Article

Teaching basic design online during the Covid-19 pandemic: An evaluation of the conventional and innovative pedagogies

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ABSTRACT

This article presents multiple pedagogical methods employed for urban planning students' first-year basic design studio course during the rapid shift to an online environment in response to Covid-19. The aim is to critically discuss the conventional and innovative tools and techniques in design teaching during the online education system in the 2020–2021 academic year at Middle East Technical University City and Regional Planning Department. To do this, the basic design and planning studio course preparation itineraries, student projects and reflections are analysed to unveil the process of creating a non-linear and open (online) studio course. Although the central question in this study is how to prepare for an online design course, which is traditionally a hands-on experience in an active face-to-face studio environment, the outcomes of this article are noteworthy to evaluate from a broader perspective of basic design education for urban planners. The pedagogical strategies for a non-linear and open studio present significant lessons learned for a similar future experience. For this, the study discusses the outcomes as integrating conventional and digital tools, collaboration with students in preparing the course content, a flexible course program, and a process-based design. The results suggest combining new and conventional pedagogical approaches to adapt not only to an online education system but also to a possible revision of the course programs of design studios.

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INTRODUCTION

The first wave of the pandemic coincided with the spring semester of 2020, which compelled universities and instructors to employ emergency remote teaching (Veletsianos & Houlden, 2020). This education in an emergency was conducted through several online platforms although many were not prepared for this system (Hodges et al., 2020; Pokhrel & Chhetri, 2021). By the start of the following academic year, universities began to explore the possible benefits of online education without forgetting the challenges posed to both instructors and students (Charters & Murphy, 2021). While adapting any conventional course to an online environment requires time and research, design studios need a highly different organisation. The peculiarity of the design courses in comparison to the theoretical

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academic courses lies in the fact that "design knowledge is difficult to externalise and is more tacit" (Polanyi 1966 cited in Park 2020). Within this context, the basic design studios during this period are significant platforms as they seem to be impossible to continue online due to the hands-on requirements.

The basic design studio is based on John Dewey's concept of learning by doing (Decandia, 2020) where students explore the concepts and discussions of theoretical courses through hands-on experience (Schön, 1983) and it is a participatory "creative space where students gather with peers and tutors to solve design problems" (Hettithanthri & Hansen, 2021, 2343). Students learn abstract thinking, creative problem-solving techniques through visual compositions in a studio-based learning experience (Orbey & Sarıoğlu Erdoğdu, 2020; Park, 2020; Kumar et al., 2021) that is a physical container and a shared space created for the social interaction of students and design tutors (Corazzoa, 2019; Charters & Murphy, 2021). This education simply aims to pass soft skills "such as communication, decision-making, and collaborative performance" (Park, 2020, 525) and is characterised by the notion of creativity (Ozkar, 2004; Greene et al., 2019; Uysal Ürey, 2021). Creativity is already a vague process and almost an obstacle in conventional studios as the students have a highly rational high school education (Günay, 2007; Alizadeh et al., 2016) that is detached from the sensory experience (Arnheim, 1965, 3). Despite the importance, there is a limited number of studies examining the fully online design studios in the existing literature as it is fairly a new phenomenon (Fleischmann, 2019; Alawad, 2021) mostly with a specific focus on the blended learning environments where online activities are merged with face-to-face instruction (Alizadeh et al., 2021).

Online design studios have some characteristics such as not having a fixed location, mediation through digital platforms, digital collaboration tools, peer support, critics, juries, and process-based learning according to Hettithanthri & Hansen (2021). To advance this list and discussion, the online design studio case during the 2020–2021 academic year for the first-year undergraduate urban planning students at (Middle East Technical University) is significant for revealing the potential and limitations of online design teaching. The conventional design studio was adapted into a digital learning environment (Pokhrel & Chhetri, 2021) through re-formulation of the course content, syllabus, and its pedogeological methods by keeping in mind the negative implications of COVID-19 on the mental health of the class participants (Amro, 2021; Callahan, 2021). Furthermore, the teaching process had to leave room for interpretation, critical reflection for the students during the adaptation.

In this context, the article will focus on the teaching methods and design pedagogies employed throughout 2020–2021 in the first-year basic design studio of the urban planning

department at (Middle East Technical University). For this, the study first explores the pedagogical approaches to prepare an online basic design course. This exploration emphasises the importance to build a non-linear design studio to adapt to an online teaching environment and to push the limits of conventional basic design teaching strategies. Respectively, the applied pedagogies for a non-linear design studio, the methods will be unfolded as (i) the integration of the digital and conventional tools to teach design such as conventional hands-on techniques (sketching, note-taking, model making) and new digital methods (digital drawing, online brainstorm meetings); (ii) design feedbacks looking for new ways to remotely handle a usually hands-on experience where students gather with instructors to solve design problems in studios' physical space; (iii) a flexible and collaborative program that includes an incremental syllabus that is open to updates and student feedbacks as the course goes. After the critical presentation of these methods, the second section of this study focuses on the new features to create a more enjoyable, visually communicable and transparent studio experience for the implementation of the studio course. These features include the formation of a visual identity for the course, establishing a website and social media account and organisation of guest lecturers and workshops. Finally, the study ends with a critical evaluation of the potentials and limits of online (design) education, the confrontations and accordance of conventional and digital teaching methods through the student projects, students' follow-up evaluations for the course and the theoretical course content.

HOW TO PREPARE THE (ONLINE) BASIC DESIGN STUDIO?

The university education under the state of exception that Covid-19 pandemic challenged the design studios that mostly depend on hands-on assignments and face-to-face interaction to boost a creative production environment. In order to face this challenge, our course employed several conventional and innovative pedagogies. They followed a narrative lens to the design problems, hybrid approaches between hand and computer-aided exercises, using storytelling as a tool in research, brainstorming, people-centred design methods, coding, generative art, and group works to foster self-regulated learning (Greene et al., 2019) to reinforce "investigative work, inventiveness, capacity for self-assessment" (Lindström, 2006) for students.

In this context, this research explores the (online design) course program preparation and its execution through a critical overview of course itineraries, year-long course experiences of the instructors' and the students' projects and feedback. By enriching this process through theoretical references and in-class project examples, the article presents the pedagogies adapted for a non-linear and open design studio that moderates between the conventional
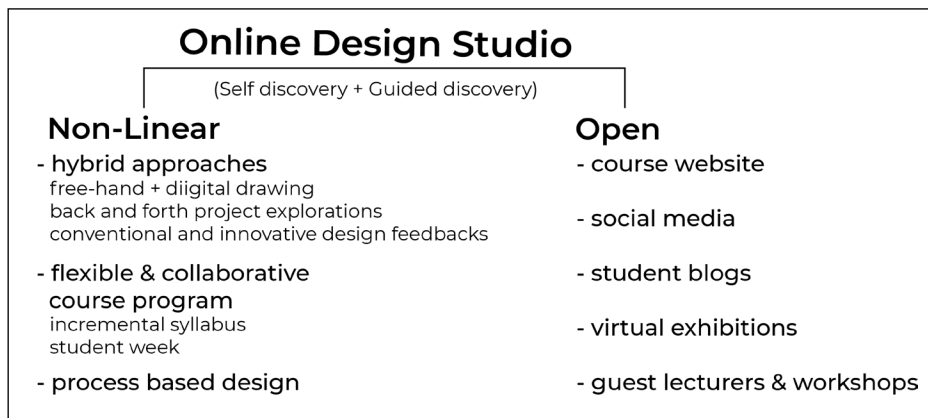
Figure 1. Main pedagogical strategies to build an open and non-linear online studio.

design studio strategies and the novel art-based, digital technologies through the four main pedagogical strategies that will be explained in detail in the upcoming sections:

1) Integration of self-discovery and guided discovery; conventional and digital tools;

2) Flexible and collaborative course program that is open to change;

3) Process-based design teaching;

4) Open Studio for transparency and accessibility (Figure 1).

Pedagogies for a Non-Linear Design Studio
The basic design studio helps students acquire problem-solving and critical-thinking skills for spatial compositions and eventually for actual urban settings. The basis of this process is conventionally to use abstraction as a pedagogical tool and the Gestalt principles of visual perception (continuity, similarity, enclosure, common fate, etc.) at (university name) (Günay, 2007). The self-discovery

and guided-discovery methods are relevant within this teaching process as the inductive teaching techniques for design (Esmailizadeh et al., 2019). For both, the students are expected to interact with the instructors and among themselves for the creative problem-solving and abstract thinking processes. Traditionally in basic design studio courses, the instructors mostly follow a complete inductive reasoning process that pushed for the self-discovery learning method at (Middle East Technical University). The students were given an abstract concept to represent in two or three-dimensional mediums – an exploration of form relations, piece, and whole qualities prior to any theoretical approach, the theory came later. For example, the first task of the studio can be "abstraction of a feeling" on "a black and white medium framed in a certain size". The students are "usually" not given further details to tease their curiosity and make them bring along many materials giving room for a rich discussion that is highlighting the trials and errors in the project. Most of these projects were full of "errors" as expected. Although this self-discovery
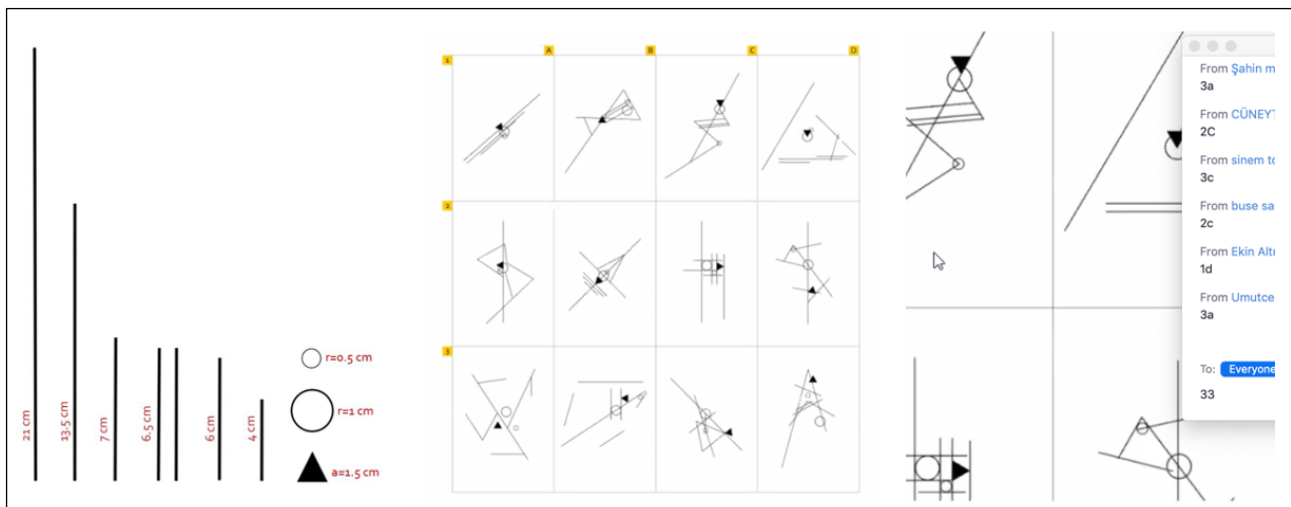

Figure 2. Students actively using Zoom chat box during the class to answer simple guiding questions for the "exploration of dynamics of form" exercise.
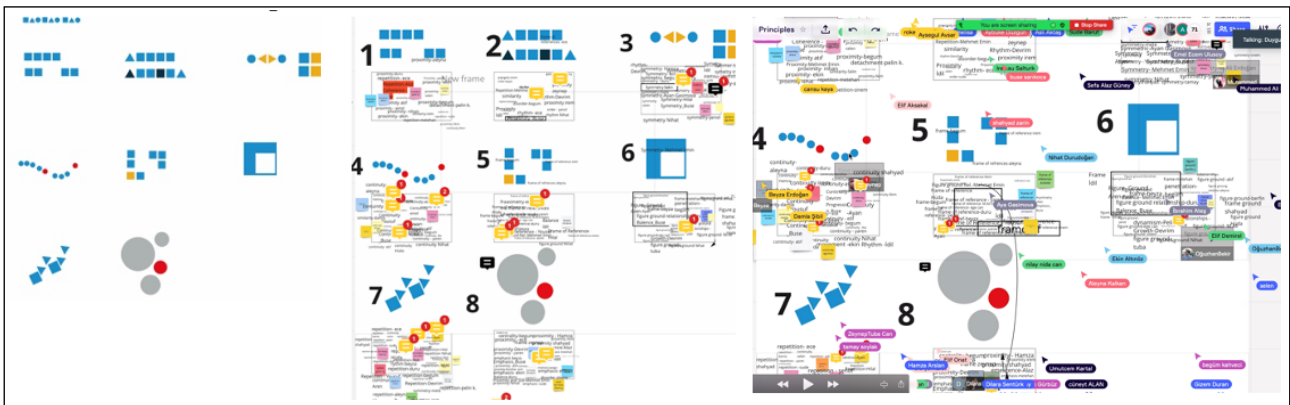
Figure 3. An exemplary online whiteboard exercise to unfold "gestalt principles" through a self-discovery method.

method stimulates discussion in the class and generates a more fruitful outcome than a mere theoretical presentation, the "expected" anxiety of the design process for the students seemed to be problematic for our design course.

During the online design studio program, the new course pursued an open approach through clear and repetitive theoretical explanations and detailed design briefs. The courses and exercises followed an interpretive approach, mixing inductive learning with interactive tools. For this, the course designated course hours, not only after hours as done before, for self-discovery studies prior to a theoretical explanation. This method was supported via digital tools as well. For example, the in-class exercises dissected some forms from Vasili Kandinsky's Composition VIII and asked students to explore several form relations by freehand drawings. Some outcomes were presented in a table and shared with the students as can be seen on the left side of Figure 2. As we have asked the students some overall design-related questions, they could share their answers through zoom's chat box (right-hand side of Figure 2). Besides, the online whiteboards such as Miro helped the class work instantaneously and in large groups. The "Gestalt principles" exercise is an appropriate example, to sum up, our approach and illustrate the use of new tools. Figure 3 shows the initial drawing by the instructor representing the Gestalt principles without any indication of what they stand for. Firstly, this drawing was placed on a collaborative whiteboard and all the students were required to write down the concepts they think that fits at the beginning of the class. The end result was complex and rich in concepts, defying the text-book definitions of this theory and leaving room for students' interpretations. Following this, the edited drawing was integrated into the theoretical presentation during the course break. This incremental approach includes students in the course, manages a good level of participation in a crowded class, and brings new perspectives and dynamism to the theory unlike in a conventional studio.

Integrating the Digital and Conventional Tools

The accessibility to computers and online submissions enabled better use of computer-aided programs and collaborative online platforms during online education. However, teaching basic design traditionally meant emphasising the importance of representation by hand. Still relying on this importance, most of our exercises followed a hybrid approach to find a balance between computer-aided programs and freehand drawings. The hybridity refers to some of the submissions that required both drawing by hand and a computer program. Searching for a mix of methods was not only in terms of drawing but also to enhance students' problem-solving skills and welcome a variety of their proffered techniques. As we passed from the simple compositions to more complex representation techniques of urban space, the students were asked to come back and forth in different visual representation techniques to break down the linear approach of most design studios (Chen, 2016; Hettithanthri & Hansen, 2021). Figure 4 shows how the spatial sketching was later adapted to a more abstract composition. In conventional studios, the abstraction projects are usually left behind as the students learn new skills of spatial representation. By challenging this, our studio aimed to integrate new skills in a non-linear fashion.

Updating the theoretical stand of the course and adapting its pedagogies for online education required us to review the rooted theories commonly used in the previous studio courses. One of these well-established theoretical discussions was Kevin Lynch's (1960) book "the image of the city". The traditional pedagogical attitude in a face-to-face studio has always been to introduce these image elements first and give students to look for their correspondences on the university campus. For an online adaptation, we had two tasks: review the theory and adjust the exercise for an online environment. Before explaining Kevin Lynch's image elements, we asked students to make a 10-minute quick sketch to express their close surroundings. After discussing the primary outcomes and representation techniques, they were given a take-home exercise to
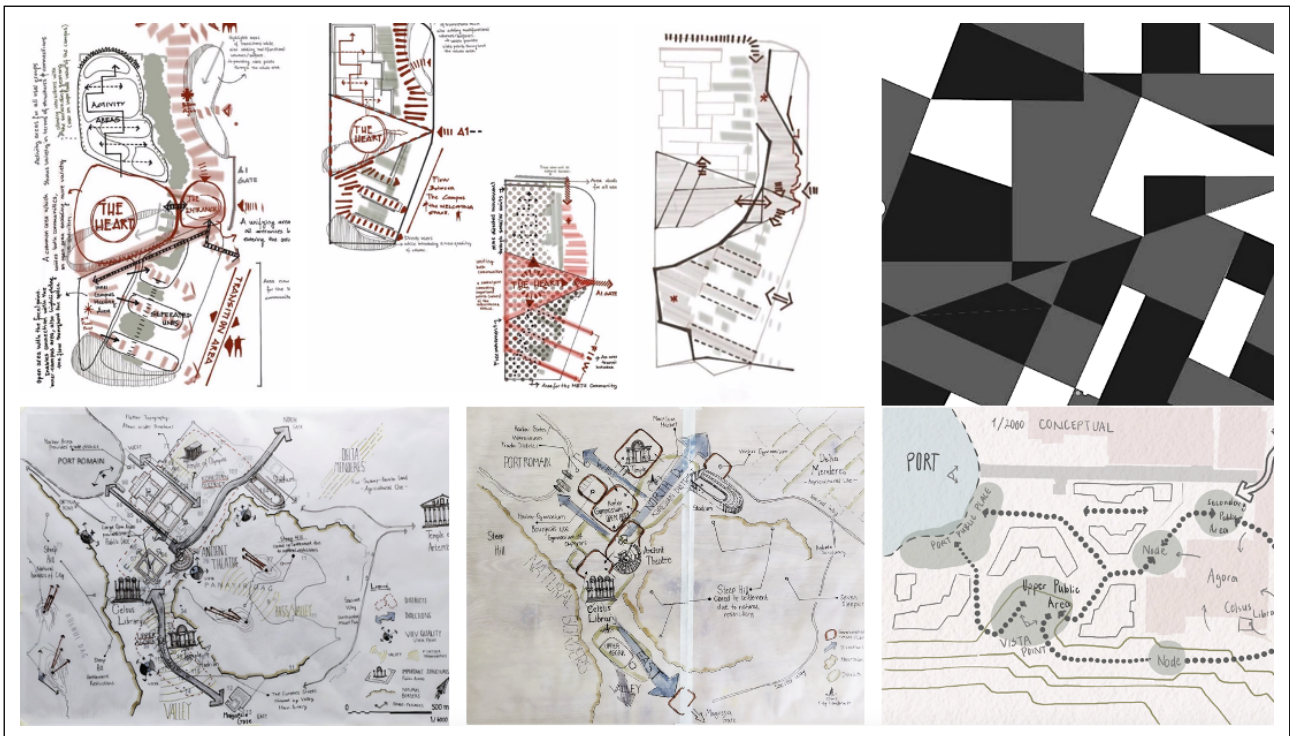
Figure 4. The first row of figures shows a back and forth approach to design as the student (A.Ekin Altınöz) starts with a new task of spatial sketching and proceeds with a more abstract composition, a skill acquired earlier in the studio. The second row includes the integration of hand drawn and computer aided drawings for the same task (M.Emin Sarıhan) to explore potentials and limits of both techniques.

represent their neighbourhoods to answer the question: "How would you map out the places you use/remember in your city?" This assignment helped to unveil the peculiar elements of our students who live in several different cities and even countries, as well as assisting them to explore their living spaces with a new perspective. The assignments were used during the theoretical lecture to critically identify the textbook definition of image elements. Instead, some

critical discussions transformed and enhanced some of the definitions as many students brought subjective local qualities. As a final step, we have adapted and transformed the conventional model of sketching the mental maps and carried this style further with an online and interactive environment: ArcGIS story mapping. With the help of a workshop given field, who is a former graduate from our department, the students had the chance to learn how to
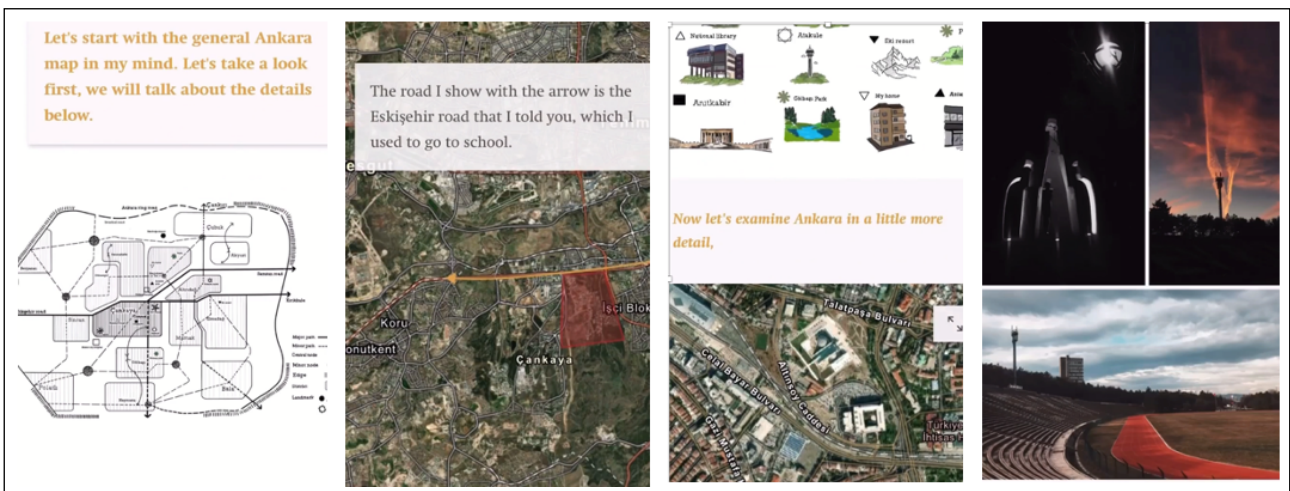

Figure 5. Several skills of visual representation such as sketching, drawing, photography shown in ArcGIS story maps for image of the city exercise (by A. Nur Aktaş).

use this program. The resulting projects were an amalgam of personal narratives, stories, photographs, digital and interactive maps, hand-drawn or computer-edited sketches that can be accessed by the public. This approach also enabled students to leave their houses and explore their close surroundings to stimulate students' senses and increase their empathy (Rodriguez et al., 2018; Hettithanthri & Hansen, 2021). Figure 5 illustrates one of the student projects prepared in ArcGIS story maps that integrates several modes of spatial representation that the class learned during lectures, workshops and projects such as photography, hand sketching, digital illustration, mapping

and storytelling all pointing out the "inventiveness" used by the students (Lindström, 2006).

Design Feedbacks

One of the design studios' most important learning processes is the one-to-one or group critique sessions where the students are guided over their projects. This process helps to create reflective conversations where the students are given words to follow their questions up or given time to reconsider some of their design choices in the class time (Schön, 1983). Since online education prohibited direct contact between the instructors and the students, we

- **Drawing and talking**
Simultaneous drawing where the instructors draw over students' projects while explaining main issues. The annotation tool via zoom was used in breakout rooms for more detailed feedback for this.

- **Interactive evaluations**
Using a collaborative whiteboard with students and including them in the feedback processes through post-it notes, keywords, and annotations.

- Collective evaluations
The handmade models and projects are gathered through online course system and divided into groups according to the common issues. The feedbacks are presented in a poster and distributed to the entire class.

- Video recordings
Some 3D modelling and free-hand sketch-making processes were presented as videos pre-recorded and edited by the instructors.
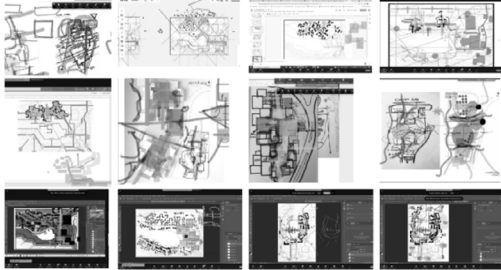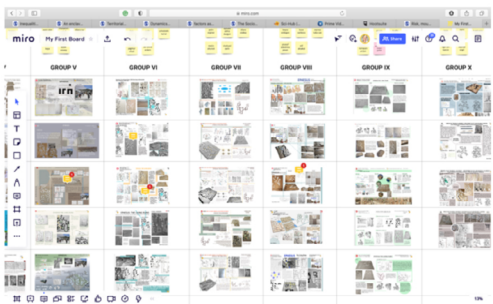
Figure 6. Design feedbacks integrated several tools and methods throughout the online studio classes.

have adapted the critique sessions into the virtual studio environment integrating verbal and non-verbal (Schön, 1983), manual and technological tools such as drawing and talking, interactive and collective evaluations and video recordings which are explained in Figure 6 in detail.

Flexible and Collaborative Program

The first-year design studio is already a collaborative and creative setting aiming to make students familiar with academic research requiring self-discovery, library research, oral and visual representation skills. Moreover, adapting the course program for an online platform under the Covid-19 pandemic restrictions required flexibility (Veletsianos & Houlden, 2020). Despite being advised as a prime asset of online education (Stone et al., 2019), flexibility and adaptability are not new in university education (Selwyn, 2011). However, as Barnett (2014, 30) discusses, "flexibility cannot be all things to all persons, interests or institutions." In the sense of flexible and adaptable course programs, Gordon (2014, 21) states, "the challenge is selecting how much of this flexible offering to adopt ad provide." This challenge brought out a particular type of flexible pedagogy specific to our online design education: a "flexible" course program. Focusing on the pedagogical flexibilities (Barnett, 2014) we followed a system of an incremental syllabus that is open to updates in the assignment requirements and deadlines but updates every three weeks after our observations in the class. The incremental syllabus left room for instructors to observe, evaluate the flow of the course, the students' responses, and monitor a possible increase in the Covid-19 patients in the students or their families. The final version of this new syllabus design highly differs from the ones prepared in the previous studios by being incremental, open to change in the course content, directly including student perspectives and giving very detailed project briefs. The flexible syllabus also meant listening to the students' feedback and looking for ways to build empathy in the class. For instance, we have decided to decrease the number of weekly assignments and the structure of in-class exercises after conducting a colloquium to review the first semester with the students.

To build empathy in the class, we have studied instructor-student communication to foster a more democratic and equitable learning environment in the online studio (Selwyn, 2011). For this, the course devoted one week entirely to the students' program called "student (syllabus) week" for the first time in the department. It was a pedagogical response after observing the weak bounds among the students to compose a class. In face-to-face education, this feeling and responsibility is easy to observe in students since they share a shared space where they listen to the lectures, do their assignments and socialise. The "student (syllabus) week" was organised as an entire week of 12-course hours to be designed by the students. We have asked them some guiding questions: what would they like to discuss and bring to the class's attention? How would they organise equal participation? Which topics would they highlight? We explained that however they choose to coordinate this week, their work will not be graded. Thus, they were free to skip that week and take some holidays as well. Instead, the students organised a meticulous class program with posters, video announcements, presentations and quizzes for the instructors. They have chosen to focus on their final project theme "nature and design" to use their time wisely. Firstly, they sent short videos and posters to announce this work through the course's social media platform. During the course, they formed eight groups concentrating on the topics such as sustainability, climate, everyday life under the main theme "nature and design" and prepared well-defined PowerPoint presentations. They have utilised videos, hand sketches, photographs and collages to support their ideas. There were two moderators selected from the students during these classes controlling the entire class by explaining the flow of the course, giving the floor to the presenters, giving breaks and posing questions. Almost all students took part in presentations, many engaged with the course. They presented a plenty of research skills and interest in the course. Furthermore, this student week seemed to have positive results for the aim of building empathy after this week as there were comments such as: *"We have seen how hard it is to prepare a class, to organize all and keep up with time. We understood you more."*

Process-Based Design Teaching

In their recent study on design studios, Hettithanthri & Hansen (2021) find out that conventional design studios lead students to be more solution-driven rather than caring about the creative process. Typically, the final product in a design studio is printed on heavy paper with its colourful and bold details, or a model is neatly cut and presented for grade evaluation. The instructors acknowledge that they are all an end product of weeks-long sketches and ideas but this process is still expected to be embedded in this final representation accompanied by a fluent project presentation. Considering that the process or the person is usually not included in the design products' evaluation (Uysal Ürey, 2021), we aimed to follow a process-based design teaching in our studio mainly for two reasons. First, not all the students had the physical, social and psychological setting to sustain an online design education. Even though we had only a few students who mentioned their lack of a proper workplace in their homes, we knew that there is always uncertainty and sudden changes due to the pandemic conditions. Secondly, there is an increasing interest in process-oriented design pedagogies highlighting critical thinking and experiential learning to prioritise process-based teaching (Öztürk & Türkkan, 2006). Figure 7 shows some of the critical examples of students' works
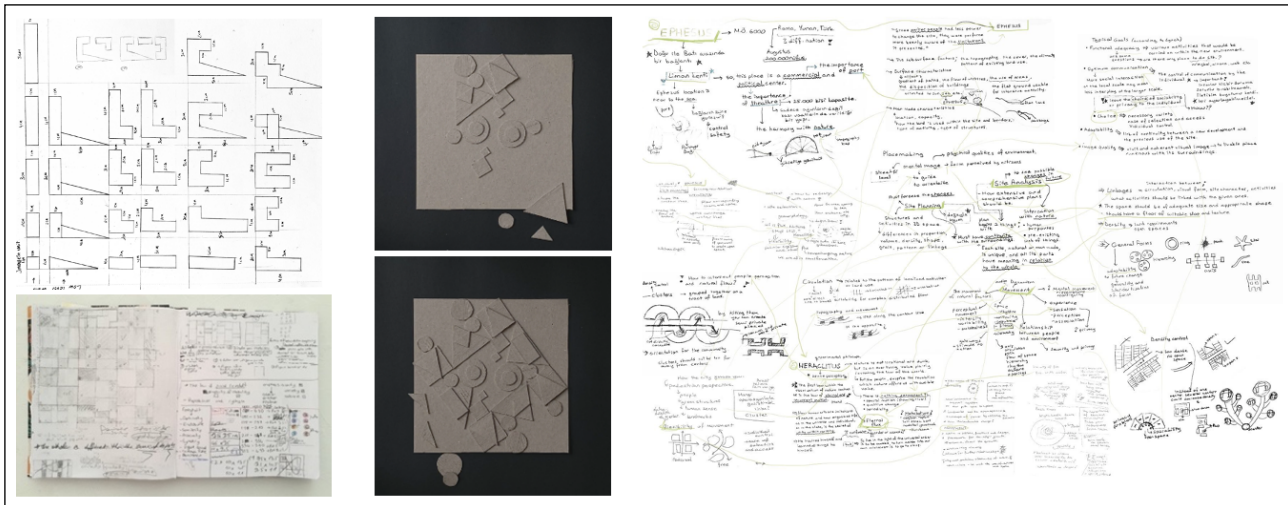
Figure 7. A selection of student works focusing on the design process where they explore the given task through various mediums and media (by Selen Tüfekçioğlu, Ayşegül Avşar, Gizem Gürbüz, Nihan Bağrıaçık).

indicating the process-based teaching model. Instead of presenting an end product, the students were encouraged to submit their conceptual maps, analytical geometrical exploration, notes and time-lapse videos to show their reasoning behind their final compositions.

The student feedback before the second semester showed that the number and variety of assignments should be lower. Hence, we prioritised evaluating design within a learning process (Kolb, 1984, Demirbaş & Demirkan, 2003) by providing several lectures and tasks to the students that incrementally lead to a more complex planning and design problem. This approach in the second semester of online design education enabled students to have experienced the topics since we gave time for them to reflect and act on their decisions which finally resulted in a concrete experience for reflection (Kolb, 1984). Especially in the final project, the students paid attention to their online studio and design journey instead of solely asking for a final product. The grading rubric given in the design brief for the final assignment asked for a complete representation of their process in different formats (videos, sketches, zoom crits) to see an investigative work and a capacity of self-assessment within the groups' design journey (Lindström, 2006). The project brief also highlighted the "design process" as follows:

"Process: The medium of presentation is up to you for the design/plan process throughout your group discussions/ in-class feedbacks. Just present your journey!"

Usually, the students work individually on their final project at the end of the basic design studios. However, giving a "co-design task with an emphasis on the importance of process" (Fathallah, 2021) was necessary for students to meet defying the feeling of solitude during the confinement periods. Therefore, the students came together and worked via online platforms, collaborative white boards, and one-to-one online feedback from the instructors. Students'

feedback extensively indicated a sense of relief and ease compared to the first semester's assignments mentioning the positive psychological impact of working in groups in times of isolation. From the instructor's perspective, this approach enabled a collaborative working environment in the studio which is not always prioritised in-physical studio classes (Park, 2020). In the student reflection survey, some comments reflect on the group work both in affirmative and critical connotations:

Affirmative Comments:

"I have established excellent relations with the group work given when I thought I could not make any friends."

"My favorite class activity is a final group working for the second semester."

"No matter how difficult it was and the points we disagreed on, as we got to know each other, it was an enjoyable and useful process."

Critical Comments:

"We were unlucky with group members."

"Working in groups was nice, but it should not be the core as we have to develop as individuals."

"Open studio": Guest Lecturers and the Use of Social Media

The previous sections on the design teaching pedagogies mostly showed adaptations of the formerly applied techniques in the studio or the existing discussions in design teaching for an online process. However, considering mental health within the scope of these discussions can be one of the most peculiar situations that the pandemic brought to academia. Many students and instructors have experienced

psychological and emotional distress (Pokhrel & Chhetri, 2021) at home due to the uncertainties of lockdown, long-term social distancing, and a deadly virus (Carlson, 2020; Amro, 2021). This idea of isolation and loneliness required new ways to make the studio course a more encompassing space. This attempt coincided with the compulsory increase in digital technologies for distance education (Hettithanthri & Hansen, 2021). The medium between the course and the student was personal computers and mobile phones. Utilising this necessity in our favour, we have worked on a digital program to create an open studio, including some strategies such as:

- Visual identity for the course

- Course website, are.na webpage, social media account

- Guest Lecturers and Jury Members

- Student Blogs

- Online Exhibition of Student Projects.

The first step of this so-called open studio was to prepare a visual identity through logos, typefaces, and colour codes to engage and inform visitors of the upcoming works. Furthermore, a coherent visual identity could influence the first-year basic design students by setting a subtle exemplary visual design strategy focusing on continuity, unity in variety, piece, and whole relationship (as in the case of a single post and its relation to Instagram grid). The second step was to publish a course webpage and create a social media account. We aimed for the webpage to be a long-lasting project to create an online archive of studio projects and events. We pursued transparency throughout the academic year by sharing a large selection of student projects on this website. The Instagram features of posts, stories, and polls were actively used almost daily. The account showcases the visual guidelines in coherent graphic language; most of the students' projects, events, and announcements were shared here.

These tools mainly target our students' interests and contribute to their learning process during off-class hours. However, there were many feedbacks from the other planning schools as our work was among the very few visible and accessible to the general public. The Instagram page (IG) created a lot of national and international interaction and interest as well. Our students stated that once their projects were posted, their peers were contacting them, and they sometimes had an online idea exchange opportunity. About 95% of our students stated that they followed the course IG account, and about half of these commented on the positive sides of this by saying *"the most important positive aspect of the studio's website and social media accounts was that it delivered the work we did in the studio to people interested in this field."*, *"very effective for inspiration,"* *"motivated the students with the homework shown during the semester."*, *"Easy to access and open to all.".* However, the other half of the students were slightly critical of the use of social media. Despite our prioritisation to include as many and diverse projects in the feed, not all the projects or students were given place equally due to its world of visual sophistication. Students reflected on that by saying: *"despite a few, some friends got ambitious to be featured on the feed.", "maybe not only the best projects but also every project can be posted equally."* Additionally, the social media account was used to share some academic and course-related information and projects such as the case of our are.na website with course-related inspiration boards, student blogs and an online final project exhibition.

The third strategy for an open studio included guest lecturers and contributors working in architecture and urbanism from Turkey and other countries such as Belgium, The Netherlands, Australia, the USA, and Portugal. Online platforms made it easy for the guest lecturers to contribute to our course without traveling or sparing much time. Most of these events require pre-and post-meeting with the guest academics as they wanted to integrate their research issue with the studio content. We had fourteen City Series talks

Figure 8. The logo of the studio, the guest lecturers' posters from the second semester and the social media page.

and three workshops throughout the year. The guests were contacted according to their research interests as they fit our course program. These talks focus on order, complexity, climate change, public space, design, and nature. The workshops were on urban sketching, coding, and collage-making. All these events were organised to enrich our students' perspectives on the urban planning profession and motivate them about the class. Following the talks, the students worked in breakout rooms to share their thoughts on the presentations and their relevance to studio topics. Among the six options listed under the pedagogies of the online studio, (final group project, are.na, student week, office hours, breakout room exercises, and city series) majority of the students (83%) have found the "City Series" as the most useful one. These events helped students get familiar with the ongoing urban issues, know the scope of our profession, and made our studio "act as a bridge between academic and professional communities" and collaborative space (Brandt et al., 2011, 329; Park, 2020) (Figure 8).

LESSONS LEARNED AND CONCLUDING REMARKS

The immediacy of adapting a conventional course to an online system was apparent after the pandemic precautions and distance education decision for the 2020-2021 academic year. This study focused on the potential of an online design studio from a critical point of view, to assess the theoretical and pedagogical approaches while adapting the course to a digital setting. Although the central question in this study is how to prepare for an online design course, the answers are noteworthy to evaluate from a wider perspective of basic design education. Below, the main methods to build an online studio are listed through comparisons with the conventional course before the pandemic.

- Integrating conventional and digital tools

During the online studio, the students were asked to combine freehand and computer drawing techniques as well as videos and photography. They have also followed a back-and-forth approach in some assignments for which the students revisited former tasks. Besides, the hybrid approaches were instrumental in design critics as the instructors combined: on-time sketch-making in adobe illustrator, recording videos of the freehand sketch-making process, utilising zoom annotation tools over students' projects, creating 2D and 3D models to explain a concept better for the students. This hybridity of techniques was not tried in a conventional studio where the main method was handmade projects and models without much focus on digital tools. Hence, there are some differences in the outcomes of these student works between the pandemic traditional studio and the online studios even when the assignments were similar. First of all, the physical frame and scale of projects were smaller for students to spend fewer resources on the material, to easily use their private working spaces. Also, the online projects incorporated supporting sketches and drawings into the main submission which had stronger analytical qualities than the previous projects.

- Flexible program

We have planned a flexible course program and made our intentions open to the students at the beginning semester. In conventional design studios, the syllabi usually were shorter documents indicating some general course topics and main submission deadlines. However, remote teaching necessitated a detailed text clearly explaining the course objectives, course flow and essential deadlines. Moreover, the detailed daily programs and project design briefs, including the guests, theoretical courses were given over three-week periods, leaving room for instructors to adapt and update according to the class's interest and a possible emergency due to pandemics. Another pedagogical flexibility was the organisation of the student week, where the students took over courses for a week and organised a whole program with presentations, quizzes, posters. This method helps to build trust and empathy among the students and instructors. Giving responsibility to the students was something rare in the previous studios and despite many hardships, a digital environment made it possible for a quicker and more meaningful organisation among the students since they could meet easily and work on shared documents.

- Process-based design teaching

The conventional design studio course mainly focused on the quality of the final product. Despite the teaching being based on the design feedback processes and in-class discussions, these rarely are reflected in the final evaluations. Considering the students' limited working conditions at home and the increasing interest to prioritise process-based teaching (Öztürk & Türkkan, 2006), this approach was one of the backbones of our studio's pedagogy. For this, each assignment allowed several iterations through which students update their work after getting feedback. Another technique we used was to grade the students' design processes (sketches, idea presentations, flowcharts, etc.) help to decrease the anxiety regarding the course grades which is one of the prominent challenges in the conventional studio course. Process-based design teaching seems to be an integral part of any design studio, our example showed some tools to strengthen this approach since this perspective should be employed as one of the first strategies both for a conventional and online studio in the future.

- Open studio

The design studios are physical containers where students can interact among themselves and with instructors while learning abstract thinking, creative problem-solving techniques (Corazzoa, 2019; Charters & Murphy, 2021). Although the digital studio could not offer a fixed space (Hettithanthri & Hansen, 2021), it creates a setting that is open not only for students but also for interested parties in a virtual public space with easy access (considering all students had personal computers and internet connection). With this in mind, we pursued transparency and ease of access to our course content which is different from the previous courses which were defined by the limits of the studio space and participants. The courses produced a virtual public space by efficiently using the course website, are.na website, and a social media account. Besides, being open meant including more people in our studio such as guest jury members and guest lecturers for the events we incorporated in the course, called: City Series (public presentations with guest lecturers from the world) and Off-Talks (workshops open only to the course participants). These events helped students get to know other scholars worldwide and enrich their contemporary knowledge of cities. In some cases, we hosted the graduates from our department to show the possible carrier paths for the students. These events resonated very well among the students not to mention the guest audience to the public lectures. However intriguing, there are limitations to an open studio. First, these platforms and activities needed long hours of organisation, constant updates with graphics, edited works and announcements with students' projects, photography, and academic notes. Second, both time and space limitations forced a certain elimination of most of the students' work. Hence, the inclusivity of a greater amount of student work into the social media and website must be of utmost importance for an open design studio in the future.

To conclude, the limitations of the online design studio brought along the potential for re-framing the conventional design studios, which usually prioritise the final product over the design process, self-discovery over guided discovery and hand drawing skills over digital tools. As a result, the course itineraries, student projects and their feedback, the guest jury comments to the final jury showed that the online studio somehow managed to foster self-regulated learning (Greene et al., 2019), especially with the example of "student syllabus week". The participants of the class were engaged in analytical research, in finding inventive solutions and capacity for "self-assessment" (Lindström, 2006). Besides, the pandemic conditions made the first-year students more engaged with digital tools and provided ease of access to university education. The design feedback used to be mostly limited to pin-up sessions and table critiques in the traditional design studios. Whereas the online environment provided a more diverse and interactive feedback session as the digital submissions of the students made it possible for a pre-evaluation by the instructors before the class and each assignment was evaluated according to their peculiarities while preparing the feedback content.

However, the private rooms of the students and instructors had to be public classrooms, the lack of computer literacy of the first-year design students triggered some problems and cause slow progress as all participants had to juggle many new tools at once. Furthermore, as time passed in an online studio with continuous confinement and unclarity of the pandemic, even the meticulously studied methods fell short. Various small-scale pedagogical methods had to be injected into the course flow, especially for the mental health dimension of online teaching. For instance, a fun contest with a new year's theme was organised where the winner was chosen by the students and had a book award; a Spotify music list to accompany the midterm project process was created. Besides, observation of the studio dynamics is harder in an online setting than in a physical space. To succeed, feedback sessions and course evaluation surveys are utilised for a similar approach in the digital course. All these required an immense amount of working and preparation time in and outside the class hours which is a significant dimension to consider such reforms in a conventional course setting. On top of these, the mental health side of the process remains a challenging and understudied topic that requires an interdisciplinary study for future (online) design studios.

The students' feedback both during the semester break and at the end of the academic year indicates the potential of the pedagogical tools we have used in the online course setting. Giving more voice to the students (group works, student-led courses), bringing prominent scholars as guest lecturers, organising workshops and social media platforms are highly praised by the students. However, some methods failed to represent the entire spectrum of projects but highlighted the more successful student works due to the nature of graphics preferred in social media platforms. Keeping these limitations and potentials in mind, this study opens up new ways to adapt a conventional design course into an online environment as well as methods to realise a blended learning environment for future courses.

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