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## Realising a hybrid design studio in basic design

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**Abstract:** *Despite the disappearance of the COVID-19 pandemic measures, hybrid learning is still a viable alternative to face-to-face education in many higher education institutions. Designing and carrying out hybrid design studio courses bring additional challenges for design instructors and students, such as feeling disengaged from the studio environment. Thus, it is essential to examine how such challenges could be addressed through course design. This paper presents a hybrid course in Basic Design with a focus on the course design, students' reflections on the course gathered through surveys, and instructors' observations. The findings indicate that the seamless integration of digital and physical worlds and the uncertainties stemming from the flexibility given to students are central concepts to deal with the scope challenges of hybrid design studios. The paper discusses the implications of these findings to guide instructors in planning and executing new hybrid design studio classes.*

**Keywords:** *basic design, design studio, design pedagogy, distance learning, hybrid design studio*

## Introduction

A synchronous hybrid class refers to teaching in-person and online students concurrently. This way of teaching has various advantages for design studio education. First, it allows students to access recorded lectures at any time, enabling them to learn at their own pace (Fleischmann, 2021). Second, it provides students who cannot physically come to a studio environment, for instance, due to a chronic disease, an opportunity to participate and learn. Third, it helps to regulate the number of students physically present in the studio environment, which might continue to be of concern, especially with the relieving of mask measures as design studios involve continuous interaction and discussion in the class environment.

The teaching in design studio classes is based on learning by doing paradigm (Kolb, 2014), design critique (McDonald & Michela, 2019; Cennamo et al., 2011; Goldschmidt et al., 2010), and reflection in/on action (Schon, 1984). Physical involvement with the design task and face-to-face interaction with peers and instructors are required to support students' learning and success in design studios.

Being in a synchronous hybrid design studio can challenge design instructors and students. From the students' perspective, the ones participating online may feel disengaged from the class because i) they may not have a good



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grasp of the studio context and dynamics despite the online communication, ii) the environment in the remote setting may distract them (e.g., TV sound), and iii) they may trust that they always have a chance to follow the course later. Plus, when online and in-class students are teamed up in a group exercise, the teams' effectiveness might be low due to the different mediums they use. For instance, using an online conference tool for group communication might be problematic for students working with physical materials, like creating an abstract composition with coloured papers.

From the instructors' perspective, managing the in-class environment while paying attention to online students can create an additional cognitive load. Notably, during the design critique sessions, the instructors can have trouble communicating their feedback properly to online students. Furthermore, technical problems such as low internet connection or broken cameras can interrupt the class flow, hindering instructors' and students' ability to listen, communicate, and concentrate.

Finally, the nature of basic design education could amplify all these challenges. Basic design courses are usually entry-level courses where design students are introduced to design thinking, design principles, and design elements for the first time. Moreover, unlike senior students, freshman design students, who take basic design courses, tend to be less familiar with digital tools.

The COVID-19 pandemic has forced many higher education institutions to switch to online learning. Although the pandemic was mainly controlled, its effect on higher education remains prominent. For instance, the online learning platform Coursera had 20 million new users in 2021 (Coursera, 2021). Furthermore, some universities keep fully online or hybrid courses in their curriculum. These events indicate that hybrid classes will still be viable alternatives to face-to-face design education. Hence, it is crucial to study how the challenges of teaching and learning in a hybrid design class can be addressed.

To pursue this goal, a synchronous hybrid course in Basic Design was designed upon Koç University's decision to conduct all courses in a hybrid fashion in Spring 2022. This course was 14 weeks long and completed with the participation of thirty-seven undergraduate students. The existing face-to-face Basic Design course was adapted to hybrid using the following strategies. First, the course was divided into sessions targeting different learning needs. These include interactive lectures, sessions for individual and group exercises, synchronous and asynchronous feedback sessions, and reflection sessions. A different combination of software and hardware was devised to ensure a quality learning environment in all these sessions (See Table 1 for details). Second, all the exercises were shared during the first week of the semester so that the students participating online could obtain the required materials in advance. Third, additional tutorials were prepared to teach students the software and hardware used in the class (e.g., Miro, tripod, and EpocCam). At the end of the semester, a short survey was distributed to assess students' experiences regarding the Hybrid Basic Design Studio course.

This paper presents the course design for Hybrid Basic Design Studio, instructors' reflections on the course, and students' feedback. It makes the following contributions to the design education literature. It showcases an example course design that could inspire other design instructors to develop new hybrid design studio courses. It presents students' reflections on participating in a hybrid design studio, both from the perspective of students who attended online and students who followed the course physically. Finally, it reveals directions and suggestions for designing and executing a Hybrid Basic Design Course.

## **Background and related work**

### **Design studio pedagogy and basic design**

The design studio is integral to education in design-related disciplines worldwide, including fine arts, industrial design, graphic design, architecture, and others. In design studios, students engage in the creative process with the guidance of a studio tutor (Schon, 1987). Design studio cannot be considered just as a physical context. A studio is both a site of design teaching and learning and the educational approach which frames how the teaching and learning process should be actualised (Marshalsey & Sclater, 2020; Rosa & Ferreira, 2023). In other words, the design studio has traditionally been a physical learning space and a signature pedagogy of higher education in the creative disciplines (Shulman, 2005; Corazzo, 2019; Rosa & Ferreira, 2023).

Design studio pedagogy is based on the experiential learning approach of Kolb (2014) and the learning-by-doing paradigm (Schön, 1987; Broadfoot & Bennett, 2003; Lawson, 2004; Yuan et al., 2008). Accordingly, students engage with multiple design projects, individually or in groups, by continuous hands-on experimentation involving observation, discovery, and design iteration with the guidance of the studio tutor (Marshalsey & Sclater, 2020). The

dialogue between the studio tutor and students encompasses design critiques (McDonald & Michela, 2019; Cennamo et al., 2011; Goldschmidt et al., 2010), which immerse the students into the studio experience and ongoing project as they try to grasp the meaning of the given feedbacks while engaging in a reflective conversation with the components of the design case (e.g., material attributes, visual elements, relationships, themes and so on). This action and sense-making process regarding the designer's knowing is called reflection in/on action (Schön, 1984; Broadfoot & Bennett, 2003; Blythman et al., 2007).

The design studio is a social learning space where personal designer identities start to be shaped by different types of dialogues beyond the design critiques (Rosa & Ferreira, 2023). Students work alongside their colleagues, observe each other's creative processes, and take part in collaborative learning not only in design critiques made by peers but also in an ongoing social conversation afforded by a flexible studio space (Blythman et al., 2007; Fleischmann 2016; Marshalsey & Sclater, 2020; Komarzyńska-Świeściak et al., 2021). Hence, the design studio differs from a traditional lecture hall course grounded on transmitting information to the students during which students listen, ask, take notes, and are evaluated by exams (Rosa & Ferreira, 2023). Such an idiosyncratic and dynamic environment in a design studio accentuates the importance of presence and interaction (Rosa & Ferreira, 2023).

Basic design is one of the initial steppingstones in design education, also entitled as a foundation course (Bouachraenc, 2006). In most basic design studios worldwide, the major aim is to teach the fundamental components of art, design practice, and theory. These building blocks include the elements of design (e.g., point, line, shape, texture, pattern, colour, space, and structure) and the principles of design (e.g., balance, unity, contrast, similarity, scale, proportion, hierarchy, focus, emphasis, rhythm, and movement). Students completing basic design studios are usually expected to demonstrate an understanding of the fundamentals and expected to acquire visual thinking, observation, and research skills through a refined visual vocabulary. Another important outcome is that students learn the importance of critical eye and reflection in action in art and design education.

### **Distance learning in design**

Although the traditional design studio refers highly to a physical learning space and pedagogy, technological advancement has triggered concurrent changes in higher education (Rodriguez et al., 2018). A need for change in higher education curriculums and processes, and trials in distributed online learning models, has started to be seen in diverse disciplines. The reasons behind this shift, on the one hand, involve issues like the increasing number of students, inadequate physical spaces in universities to support this increase, difficulties of higher education institutes to cover related expenses, and endeavours to deliver more cost-effective programs (Richburg, 2013; Marshalsey & Sclater, 2020; Fleischmann, 2021). On the other hand, this change is facilitated by the new technological opportunities and visions that could realise online forms of distributed education (Chen et al., 2010; Boelens et al., 2017; Rosa & Ferreira, 2023).

However, beyond being an option, the COVID-19 pandemic forced universities worldwide to provide distance education. Despite several universities experimenting with online learning models and digital tools earlier, most universities had to quickly adapt to an unfamiliar, ambiguous, and open-ended distance education journey. This created more disruption in the status quo of the design studio classes and, in the teaching/learning experiences of art and design (Komarzyńska-Świeściak et al., 2021).

Distance education is usually handled as an umbrella term that covers the educational format where the teaching and learning groups are spatially and sometimes even temporally separated, and the educational processes and interaction between stakeholders and resources are aided by technology (Simenson et al., 2015; Rosa & Ferreira, 2023). Distance education is accompanied by variations such as hybrid learning, blended learning, online learning, virtual learning, remote learning, mixed-mode learning, and so on (O'Byrne & Pytash, 2015; Rosa & Ferreira, 2023). Hybrid learning and blended learning are usually used as synonyms (Hrastinski, 2019; Bernardo & Duarte, 2020; Fleischmann, 2021; Bozkurt, 2022; Komarzyńska-Świeściak et al., 2021), whereas several researchers also address specific differences between them. Blended learning is more frequently utilised, referring to the deliberate 'blending' of onsite and online instructional activities to stimulate and support learning that involves diverse parameters shaping the use of each modality, such as time, place, and pace, through sequential or parallel formats. However, hybrid learning is preferred to highlight the synchronous presence of in-person and online students while teaching. Within the scope of this paper, 'hybrid learning' has been used to emphasise the synchronous character of the proposed course design, which was identified as a gap in the field by Raes et al. (2019).

Early experimentations within the scope of distance education were in progress towards the millennium, with asynchronous communication between stakeholders via emails, digital pin-up boards, and custom-built web interfaces

(Broadfoot & Bennett, 2003). Within the scope of technology-mediated learning, online tools such as learning management systems, video tutorials, social media, and virtual reality have been progressing (Fleischmann, 2016; Fleischmann, 2019; Marshalsey & Sclater, 2020; Rosa & Ferreira, 2023). In addition, video streaming, massive open online courses (MOOCs), and specific examples of longitudinal teaching at a distance at scale have already been available (Jones et al., 2021; Jones, 2022).

No wonder studies on distance education escalated after the pandemic. Pertaining to design education, design educators have started to report experiences on how they integrate online collaboration tools such as Miro, communication channels such as Zoom and Microsoft Teams, blogs, and e-portfolios (Marshalsey & Sclater, 2020; Komarzyńska-Świeściak et al., 2021). Diverse aspects of online education have been studied, such as perceptions and personal experiences of design educators in higher education after a shift from in-person to online education due to the pandemic (Bernardo & Duarte, 2020), students' preference for educational formats (including in-person, hybrid, and online) after an intense experience with distance learning formats (Rosa & Ferreira, 2023), implications of art and design studio education in a time of distributed learning (Marshalsey & Sclater, 2020), the process of redesigning a design studio with emergency remote teaching (Komarzyńska-Świeściak et al., 2021), and meta-connective pedagogy to critically engage with pedagogical concerns emerging from the connective nature of the digitally networked world (Dreamson, 2020).

With the relieving of measures related to the pandemic, most universities have turned back to in-person education, with the repercussions of distance education and more advanced online collaboration technologies due to the push of the pandemic. A recent global study examining university students' preference of teaching medium (N: 2725) indicated that while only 18 per cent of the students would prefer entirely in-person classes, 22 per cent would prefer courses that include both an online component and an in-person component within the same course (Widenhorn et al., 2022). This finding indicates that hybrid courses will still be available in the future despite the demise of the pandemic. In parallel with this, discussions about future design studios should address hybrid education more as a balance between the necessities of the signature design pedagogy on the one hand and the changing ways of working and individual expectations due to the technologies on the other. Designing new design courses with hybrid components and sharing the teaching and learning experience in these courses with the design community is vital to achieving this balance. This paper tackles this challenge, for the first time in the literature, by designing a synchronous Hybrid Basic Design Studio and revealing implications for designing and executing future hybrid design courses.

## The case study in realising a Hybrid Basic Design Studio

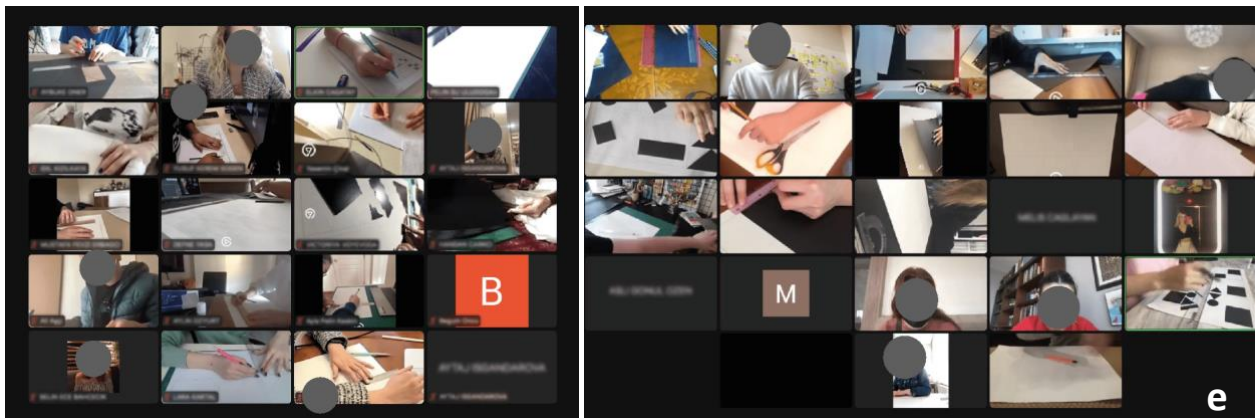
### Course design and teaching methods

The Hybrid Basic Design Studio course presented in this paper had six different session types: lectures, sessions for practical exercises (individual), sessions for practical exercises (group), synchronous feedback sessions, asynchronous feedback sessions, and reflection sessions. As the nature of each session changes according to its purpose, teaching methods and the use of digital tools are tailored to the specific requirements of each session. Table 1 explains the purpose of each session and how the hybrid learning setup is structured. In addition to that, the course presented students with diverse alternatives for attaining specific tools and materials when needed. For instance, at the beginning of the semester, while introducing the planned Hybrid Basic Design Studio concept and weekly calendar to students, how a DIY camera can be created was shown rather than purchasing or borrowing a tripod; or different free apps for turning smartphones into external cameras, etc. were explained. Figure 1 demonstrates the processes from different session types, with planned (e.g., tripods vs. DIY tripod suggestions) or emerging strategies (e.g., book tower as a tripod).

Table 1. Session types in the Hybrid Basic Design Studio and utilised tools in each session.

Session type	Session description	Tools used
Lecture	These are interactive lectures where the instructor introduces concepts on basic design (e.g., balance, harmony) through example works. Throughout the semester, eight lectures were delivered through interactive presentations. During these sessions, in-class portable cameras were used to record the studio environment since the design studio in the authors' university did not have a fixed camera. Zoom was used to deliver presentation content and the live feed from the classroom.	Zoom Portable camera Computers (for online participants)
Practical exercises (individual)	There are two types of practical exercises. While workshops are daily exercises designed to improve students' skills, assignments are tasks in which the students are expected to apply the theoretical knowledge obtained in the lectures into practice. During these sessions, each student used external cameras to live-stream their working space (i.e., live footage of their paper),	Smartphones EpicCam (or similar apps)

	regardless of being at home or in the studio. The live stream of students' working spaces was shared in Zoom and simultaneously projected on the classroom wall/display. Students used EpocCam or similar apps to turn their smartphones into external cameras to record their working space.	Tripods Zoom Computers
Practical exercises (group)	Prior to some individual assignments, students are expected to work as a group and perform some analysis tasks such as analysing a poster design visually, analysing book cover designs or creating a visual vocabulary to visualise different sounds in a song. To support group work in a hybrid learning environment, the activities was entirely transferred online through Miro (an online collaboration platform). A dedicated Miro board and pre-determined templates were created for practical group exercises. All students, including the ones who come to the class, are required to join the session through Zoom. The live stream of Miro Board was shared in Zoom, and simultaneously projected on the classroom wall/display.	Miro Zoom Computers
Synchronous feedback sessions	Prior to some individual assignments, students are expected to work as a group and perform some analysis tasks, such as analysing a poster design visually, analysing book cover designs, or creating a visual vocabulary to visualise different sounds in a song. Miro, an online collaboration platform, was used to support group work in a hybrid learning environment. A dedicated Miro board and pre-determined templates were created for practical group exercises. All students, including the ones who come to the class, are required to join the session through Zoom. The live stream of Miro Board was shared in Zoom and simultaneously projected on the classroom wall/display.	Tablet Tablet pencil Document camera Zoom Computers (for online students)
Asynchronous feedback sessions	Since each student has a different pace in learning how to design, synchronous feedback was complemented with asynchronous feedback sessions. These were realised online using Slack, a communication platform allowing users to create thematic channels and share content. Besides, asynchronous written feedback was given on Miro boards. Students are also encouraged to send emails with their attached visual works to receive feedback when they need extra.	Slack E-mail Miro
Reflective sessions	These are sessions in which instructors, teaching assistants, and students reflect on submitted assignments as a class. These sessions were realised by using Miro and Zoom. Miro was used to store submissions and for students to annotate and comment on each submission. Zoom was used to share the Miro screen and to moderate the interactive discussion. The live stream of Miro Board was shared in Zoom and simultaneously projected on the classroom wall/display	Miro Zoom Portable camera Computers (for online participants)



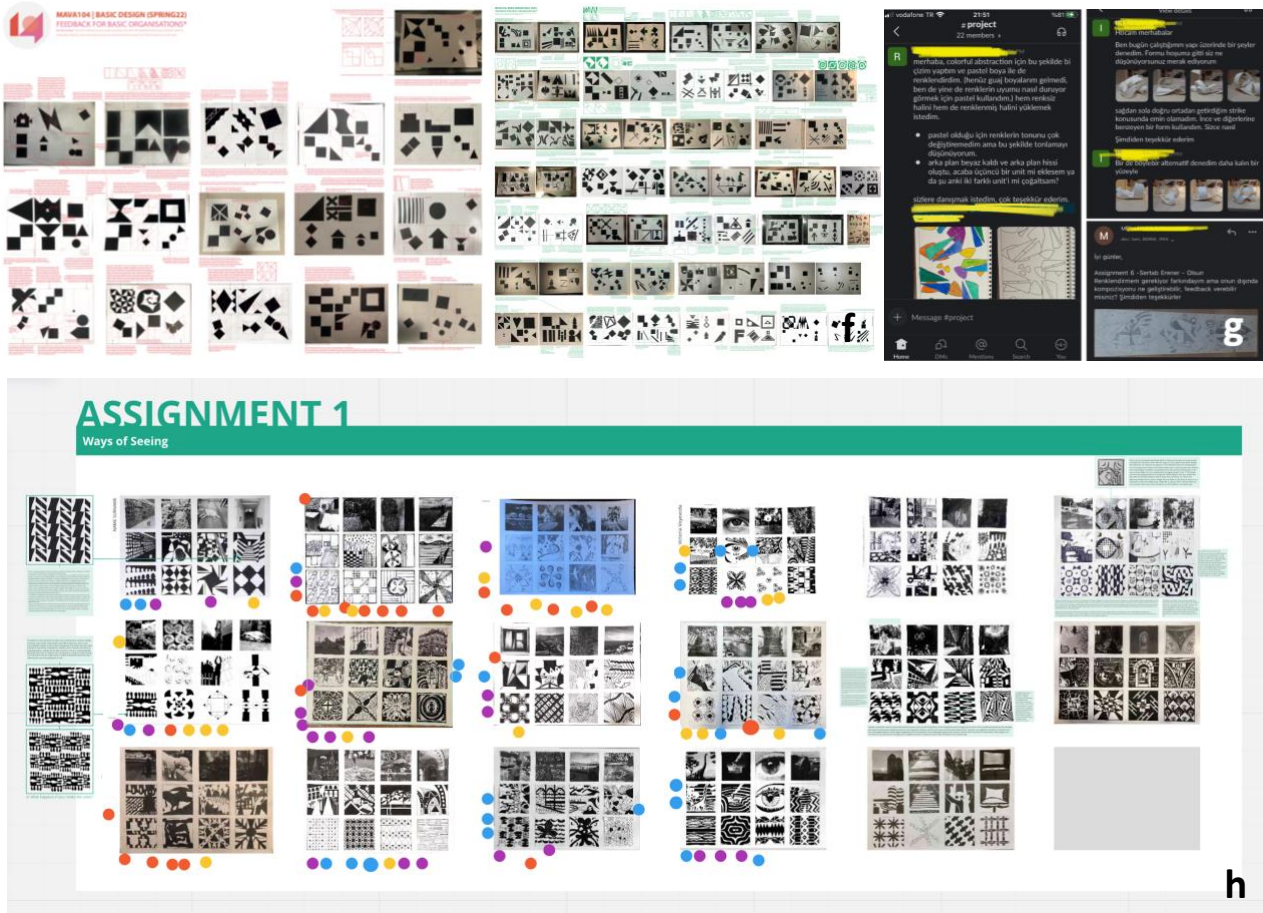


Figure 1. (a) The hybrid studio environment; (b) Students’ hacks for emergency tripod problems; (c) A document camera; (d) DIY tripod alternatives shown to students with corrugated cardboard; (e) Screenshots of synchronous Zoom sessions during which students were live streaming their work stations and instructors in different sections were observing and guiding them; (f) A screenshot of an asynchronous design critique posted on Blackboard learning management system; (g) A screenshot of an asynchronous design critique via Slack; (h) A screenshot of a synchronous collective voting session.

**Information about students who took the course**

The basic design course at Koç University is offered to every undergraduate student in the university regardless of their major. Thus, students from diverse departments and diverse levels can take the course. Thirty-seven undergraduate students took the course. The course was opened as two sections, one consisting of 19 and the other 18 students. Those sections were similar regarding the course content, design briefs, and procedures. Hence, they are dealt with together. Most of the students were from the Department of Media and Visual Arts (n: 20). The rest were from various departments, including psychology (n: 5), business administration (n: 4), international relations (n: 2), history (n: 1), sociology (n: 1), economics (n: 1), chemical engineering (n: 1), computer engineering (n: 1), and nursing (n: 1). Most of the students were freshman (n: 15), followed by eight sophomore, eight junior, and six senior students. None of these students have taken a design course before.

**Techniques used to explore the students’ perceptions of the course**

The course's teaching and learning experiences were assessed using different data. The primary data source was the surveys distributed to all students at the end of the semester. Participation in this survey was voluntary. The students were informed that their participation and answers did not change their grades. The survey comprises 11 open-ended questions probing students' general views on hybrid education, their favourite aspects of the hybrid design studio class and the challenges they faced during face-to-face and online participation, their learning experiences regarding different class sessions (lectures, feedback sessions, in-class exercises), and lastly their suggestion for improving their learning experience. Of the two sections consisting of 37 students, 21 filled out the survey. Through this survey, qualitative data was gathered apart from certain descriptive information about their department and level. The second data source was the instructors' notebooks which recorded their in-situ classroom observations and

reflections from informal communications among themselves and with students. The final data source was the course data derived from the learning management system of the university, Blackboard, which shows students' attendance (e.g., participation in Zoom) and engagement in the class (e.g., watching recorded classes, engaging in forum discussions).

For the data analysis, thematic analysis was used to code the qualitative data from the interviews (Braun and Clarke, 2006). Both inductive and deductive coding were pursued. Survey questions guided the former, whereas the recurring patterns in the data guided the latter. Blackboard data provided some quantitative and descriptive data to support the main analysis and give information about student engagement. Observation notes were handled as narratives.

## Results

The results will be presented in three sections. The first section provides data about students' participation and engagement. The second and third sections elaborate on students' and instructors' reflections.

### Students' participation and engagement

During a 14-week semester, the Hybrid Basic Design Studio Course has 24 sessions in total. The students' participation in the sessions on average was 16,73. The range was between 12 and 24. Most students preferred in-class participation (n: 32). Only three students' online participation was more than their in-class participation, and two students' online participation was equal to their in-class participation. Among these, one student participated entirely online throughout the semester due to a health condition preventing her from coming to the studio (See Figure 2).

Looking at the Blackboard data, out of 37 students, 32 watched the recorded sessions. The average duration for watching recorded lectures was 34%. Considering that students mainly re-watched lectures and that lectures constitute 30% of all the sessions, students participating online, and in class benefited from class recordings.

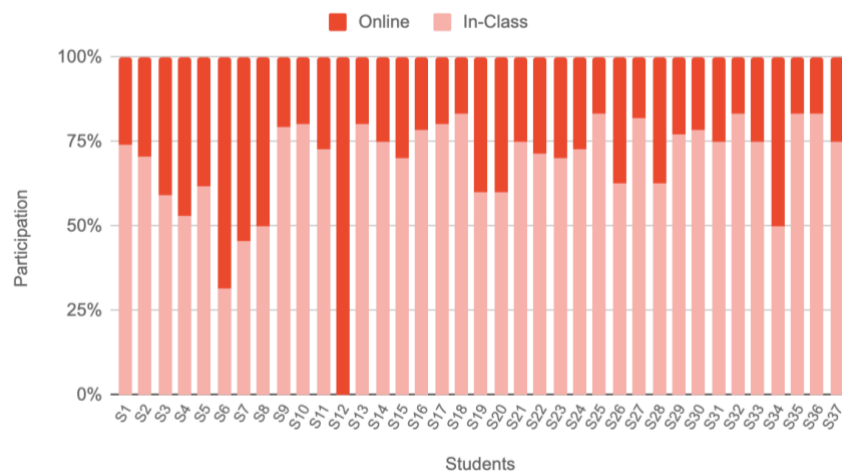


Figure 2: Online/in-class participation in two sections

### Students' reflections on the course

Overall, the students were positive about the hybrid setup and listed several advantages. First, they indicated that a hybrid studio provides them flexibility (n: 6), i.e., it can help them better plan their daily schedule without worrying too much about physical participation. Second, they also found watching lecture recordings beneficial, particularly for understanding concepts that were unclear during the regular lectures (n: 2). Another benefit of the hybrid studio, according to the students, was the ability to know more about new technologies such as Zoom, Miro, EpocCam, Slack and so on (n: 2). On the other hand, there were some students (n: 4) who had some reservations about learning basic design in a hybrid studio, arguing that design should be taught face to face. The following quotation from a student illustrates this:



I think there should be only an in-class option, and if you have a reason like being sick, you should get your feedback personally with Tas or the lecturer himself/herself rather than making all the face-to-face participants open Zoom and share their workspace with the online people. In such a setting, getting, or listening to feedback is too much effort. (S20)

### ***Students' reflections on face-to-face participation***

Students listed several advantages of being physically in the studio environment. They indicated that interacting with their classmates freely helped them not only learn from each other but also socialize and enjoy their time in the studio (n: 8). They thought that face-to-face communication with the instructors helped them communicate their design ideas in a better way (n: 5). They felt more comfortable in asking their questions to the instructors (n: 2). According to them, the atmosphere of the studio environment motivated them to focus on the design tasks (n: 2). For example, one student said the following:

Since the assignments and workshops are tangible and creative, working face-to-face is necessary and pleasant. Online learning would be difficult since it is a design lecture; we must experience things in person. I loved working with my classmates and seeing their work live. (S4)

On the other hand, they listed some challenges regarding face-to-face participation in a hybrid studio. These challenges were mainly about setting up and sharing their workspaces. The students attending the class physically had to set up a tripod and their smartphones each time they came to class. The students found this activity cumbersome (n: 6). Another challenge was COVID-19; students did not like wearing masks in class (n: 1).

Carrying all the stuff to class. Sometimes I needed to complete assignments on the weekend when I went to my family home. I had to carry all the stuff there. I do not like sharing my workspace on Zoom when I am physically in class. (S8)

### ***Students' reflections on online participation***

Students listed several advantages of attending the class online. They like having a dedicated and personal workspace within the comfort of their homes (n: 5). This was perceived as more convenient than carrying computers and setting up the workspace each time they attended class. Having a dedicated working space helped students focus on their work during class hours (n: 2). Another advantage of online participation, according to the students, was being exempt from COVID-19 measures such as wearing a mask (n: 1). The following student quotation summarises all the benefits nicely.

I really enjoyed the online classes; I had the opportunity to communicate with the instructor, TAs and my classmates one-on-one. I was more concentrated during the online classes. I also had the opportunity to share my workspace with my friends and see everybody's work quickly during online classes with the help of Miro, EpocCam, and Tripod. Also, the instructor responded to our questions immediately via Zoom. Since the lectures are recorded, I had the chance to watch them. (S12)

On the other hand, students had some difficulties in following the lectures and discussions via Zoom (n: 7). One student explained this situation with the following,

Working alone at home and being unable to feel the class atmosphere was a disadvantage. Although our instructor and TAs were answering our questions right away, it was still hard to express and show my work and get full feedback through the screen (it was hard to show the details due to the camera quality). (S15)

Another major challenge for online students was the difficulty in explaining their design ideas and sketches through the screen and receiving instructor feedback (n: 5). Two students complained about setting up a workspace at home for online participation. Lastly, students participating online felt "forced" to work as their cameras were always open. One student explained this with the following,

I did not feel comfortable sharing my workspace for three hours because when you are in the classroom physically, you can work for three hours in harmony with the environment, with your friends. However, sitting in front of the camera for three hours felt longer and made concentrating harder. Moreover, I needed to work constantly because my camera was just shooting my working space all the time. (S20)

### ***Instructors' reflections on the course***

The instructors have taught basic design at Koç university for six semesters with a standard syllabus shaped throughout the years. Thus, they needed to make several adaptations at the pedagogical and technical levels to the course design. In parallel with this requirement, their reflections in this paper encompass diverse phases of offering the basic design course — adapting all the course content, materials, exercises, and procedures to a hybrid format before the semester starts; making necessary preparations for technical equipment and course materials before each

class hour; teaching, guiding, and managing both planned and emerging class issues and dynamics during each class hour; communicating asynchronously after the class hours and giving additional asynchronous feedback; assessing the design works, students' processes and participation, and the overall semester. All these phases involve decisions intended to facilitate learning processes in a synchronous Hybrid Basic Design Studio, as explained below. These will focus on technical and content adaptation.

### ***Technical adaptation to a synchronous Hybrid Basic Design Studio***

The overarching issues affecting all the phases were the technological and technical infrastructure provided by the university, coupled with the instructors' decisions to integrate extra digital tools to better afford specific physical design studio experiences in a hybrid way (as introduced in 'Course design and teaching methods' section). It had been necessary for the instructors to find out, test, and learn different technological tools within a limited time frame when the university announced that the semester would be carried out in a hybrid format. During the pandemic, the entirely online semesters had already forced many instructors and students worldwide to transition to technological tools such as Zoom, Miro, and so on. Being exposed to such tools previously was an advantage when designing the course. However, realising a synchronous hybrid design studio added the necessity to search and orchestrate additional tools, such as applications turning the mobile cams into external cameras to live stream each student's workstations, document camera, tablet, etc. This requirement created an extra learning load for the instructors and increased the course's preparation time.

The instructors needed to bring various tools to the class (e.g., document camera, tablet, and tripods in addition to design-related class materials such as cardboard, paints, etc.) and to check whether everything was working correctly (e.g., document camera's connection to Zoom, other portable camera's placement, and connection, projector connection, etc.). Thus, a certain amount of time was required before the class hour to not steal time from the actual class time, posing certain stress levels and creating extra cognitive load for the instructors. Also, no matter how precise the technical settings were, unexpected technical issues sometimes occurred either on the physical studio side or from the sides of the students connecting online. It was observed that those unexpected situations and uncertainties were not only causing unease, but also distracting both the instructors and students. The technical setup, which bound instructors to the place of the document camera or Zoom screen, affected their fluid movement in the physical studio environment, like in traditional design studios. The following note taken during an internal discussion among the instructors illustrates this:

You know, I used to walk around the classroom all the time, particularly during exercises, as I would like to see each student's progress and interfere if necessary. Nevertheless, with this new setting, I needed to stay at the "instructor's desk" entire class. Aside from reducing my ability to oversee their work, it felt weird that we were no longer in a studio setting.

All these issues made it more challenging to observe the class dynamics and students' actual participation and performances, no matter whether most of the students were live streaming their workstations from Zoom and this was being projected on the studio wall.

### ***Adaptation of the course content and procedures to a synchronous Hybrid Basic Design Studio***

One of the decisions while adapting the course to a hybrid format was about changing or eliminating specific group works that previously incorporated the utilisation of tangible materials and tools in a collaborative way (e.g., a team of students creating a design composition by using natural materials or creating a physical structure as a warm-up exercise to team building). It was not possible to completely disregard tangible materials and tools and ultimately turn into digital versions, as one of the goals of the foundation art and design classes is teaching design skills about the usage of physical materials and tools, which might be reduced in the upper levels with the integration of more digital tools. Hence, a limited number of group exercises could be transferred online, including the ones incorporating analysis exercises rather than design exercises (e.g., analysing book cover designs on a Miro template).

It was observed that the elimination of the physical ice breaker exercises, during which students create tangible things in an interactive and gamified way, especially at the beginning of each semester, and carrying out fewer group works towards the end of the semester affected the communication between students participating from their places and students participating from the actual studio space. Although extensive preparations had been made to create multiple touch points among students in a hybrid way, such as the connection of each student, even in the physical studio, to the Zoom sessions rather than only broadcasting the whole class together with a camera or carrying out peer feedback sessions, there were communication gaps, particularly with the students who mostly attended online. Furthermore, students who were physically present during class usually used the physical studio space outside class hours to finalise their exercises. This helped them work together and interact with the students not just from their

class but also from other course sections and design classes. In other words, online attendance diminished natural, casual, and unplanned encounters within or outside class hours; hence, socialization and community building fall behind formal and pragmatic communication. So, despite the physical components and multiple touchpoints of a synchronous hybrid design studio, all students could not form the perception of a studio team as a part of a holistic design studio experience.

During the adaptation, the instructors maintained synchronous lectures and critiques as the central teaching medium. However, the students always had the option to watch a lecture later or request additional feedback outside class hours, as well as asynchronous feedback via email or Slack. The instructors observed that the flexibility for students to attend online was welcomed at the beginning of the semester or when they had other issues to deal with in parallel to the class. However, students also communicated throughout the semester during talks with the instructors that although they liked the online option, not having external pressure or a stricter control mechanism decreased their efforts to develop more perfectionistic work. Furthermore, as they thought that they could listen to the online classes later and arrange an extra one-to-one office hour with the instructor when they did not attend class hours, this escalated office hours, multiplying the class load for the instructors. So, even when instructors were always willing to help to handle possible gaps in students' learning processes, the number and variety of the issues an instructor deals with needed extra planning and careful balancing.

## Discussion

This section discusses the major dimensions that come to the forefront among all study findings retrieved from students' and instructors' reflections. It also provides specific directions and suggestions which might be beneficial for design instructors while devising a synchronous basic design studio or other hybrid design studios.

### Smooth integration and onboarding to hybrid learning

According to a systematic review of teaching and learning during COVID-19 (Zhou et al., 2023), national or institutional infrastructure aspects influence online learning in any educational context. Even before the pandemic, studies have showcased the experiences of educational technologies in general and provided suggestions for achieving effective online design education in higher education (e.g., Jones et al., 2021; Jones, 2022). These studies were very valuable, yet, as stated earlier, design pedagogy is idiosyncratic and not didactic, and examples specifically on synchronous hybrid design education are uncommon. Hence, suggestions and implications extracted from non-design learning contexts cannot be easily applied to design studio courses.

The case presented in this paper, which particularly focuses on basic design education, illustrated that synchronous hybrid teaching and learning incorporate multiple tools and technologies to connect the physical and digital worlds in an educational context. Due to the intrinsic teaching and learning processes in design pedagogy, the need for extra tools and technologies for annotating, visualising, sharing, documenting visual and tangible works, and synchronously observing peers creates further challenges for seamless integration; and amplifies the technical problems both from the side of instructors, students, and the educational institutions. In a seamless, integrated hybrid studio, the instructors and students should not need to set up a working space; the instructors can freely walk around the classroom and interact with the students naturally. So, despite the extensive efforts to benefit from multiple tools and technologies as in the current case and the university's efforts to provide technical support, more integrated solutions and build systems are necessary for effective synchronous design education.

More importantly, instructors and students need more time and support for onboarding if such hybrid studios will prevail in the future. In contrast to the unpreparedness of most universities for distance education with the onset of the pandemic (Rosa & Ferreira, 2023), tutorials, trainings, and participatory sessions with all stakeholders to provide smooth onboarding to a synchronous hybrid design studio could eliminate not only the pragmatic issues but also psychological barriers (e.g., stress to handle technical problems; lack of empathy from both instructors' and students' perspectives regarding the challenges all parties encounter in such settings – for instance, students tend to think that instructors should be perfect at using technologies).

### Ongoing uncertainties of hybrid learning

The case presented in this paper revealed that a hybrid design studio incorporates many uncertainties beyond those related to the pandemic and technological issues like unstable internet connection or malfunctioned cameras. These uncertainties go hand in hand with the flexibility regarding the synchronous education space provided to students. Since the students were free to choose the face-to-face or online class, the student distribution in each class could not

be anticipated. This brought challenges for instructors to plan the contextual layout and materials accurately, created a need for dynamic theoretical and practical exercise moderation decisions depending on online/in-class student participation and distribution, changed the motivations and attentions of all parties depending on class dynamics in a synchronous hybrid class, and created additional cognitive and physical efforts of all stakeholders to pursue effective interaction. In fact, uncertainty can be valuable in design curriculum, as creativity usually emerges from uncertainties during design processes; ambiguities can even be a resource for design (Gaver et al., 2003). However, this paper shows that uncertainties should be balanced in a synchronous hybrid basic design education.

The role of learner choice and self-regulation comes to the forefront when learners are given flexibility about the kinds of contexts/blends they could participate in (Graham, 2006). In parallel, the type and level of guidance from the instructors become critical. This paper highlighted that the students' self-discipline in a synchronous hybrid design education could be even more crucial to realise a holistic studio experience. Both online and in-class students' active participation during hands-on exercises, critique sessions, and discussions positively affects the entire studio culture since design pedagogy highly benefits from peer observation, peer feedback, and social communication (Wragg, 2020). Therefore, basic design studio instructors' roles in guiding, comforting, and engaging students to keep their cameras on while creating hands-on work and articulating their and others' works are also essential. Accordingly, instructors need to prepare multiple touchpoints and community-building activities, including offline components, to increase formal and casual/social communication, which would ultimately entail collective studio culture and nurture a sense of belonging and responsibility. For example, creating digital communication channels like Slack or Discord could support community building for students who already know each other.

Finally, inherent uncertainties of synchronous hybrid design studios, which were observed to be coupled with uncertainties of the first year in higher education and mixed disciplinary backgrounds of the students in the current course, have compelled the course instructors to demonstrate skills beyond teaching and designing skills. The synthesis of all the findings connotes that the roles of design studio instructors in such a hybrid setting include orchestration skills as they would need diverse levels of support (e.g., institutional level, education policy level) to juggle not only the unique and dynamic nature of a synchronous hybrid design studio, but also complex and emerging interactions due to in-person and online presence afforded via various technologies.

## Conclusion

Although distance education is not contingent on the COVID-19 pandemic, it is an inescapable push to experiment with technologies within the scope of design education despite previous concerns about transferring the traditional design pedagogy to online component-added formats. This paper investigated how a synchronous Hybrid Basic Design Studio can be designed and how the possible challenges of teaching and learning in such a studio can be addressed. It presented a case about realising a synchronous Hybrid Basic Design Studio and students' and instructors' reflections about the course. The results have shown students' positive and negative feedback about face-to-face and online participation in a hybrid design studio and instructors' observations and experiences about adapting a basic design studio to a synchronous hybrid format, covering aspects of technology, course content, procedures, communication, and socialisation. It was concluded that 'integration' and 'uncertainties' are central concepts to deal with the scope challenges of hybrid design studios. An example case and related reflections in this paper could inspire other design educators to develop new hybrid design studio courses and provide both caution points and possibilities while doing as such.

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