under the French name workshop) in France; It was the first formal architectural education framework adopted in the Western world, which later spread to other European countries and North America. (Goldschmidt et al., 2010)

However, towards the end of the 1920s, criticism against Beaux Arts culture began to rise. Many educators view student and practitioner methods as archaic and view evaluations of students' work as unhelpful. (Anthony, 2012)

Ecole des Beaux-Arts, which is a continuation of the French Royal Academy and has dominated architectural education for a long time, weakened with the spread of the Modernist Movement, and in the first half of the 20th century, education models were greatly influenced by the Bauhaus, and design schools replaced the academic tradition (Balamir, 1985). Founded by Walter Gropius in 1919, the Bauhaus created a new kind of educational culture rooted in Europe as an alternative to Beaux-Arts. The internationally influential German design school had its heyday in the mid-1920s and moved to a private building in Dessau. Its curriculum is built around workshops and laboratories where students conduct collaborative, hands-on construction projects, some on real construction sites. (Anthony, 2012)

The influence of the Bauhaus began to wane in the 1960s when populist tendencies spread and new trends in art, culture, and politics advanced towards pluralism. Changes in technology, urbanization, and cultural environment have liberalized with wider target audiences and caused the schools of architecture to be affected in many areas. First of all, the competence area of the architect has expanded and this situation is also reflected in the education curriculum. While it is stated that the multi-paradigms seen in the 1970s were reflected in education with terms such as problem-solving, decision-making, and environmental design, and then it turned to traditional design methods, it can be said that the established paradigms began to be questioned in the 1980s. (Balamir, 1985)

The design studio, on which Beaux Arts education is based, is a learning environment that progresses on the axis of executive and student about design practices in today's architectural education. The design-oriented nature of architectural education has made project studios, the place where design is learned and done, the focal point of education. (Uluoglu, 1988)

As Akyıldız stated, various research on the design studio, along with definitions from different aspects, basically referred to two definitions: a physical learning environment and the basic pedagogical unit and management of design education. (Akyıldız, 2020)

Considering design studios as a physical learning environment, according to Ledewitz, the studio treats design education as a new skill such as visualization and representation, as well as a place where students learn a new language. Also, all aspects of design education refer to the realization of experiencing with indirect thinking rather than being thought through direct explanation. Accordingly, architectural design studios are environments where design language, representation, and way of thinking are handled (Ledewitz, 1985).

Considering design studios as a basic educational pedagogy in architectural education, architectural design studios, as quoted from

Aslan; rather than a learning environment that directly trains staff for architectural offices, is a situation where knowledge, culture, language, and technique are combined with the energy of space, which directs and teaches candidate architects who enter the practical life course (Aslan, 2016). Design knowledge is communicated to the student through the criticisms made in the studio. The analysis of the criticism shows that design knowledge can be best understood by considering both its general and personal qualities as a whole (Uluoğlu, 2000). In this sense, the studio aims to create an awareness arising from the individuality of the relationship to be established with practice. However, the fact that the executive in the studio is the person who knows destroys the studio environment and it can only be mentioned that the paradigm of learners exists (Aslan, 2016). Many features such as students' learning styles, speeds, abilities, expectations, and experiences, motivations can contribute to the essence of the process in personalized learning environments. Rather than transferring information one-to-one, it is learned by living; accordingly, the goal of being internalized shapes contemporary learning environments (Yurtsever & Polatoğlu, 2020). As stated by Paker Kahvecioğlu, the main purpose of design education is to offer different design experiences, to take an active role in different areas of design, and to gain knowledge. "The active components in the studio are "design studio as a communication medium", "design task or problem", "design knowledge" and "different communication tools" and individuals are "student-designers and studio trainers" to establish and realize strong communication in the studio (Kahvecioğlu, 2007). Aydınlu considers architectural design studios as a place where students produce their design knowledge by experimenting, discussing, and doing. In this sense, as a creative paradigm in design education for architectural design studios, it makes the studio culture rethink within the scope of "learning to learn". The studio aims to create a learning environment that will enable knowledge to be structured (Aydınlu, 2015). Uluoğlu, on the other hand, argues that learning to design can be realized not only by knowing the relationship between objects and phenomena, but also by applying it to producing

a solution in the context of a determined or selected topic and problem, and states that the transformation of the existing knowledge in the memory of the person based on all the experiences of the design studios into design knowledge takes place in the project studios. (Uluoglu, 1988).

Studio practices are a process in which design practices, in which a determined subject and a certain design problem are discussed in each period and a solution is sought for this problem, are represented by considering all the components of the discipline of architecture. In this process, the student progresses in the form of drafting the project and consultations with the executive about the design. For this reason, as Uluoğlu stated, design is learned in the studio and includes mutual communication between the coordinator and the student (Uluoğlu, 1988). This form of communication is the critique taken in the studio environment.

On the learning models discussed within the framework of architectural design pedagogy, it can be said that there are different orientations and fields open to experimentation in architectural design studios. Among these, conceptual expansions such as learning to learn, flipped studios and active studio experiences are included in the literature. The current pursuits in the architectural design studio workshop also diversify the forms of communication between the studio instructor and the student. The "active learning environment" suggested by Polatoğlu in his study is an initiative that can suggest to students a free-thinking environment and provide an opportunity for them to express their thoughts (Yurtsever & Polatoğlu, 2020). As mentioned in Kahvecioğlu's works, the studio transforms from a place that uses traditional analog systems and their presentation tools (sketches, drawings, reproduction models, 2D-3D graphics...) to a place that opens itself to various media (such as photography, cinematography) in the individual transfer of the student's own design thoughts. (Kahvecioğlu,2007).

Process of Design information, from the point of view, is a process supported by active studio participation; students interiorize the studio and

use the space apart from the course is subtract the studio from just being a workshop and in Cuff's terms transform it to both a home and workspace. (Akyıldız, 2020; Cuff,1992: 63-65).

The Covid 19 pandemic process has brought many restrictions in daily life practices; these restrictions have also changed and transformed the forms and spaces of communication in the triangle of student-trainer-acquisition of knowledge in the field of education. In the process where the conceptual basis of architectural education and architectural production practices is still questioned and discussed, a different expansion of education and training has been encountered. In this sense, the formation of the above-mentioned design knowledge with studio culture and the form of communication used in studio dynamics have also changed. Starting with the master-apprentice relationship of the studio culture; While talking about the existence of different approaches until today; The transfer of studio communication to the virtual environment along with the pandemic process has also raised awareness of the existence of different resource groups in the student's learning by experience. In the process of structuring design knowledge in the traditional studio culture, the executive's criticisms of the student's design practices were also realized through different virtual tools.

Analyzing how the change or diversification of communication styles and tools in transferring and acquiring architectural design knowledge is reflected in architectural design studio evaluations gains importance in terms of shedding light on the future of architectural education.

3. Handling Iso 9001-10002 Process In Educational Practices And Its Reflection On Studio Evaluations

The primary purpose of teaching and education is for the student to acquire certain gains and outputs for the field. Evaluation of the outputs of the process followed in the education curriculum, which includes the studios, which are the most important and predominant in architectural education, has seen accepted as a necessity today

Hesapçioğlu mentioned two approaches to ensure quality assurance in the realization of the functions of the educational institutions regarding the acquisition of knowledge and qualifications of the students: the first is the accreditation of educational institutions, and the second is the evaluation of the outputs. (Hesapçioğlu, 2006). Although the existence of national quality assurance systems in higher education institutions does not have a very old historical background, the establishment of national agencies in England and various European countries dates back to the early 1990s. In the United States, however, there is a long history of institutional accreditation with the establishment of a state-sponsored quality assurance mechanism in the 1960s. In this sense, the quality assurance systems question/answer (Q/A) method has played an important role in institutional feedback in recent years (Yorke and Vidovic, 2016).

In Turkey, YÖK, the Higher Education Institution, has established a quality evaluation process according to the standards as a means of supervision and monitoring universities. As stated in the relevant legislation, evaluation of training, implementation, monitoring, etc. are subject to internal and external evaluation processes. According to this;

“Internal evaluations consist of periodic review

phases as well as continuous monitoring. The periodic review is conducted by the organization's internal supervisors or individuals with expertise in the Standards and practices within the organization, under the responsibility of the head supervisor. External evaluations, internal audit activities; Full external evaluation or periodic review by a team of qualified and independent external evaluation experts to be determined by the Internal Audit Coordination Board (Board) to determine its compliance with the definition of internal audit, the Standards and Code of Ethics, the level of use of successful practice examples, and its effectiveness and efficiency. These are studies that should be carried out at least once every five years in the form of verification.

Internal and external evaluation activities contribute to the assurance and development of quality by completing each other in the quality assurance and development process. This ensures that activities to enlist quality have an impact on the entire internal audit, including audit management. For the quality assurance and development process to function fully and in the intended direction, internal and external evaluation activities should not be considered independently of each other. (Yök public internal audit quality and assurance development legislation, 2011). Increasing the awareness of students and lecturers about

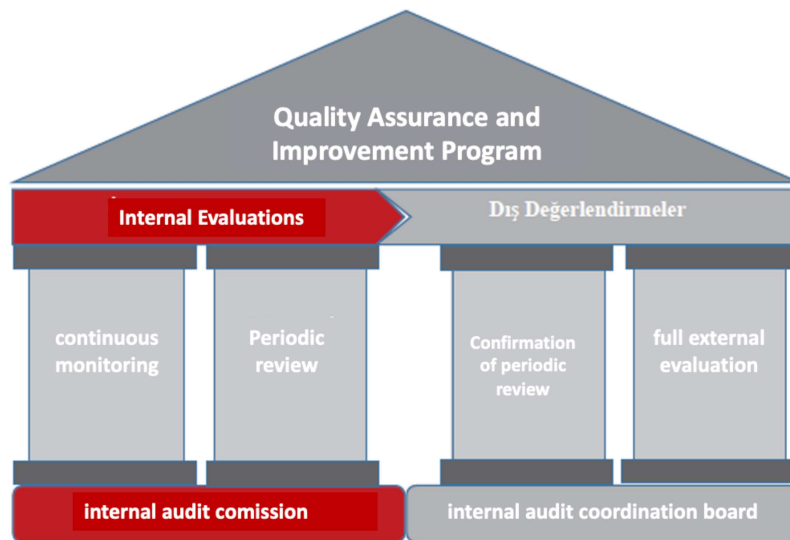


Figure 1: Quality assurance and development process

quality assurance in higher education, which is one of the principles of internal and external quality assurance systems, is one of the basic principles of quality, which is important to evaluate in the quality process (Ayvaz et al., 2016).

Thanks to quality management, planning actions according to the activities and survey measurements and reporting the situations that need attention in the next period will show its difference from other institutions. According to Aydın (2013), "The implementation of the Quality Assurance and Improvement Program, which also includes the audit of the auditors, by the internal audit managers, by giving the necessary importance, will be an indication that internal audit is an audit system with international references, unlike classical auditing." (Aydın, 2013). In this context, the aim is to create a system that gets better every period with the data obtained.

Antalya Bilim University was included in the ISO Quality Assessment process within the scope of YÖKAK in 2018 and gained the ISO certificate from Türk Loydu in 2018. Another part of the Quality Management System that concerns the delivery of education and the evaluation of its outputs is the student satisfaction questionnaires, which consist of the "Course content" and "Evaluation of the instructor of the course" parts applied for each course.

The aforementioned satisfaction surveys are sent to the students on the portal where the related course is announced, and the students indicate their satisfaction with a score ranging from 0 to 5, and if they wish, they can write comments about the progress of the course.

4. Methodology

In the study, questionnaires applied throughout the ISO quality process were used in order to measure the efficiency of studio lessons in the distance and formal education process of students. In this context, the research includes two different methods of embedded theory. In the first step, the common question patterns covering the method and content of the studio lessons were determined by comparing the data on the questions updated between 2018-2022 with the content analysis method. Content analysis is simply summary based; It takes and analyzes, reduces, and interrogates texts using emerging themes in pre-existing categories to construct or test a theory. It uses systematic, repeatable, observable, and rule-based forms of analysis. (Cohen et. Al., 2007) Content analysis; provides measurable statements about research activities in a particular field. (Falkingham & Reeves, 1998)

Based the content analysis method, it is aimed to define keywords as concepts containing repeated common words with summarizing the updated survey questions. The survey questions are updated by the changes in the process and the benefit and development of the institution, within the framework of the goals of continuous improvement as the need of policy of the Quality Process each year including the distance education process along with the pandemic. Keywords were used and marked in the attached table to compare the updated question pattern and content with student satisfaction in formal and distance education and hybrid education processes. Accordingly, although the current question pattern has changed, the student responses to the items whose content and purpose of the question have not changed have been compared and the active parameters have been mainly included in the studio education.

Table 1: Fall and Spring Semester course satisfaction survey questions comparison table

<p>Q.1:improving the student's ability to analyze, interpret, and access new information through the course.</p>	<p>Q.2: skills of students in public speaking and making presentations.</p>	<p>Q.3:investigating the positive effect of the way of teaching on the student's interest in the subject.</p>
<p>18-19 FALL&SPRING (FORMAL EDUCATION) survey questions: Thanks to the course, my ability to <i>analyze and interpret information, and obtain new information</i> has improved. Thanks to the course, my ability to <i>produce alternative solutions for complex problems</i> has improved. 19-20 FALL-FORMAL EDUCATION: Thanks to the course, my reading, writing and <i>analysis skills</i> have improved. The lecturer used methods and techniques that encourage <i>critical thinking and research</i>. 19-20 SPRING DISTANCED-ONLINE EDUCATION: Thanks to the course, my ability to <i>analyze and interpret information, and obtain new information</i> has improved. 20-21 fall (online education) survey questions:: Thanks to the course, my ability to <i>produce solutions for problems</i> has improved. The lecturer used methods and techniques that <i>encourage critical thinking and research</i> . 20-21 spring-21-22 fall survey questions:: She/he provided a <i>critical perspective</i> She/he improved my <i>analytical thinking and problem solving skills</i> he/he improved my <i>research skills</i>. She/he improved my innovative and <i>creative thinking skills</i>.</p>	<p>18-19 FALL&SPRING (FORMAL EDUCATION) survey questions: Thanks to the course, my ability to <i>talk and make presentations</i> in front of people has improved. 19-20 fall formal education-20-21 fall survey: Thanks to the course, my ability to <i>talk and make presentation s</i> in front of people has improved. 20-21 spring-21-22 fall survey questions: Thanks to the course, my ability to <i>talk and make presentations</i> in front of people has improved.</p>	<p>18-19 FALL&SPRING (FORMAL EDUCATION) survey questions: His/her <i>teaching style aroused my interest</i> in the course. 24-The course content was <i>thought-provoking and intriguing</i>. 19-20 FALL-FORMAL EDUCATION-20-21 fall survey question: The course content was <i>informing and tempting</i>. 20-21 spring-21-22 fall survey questions: Lecture method was effective, easy to understand and <i>interesting</i>.</p>
<p>Q.4: effective lessons are taught for the effective use of technological lesson equipment to be used in courses</p>	<p>Q.5:positive effect of using methods and techniques that enable active participation of students in lessons, away from memorization, and support creativity and research.</p>	<p>Q.6: assignments and projects given by the instructor to the students will contribute to the understanding of the course and the student's self-development.</p>
<p>18-19 fall &spring formal education survey question: 6-He/she used <i>technological course equipment</i> effectively. 30-New equipment (projector etc.) is available to be used in courses. 19-20 fall formal education survey question: The lecturer used <i>teaching equipment</i> effectively (white board, visual equipment etc.) 19-20 spring online education survey questions: The <i>course materials</i> were sufficiently shared on LMS (or via e-mail) The synchron Synchronous lessons (on LMS, Microsoft Team, BigBlueButton, ZOOM etc.) were carried out effectively and sufficiently. 20-21 fall survey question: The lecturer used teaching and <i>technical equipment</i> related to the lessons effectively. 20-21 spring-21-22 fall survey question: She/he used <i>course materials, appurtenances and technology</i> effectively</p>	<p>18-19 fall &spring formal education survey question: He/she used creative methods and techniques that <i>encourage creativity and research and ensure the active participation</i> of students. 20-21 fallsurvey questions::The lecturer used methods and techniques that <i>ensure active participation</i> of students. 20-21 spring 21-22 fall survey questions:: She/he was <i>promotive and encouraging active participation</i>. It provided me to grasp the lesson and <i>learn permanently</i>.</p>	<p>18-19 fall &spring survey questions: His/her homework and projects contributed to the comprehension of the lessons and helped me <i>improve myself</i>. 19-20 fall: The lecturer's teaching style contributed to my <i>learning</i>. The homework, exams and projects given by the lecturer contributed to the comprehension of the lessons and helped me <i>improve myself</i>. 20-21 fall survey questions: The lecturer's teaching methods contributed to my learning. Thanks to the course, <i>my personal and occupational skills</i> has improved. The homework, exams and projects given by the lecturer contributed to the comprehension of the lessons and helped me <i>improve myself</i>.</p>

The student satisfaction survey questions directed to the students by the Antalya Bilim University ISO Quality Coordinator for the education and training periods between 2018-2022 and in which the student evaluates the course content with the instructor of the course are compared in the table above. As a result, the results of the common question patterns and contents in the survey of each term were tabulated according to the student's answers as percentages. Evaluated questions:

- Thanks to this course, my abilities to analyze, interpret and access new information have improved.

- Thanks to the course, my ability to talk and make presentations in front of people has improved.
- The way of lectures made me very interested in the subject.
- There is new technological equipment (projection, etc.) to be used in the lessons. He used technological lesson equipment effectively.
- Some methods and techniques enable active participation of students in the lessons, away from memorization, and support creativity and research.
- The lecturer's teaching style contributed

to my learning, and my personal and occupational skills have improved. The homework, exams, and projects given by the lecturer contributed to my comprehension of the lessons and helped me improve myself.

In the second step, the comparative analysis method was used by taking the percentages of the Likert scale answers between 0-5 given by the students over a total of 6 questions. According to Collier, comparison is a fundamental tool of analysis (Collier, 1993) and It means the constant comparison of different pieces of data with each other to facilitate the derivation of abstract categories. (Ilgar & Ilgar 2013) Comparative analysis, like experimental and statistical methods, is a general method and is based on the logic of benchmarking. Also, it is aimed to reveal new conceptual categories and to prove their validity through continuous comparisons. In addition, comparative analysis is used to reach empirical generalizations. Empirical generalization does not merely set limits on the applicability of accessing an embedded theory. More importantly, it also offers assistance in terms of greater general applicability and greater explanatory and predictive power. (Bulduklu, 2019)

At this point, it is aimed to compare the questions posed to the students in the formal and distance education process and to reveal which parameters vary or is continuous in the positive

and negative effects of the student's learning.

5. Findings

Within the scope of the study, the averages of the Architectural Design Studios and the Basic design studio courses were taken based on questions during the face-to-face and online education process between 2018-2022, and the comparison was made and interpreted graphically.

• Analysis 1

The first analysis is based on research aimed at improving the student's ability to analyze, interpret, and access new information through the course.

In the face-to-face education process, ARC 4001 Architectural Design Studio 7; While it has the highest average of 89.57%; ARC 2001 Architectural Design 3 Studio has the lowest average of 76.54%. The most different result regarding the question for face-to-face and distance education periods was observed in the ARC 1000 basic design lesson with a difference of about 9%, in opposite way more positive in distance education 8% differences were observed in the ARC 1002 Architectural Design Studio 2. ARC 3001 Architectural Design Studio 5 has the same satisfaction level of 77% in Architectural Design 5 courses, both face-to-face and distance education.

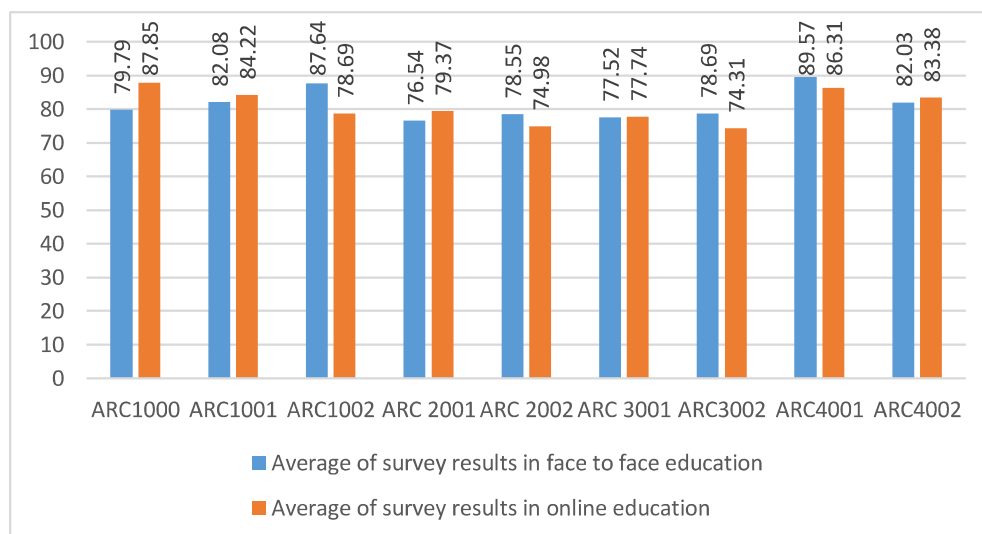


Chart 1: Graphical representation of analysis 1 results

It is examined in terms of helping students to develop their ability to analyze, interpret, and access new information and to improve their problem/problem-solving skills thanks to the course. According to the results of the survey, they stated that these skills the freshmen of the basic design course, which is one of the practice courses, can be more efficient and develop themselves in online education compared to face-to-face education. In the results of the project courses, which are all studio courses, except for the 1st year spring semester, the results of online education and face-to-face education are close to each other, it is indicated in Chart 1. The students were mostly satisfied with the results of the first-year basic design course ARC 1000 and the architectural studio course ARC 1001, although by a small amount. A remarkable point is that the ARC 1002 course, which is the second term project compared to the Basic Design and first project course, can be interpreted as more inefficient than the face-to-face education for the solution of the problems they encounter for the first time in architectural studying practices with online communication.

• Analysis 2

The second analysis is aimed at measuring the skills of students in public speaking and making presentations. Especially in architectural studio classes, students' posters and project

presentations gain importance. The face-to-face jury environment in the face-to-face education was carried out in the same format on the virtual platform.

The highest satisfaction rate with 91.33% was obtained in the ARC 4001 course during the distance education period. In the face-to-face education period, the ARC 1002 course is seen as the most efficient with 88.68%. The satisfaction rate of the ARC 3002 course for this question decreased to 83.12% in face-to-face education and 62.86% in distance education; The highest difference in face-to-face and distance education (21%) was observed in this course. Another interesting result of the ARC 1000 basic design course is; In the face-to-face education process, the satisfaction rate of 78% increased by 9% in distance education and reached 87%. The same situation was experienced in the ARC 4001 lesson: the satisfaction rate of 84% increased by 7% and reached 91% in distance education. In the ARC 1002 and ARC 2001 course, the satisfaction rate in face-to-face and distance education is very close to each other.

According to the results of the survey, it was found that the students, who stated that these skills were more in the basic design and first project courses, negatively affected these skills with distance education in the second semester

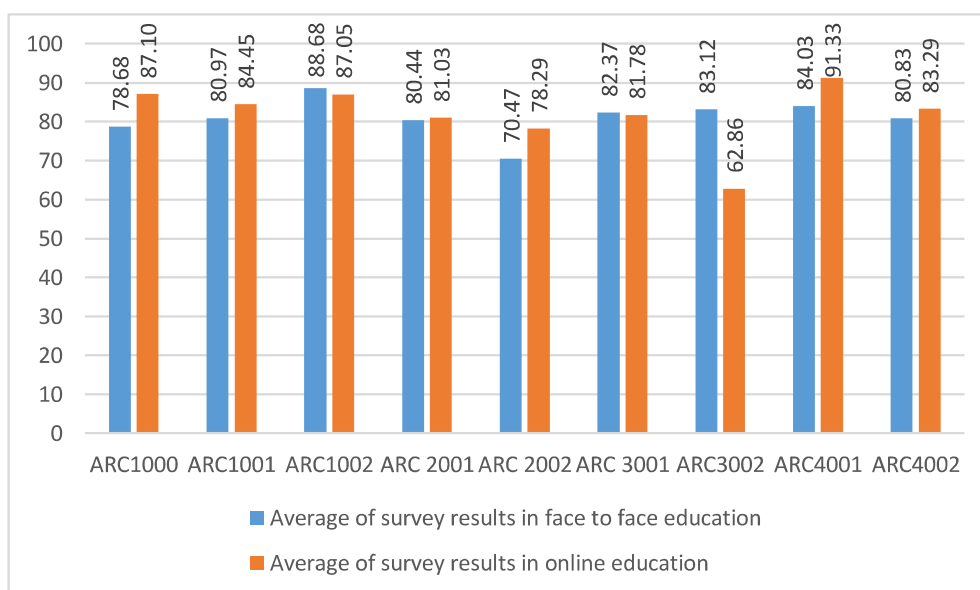


Chart 2: Graphical representation of analysis 2 results

of the 3rd year and that formal education could be more beneficial. Accordingly, it shows that students are better able to express their projects face-to-face, rather than through distance communication, due to the content's complexity and the design area's growth, especially in the ARC 3002 architectural design studio course compared to the projects in the previous semester. It can be thought that it provides a more comfortable environment for freshmen students who have just started school, due to factors such as setting up the jury in a virtual environment and not having to open a camera. However, it should be stated that the establishment of a jury, which is specific to design courses, does not allow for an open exhibition and open jury environment that takes place throughout the faculty.

• Analysis 3

The third analysis is aimed at investigating the positive effect of the way of teaching on the student's interest in the subject.

It has been observed that students' interest in the distance education process is intense in 5 of the architectural studio courses, except for ARC 1002, ARC 2002, and ARC 3002. Although the highest satisfaction rate was observed in the ARC 4001 course with 86.56%, the same course

was found to be similarly high in distance education. This shows that it can be specific to the course. In the ARC 3001 course, the satisfaction rate, which was 70.92% in face-to-face education, reached 84.71% in distance education with an increase of 14%; in the same way, the satisfaction rate in face-to-face education in the ARC 4002 graduation project course increased from 69.81% to 83.29%; the biggest difference in face-to-face and distance education processes was observed in these courses. In the ARC 4001 course previous course from the graduation project; in both face-to-face and distance education, a satisfaction rate of 86% is observed.

Since architectural design studios are given face-to-face criticism, keeping the course groups in a certain number, and each group teaching separately in the virtual environment, the communication between the groups in the studio environment causes some disconnections in the virtual environment. While it is important that the studio critics in the group are watched by other students, sharing on the screen has replaced desk critiques in online education. Although desk critiques are generally handled based on output, the fact that drawing and modeling programs are intervened quickly and easily at different phases of the production

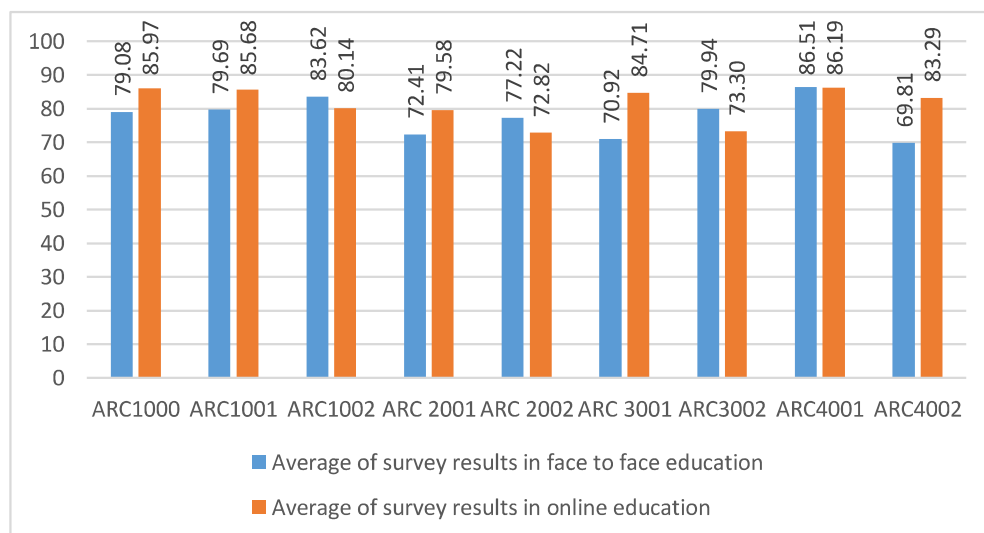


Chart 3: Graphical representation of analysis 3 results

process of projects has increased efficiency. When the results of the survey are examined, it is understood that the interest of the students towards the courses continues even online and it is productive.

As a result of the application of the project courses with online education, it can be beneficial to show the theoretical parts or to allow other student groups to listen to each other's critiques on the screen. In response to the questions asked in the surveys that the course is impressive, facilitating, and interesting, it is seen that the students can provide more efficiency in online education than in face-to-face education.

• Analysis 4

The fourth analysis is based on the research on whether effective lessons are taught for the effective use of technological lesson equipment to be used in courses.

According to chart 4 below In distance and face-to-face education, an equal satisfaction rate was achieved as 76% in ARC 2002 and 79.50% in Arc 3002. The biggest difference between face-to-face and distance education was observed in

ARC 1002 and ARC 3001 courses, with 9%.

Due to the global epidemic, earthquakes, and natural disasters on a national scale, online education has brought along some infrastructure and technological requirements. Face-to-face critiques reflecting the relationship between hand drawing and master apprentice as a classical method in architectural education and professional architectural production practices are especially prevalent in the first two years of the education period. It is widely believed that hand and drawing are related to mind and perception. With online education being carried out, this situation has led to the use of technological opportunities in the fields such as presentation, etc. in the first years of the education period. The most important stage that architectural design studios are affected by in the online education process is the replacement of model-making with 3D modeling programs. According to the results of the survey, it was seen that the use of infrastructure, equipment, and programs required by online education in other studios other than ARC 1002 and 4001 courses was effective. It should be reminded that students have the chance to repeat them retrospectively, especially in recorded courses.

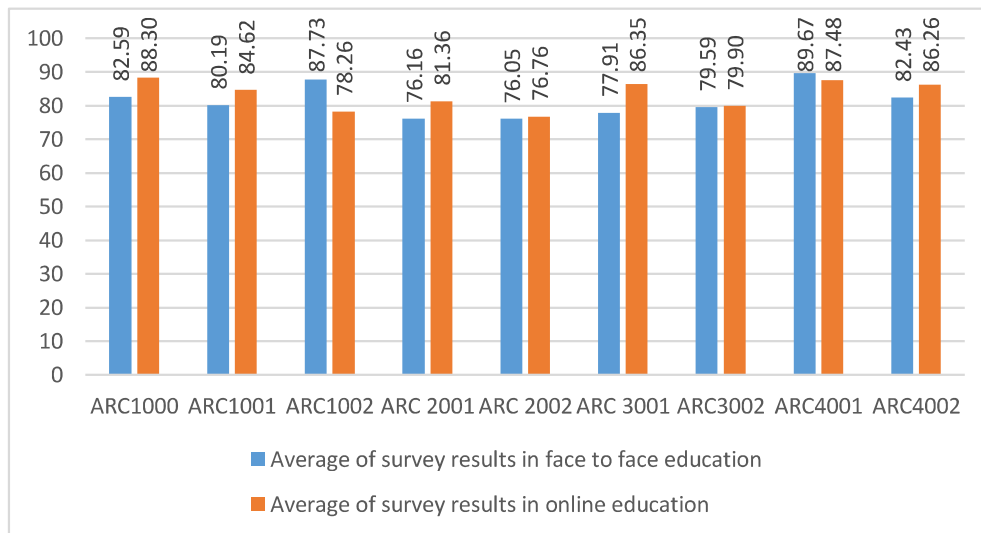


Chart 4: Graphical representation of analysis 4 results

• **Analyse 5**

In the fifth analysis, there is research on the positive effect of using methods and techniques that enable active participation of students in lessons, away from memorization, and support creativity and research.

The highest satisfaction rate for this question was observed in ARC 1000 basic design with 86.95% and ARC 4001 with 86.51% during the distance education process. In the face-to-face education process, the highest rate was observed in ARC 4001 with 87.02%, and ARC 1002 with 85.21%. These high rates observed in 1st and 4th-grade classes indicate the importance of practices that encourage student participation in the beginning and maturation stages of architectural education. The biggest difference in face-to-face and distance education processes was observed in the ARC 1002 course, with a satisfaction rate of 85% in face-to-face education and 77.97% in distance education. A similar satisfaction rate is observed in the ARC 3001 course, 82-83% in face-to-face and distance education.

It is possible to conclude that online education is efficient, except for Arc 1002 and 3002 courses and 4001 courses. The highest difference in the results of the evaluation of the methods supporting the research to ensure active participation in the online and face-to-face education period was observed in the answers of the freshmen students in the ARC 1000 and 1001 courses. In particular, the fact that it is difficult to access campuses like Antalya Bilim University, outside of the city can be perceived as a factor that decreases class participation for students. It is undeniable that it is simple for students to access classes from a distance without coming to the campus or the education building. However, being away from the social environments of university education that includes campus life, sharing, and intersections is a great loss in disciplines that feed from every field such as architecture.

• **Analyse 6**

The sixth analysis examines whether the assignments and projects given by the instructor to the students will contribute to the understanding of the course and the student's self-development.

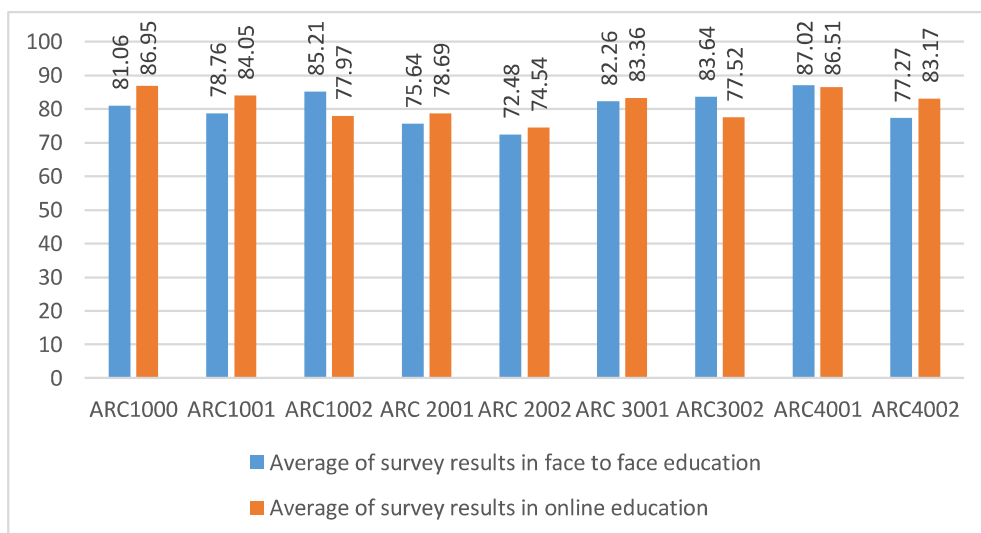


Chart 5: Graphical representation of analysis 5 results

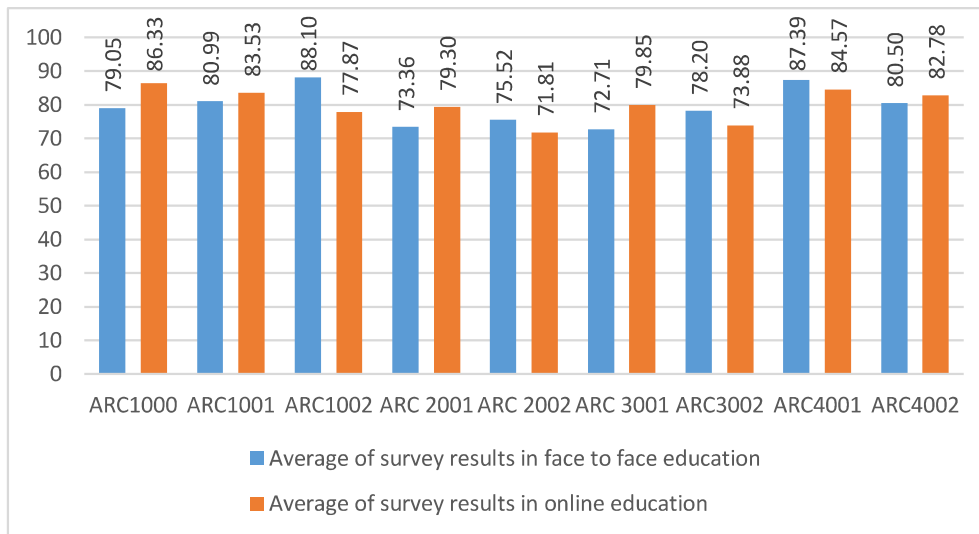


Chart 6: Graphical representation of analysis 6 results

According to the students' answers to the 6th question, the highest satisfaction rate in the face-to-face education process was observed in the ARC 1002 course with 88.10%, followed by the ARC 4001 course with 87.39%. In the distance education process, it was seen in ARC 1000 with 86.33% and ARC 4001 with 84.50%. In the face-to-face and distance education process, the difference in the highest satisfaction rate was observed in the ARC 1002 course with 11%.

It can be said that the contribution of the homework given in face-to-face education in ARC 1002, 2002, 3002, 4001 courses is more efficient as a result of frequent consultation with the supervisor in the studio environment. However, in other courses, it is also revealed that satisfaction with the follow-up and feedback of the critiques and assignments given during online education is provided. It can be said that virtual classroom environments such as the Learning Management system used during distance education are easy to monitor students' activities and homework. However, in the evaluation of the homework and in-class applications submitted online, other than the jury, for the development of the project, it may cause miscommunication from time to time

when it is sent to the student in writing as a comment during the extracurricular times.

• Total Analysis

As it can be seen from the chart.7 below; when the survey results applied in the face-to-face and distance education processes are compared, the highest satisfaction rate in the face-to-face education total is 81.38% in Q.1 (at improving the student's ability to analyze, interpret, and access new information through the course.) and Q. 4 (effective lessons are taught for the effective use of technological lesson equipment to be used in courses.). In distance education, Q.4 has the highest rate with 82.25%. The highest difference between satisfaction rates of 4% during distance education and face-to-face education is observed in Q.3 (positive effect of the way of teaching on the student's interest in the subject.) the satisfaction rate increased from 77.68% in face-to-face education to 81.29% in distance education.

Directed to students for online courses in the 2020-2021 academic year, "Did you encounter any problems while taking this course with online education?" The students' statements regarding the question are given in the acknowledgment part.

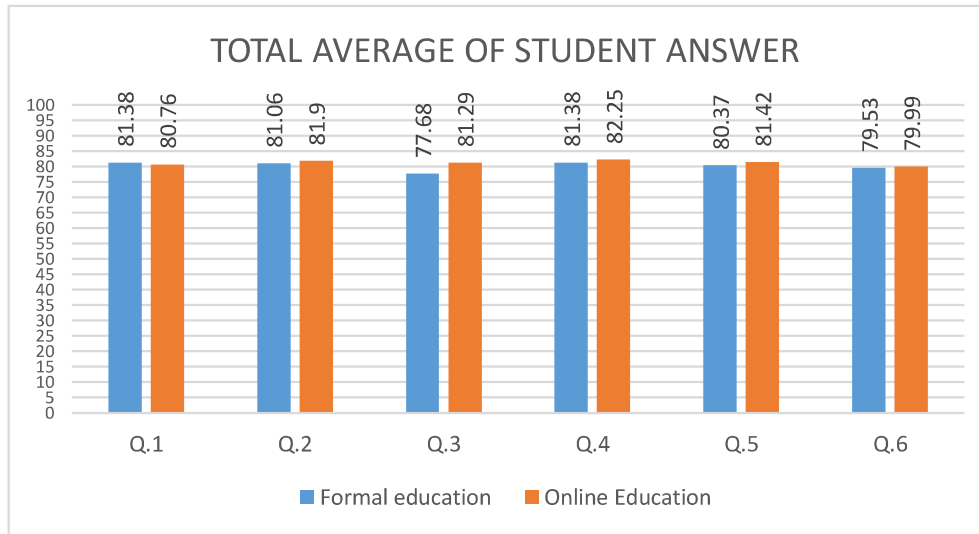


Chart. 7: Total average in the distanced and formal education of the students' answers Survey Comments

The comments they wanted to make about the course were specifically directed at improving distance education in the distance education process or understanding the issues they experienced, aside from the questions in the student satisfaction surveys, in which the content of the course and the course instructor was evaluated. As a result, especially in design studio courses, the most common online education; There are statements that design courses are not suitable for online education, cannot continue online, online education is not efficient, and does not provide success in studio courses. On the other hand, the feedback that the project lessons were interpreted as "must be face to face" was the second highest statement among the comments made among the students. In the beginning, the problems encountered during the online education period, while being described as "difficult" by the students; problems of focusing, lack of communication, and active participation are seen as other problems, respectively. In addition, one of the students who commented on the questionnaire stated that they understood the importance of communication on the model and criticism on paper.

On the other hand, among the survey comments, there are also statements stating that online education is as effective and efficient as face-to-

face education, although it is few. Apart from this, there are demands to increase the accessibility of the instructors by planning interactive courses and recording the courses to improve distance education.

5. Conclusion

The practical education model for the discipline of architecture includes a process that began with the master-apprentice relationship and includes a variety of studio approaches. As a result of the decisions taken in the field of education due to the unexpected and sudden changes experienced around the world and in Turkey, it was carried out in an online way. The role of online education in architectural design practices is still a topic of discussion and is expected to have a long-lasting impact on educational models at this time when working opportunities and distance learning opportunities are being pushed to their limits.

Through surveys and comments, the study examines how students' perceptions have changed as a result of the face-to-face, online, and hybrid project courses that are the basis of architectural education. Communication is the main part, particularly in the project development phases of architectural design studios that are disrupted online learning. There is barely any interaction between the students

during class, little cross-pollination between the various learning environments brought by the studio culture, and limited student-to-student conversation. On the other side, a change in the location for the design idea's discussion opened up new possibilities and flexibility. Model making, which is essential for creating the perception of 3D space, had to disregard, although the instructor's ability to interfere with his line in the projects that the student reflects on and beyond the screen is a significant advantage.

Considering both the comments and the results of the survey, it was concluded that project courses, which are practice courses, are more difficult for students especially for freshmen to get used to the profession and express students' selves in online education. In the project training received after the first project experience, the expectations and load of the course increased until the last year. And the students who have come to the graduation period, and who have received the graduation project, have stated that taking online project courses is more inefficient than face-to-face education.

As a result, online education and face-to-face education may have advantages or disadvantages depending on the intended use of students in training that include practice such as project lessons. Here, face-to-face education comes to the fore to communicate that they feel lacking, to express themselves in front of the community, and to prevent possible problems in the concept of proportion/scale depending on the handmade model. It is also among the results that the ideas reflected on the screen can be more useful in online education thanks to the digitally taught programs, while it stands out in terms of listening to the recorded critiques again in online education. However, since the model made in coordination with the drawing will improve the student's perception of space in both education systems, the student is guided by intervening more quickly with the critiques in face-to-face education.

This study, it has made essential for Turkey to continue providing online courses since 2020, just like other countries. Some courses,

particularly theoretical ones, have chosen to continue online learning with online education. Additionally, it has been identified that the most interactive solution, which will benefit students studying in the department that requires application, such as architecture, should be sought for a common solution in which they should use both systems together, for the years 2023 and after, when the hybrid system is also tried. The Z generation, who grew up in the age of technology, have different perceptions and focuses. They are curious about the innovations brought by technology and are more active in improving themselves than the previous generation. Because of this, it is possible to alter the curriculum in the educational system so that it can be included in the traditional educational system with hybrid education and architectural education as well as be adapted to other required online education, which will improve the effectiveness of project courses with practical+theoretical education.

Acknowledgments: Directed to students for online courses in the 2020-2021 academic year, "Did you encounter any problems while taking this course with online education?" The students' statements regarding the question are given below.

ARC 1000:

- Since we were in the first year and we did not know each other, we had difficulty actively participating in the lesson.
- Sitting in front of the screen for 7 hours caused focus problems because the lesson was too long.
- I did not encounter any problems, it was a really enjoyable lesson like face-to-face training.
- I believe that face-to-face architectural education will be more productive.

• Face-to-face is better

ARC 1001 – Architectural Design I

- At the beginning, we had problems with active participation in the lessons, since we were far away and we had never seen each other before, we had trouble attending the lessons. I also think it would be much more effective if we had the critics face-to-face. but that doesn't change the fact of how good this course is.
- Being the first semester and being done remotely made it hard for me.

ARC 1002 – Architectural Design II

- Since this is a project course, I would like it to be face-to-face. Because of the model, the lecturer can give the students a critique of the design more easily and descriptively.
- the project course is challenging for distance education. while taking criticism, sharing ideas, etc. I had a hard time

ARC 2002 – Architectural Design IV

- This course is already difficult online. I say it independently of the teacher. The Internet connection cannot share the screen.
- This course should be face-to-face, we saw the importance of a single line our teacher would take during this period. It was a little difficult to explain ourselves and our project online, to the students, I'm sure it was also difficult for our teacher.
- I have not had a problem that would cause me extreme distress.

However, I do not agree with the idea that this course can be continued online.

- It was the most productive design course I have ever taken.
- ARC 3001 – Architectural Design V
- I had the opportunity to watch many people on the jury, apart from the grade I will get, I can see that I am improving.
 - It was quite difficult to draw even a line since it was a design class. I don't think it's a course to be taken remotely. Although architecture is abstract, I think we need to communicate concretely.
 - Design courses are not successful with distance education.
 - Again, we have come to the end of an inefficient online design course...
 - Since the course is practice-based, I think it is not suitable for the distance education system.
 - It was difficult to take a design course remotely
- ARC 3002 – Architectural Design VI
- Although it is a difficult course for distance education, it was very useful because we were able to communicate a lot. I did not encounter any problems.
- ARC 4001 – Architectural Design VII
- Taking a pen in your hand and showing it digitally are very different things, but of course, this is not something we can prevent.
 - Being a hands-on course is not suitable for distance education, even though the student or instructor puts in the necessary effort.
 - I think that design lessons are more productive with face-to-face training.
 - They explained the lesson to us as much as possible with distance education.
 - I had problems with my personal computer, there were moments when I was inadequate for the lesson. Even though I had technical difficulties, it was a very good time.
 - Face-to-face (formal education) could have been better.
 - Distance education projects developed much faster than face-to-face education.
 - We sometimes had a hard time understanding each other in terms of communication.

2020-2021 SPRING SEMESTER: DISTANCE EDUCATION

What do you think can be done to make it more effective when teaching with distance education methods?

ARC 2002 – Architectural Design IV

- Especially for this semester, the distance education design course has had a very bad effect.
- We know that distance education in design class is difficult, but this term was much more difficult for me. I don't think I had a very productive period because I think our teachers and we did not fully understand each other. maybe there were disagreements because we didn't see our gestures on the screen.
- I think distance education is more beneficial than formal education. But for the architectural design course, the course duration (while giving the critiques) should be more understandable and a little longer. However, distance education was more beneficial for both training and being more creative because we had the opportunity to work more on design at home since there was no commute.

ARC 3001 – Architectural Design V

- It would be better if course records were taken.
- ARC 3002 – Architectural Design VI
- It should be accessible by e-mail outside of the classroom. In such a process, the only place we can communicate outside of the classroom is via e-mail.
 - I could not provide transportation outside of the classroom in any way.

ARC 4001 – Architectural Design VII

- Interactive lessons can be increased.
- ARC 4002 – Architectural Design VIII
- The first thing to do with the distance education method is the motivation of the students, we have been studying at home for 3 semesters. During this period, I could only see my family for breakfasts and dinners. While working without leaving the

computer...

- I think this course should not be given by distance education.

21-22 FALL SEMESTER

What do you think can be done to make it more effective when teaching with distance education methods? / What can be done to make it more effective when teaching with distance education methods?

ARC 1000:

- Face-to-face training is much better

ARC 4001:

- the project course is also more efficient with distance education.

21-22 SPRING TERM

What do you think can be done to make it more effective when teaching with distance education methods? / What can be done to make it more effective when teaching with distance education methods?

ARC 1002:

- I think we should be critical of the on-demand online as well as 2 face-to-face

- can be by giving distance education

ARC 2002

- Applications must be face-to-face

- This course must be online

ARC 3002:

- I did not have any problems with distance education and I did not feel any deficiency. I prefer our juries to be remote.

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Ethics Committee Approval: N/A.

Author Contributions: Study conception and design: S.B.E., S.U.; data collection: S.B.E., S.U.; analysis and interpretation of results: S.B.E., S.U.; draft manuscript preparation: S.B.E., S.U. All authors reviewed the results and approved the final version of the manuscript.

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