

INSTRUCTOR TEACHING EXPERIENCE WITH ONLINE DISTANCE LEARNING FOR PRACTICAL DESIGN COURSES AFTER COVID-19

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ABSTRACT

Due to COVID-19, all classes in schools have been converted to distance learning using online platforms. However, various problems were raised when converting face-to-face classes to online distance learning. In particular, the difficulties were more pronounced for practical design courses because they include practical experience.

In this context, this study focused on actual online distance learning classroom cases in design education. Based on the qualitative case study methodology, four instructors were interviewed about their experience with distance learning courses that actively utilized online platforms for college design courses as research cases.

In design education, which aims at interdisciplinary and convergence thinking, online distance learning is meaningful in that it can expand experience and opportunities for the overall formative design through the development of technology. On the other hand, there are clear limitations in terms of practical production activities for existing online distance learning methods. Therefore, it is necessary to explore whether to develop classes based on the recently used effective activities or whether to find new strategies in the case that these limitations are fundamental to online distance learning.

KEYWORDS

Distance Learning, Design Education, Education after COVID-19, Practical Online Teaching

1. INTRODUCTION

Education around the world began to actively utilize information and communication technology as the COVID-19 pandemic began. In this era of transformation, the Ministry of Education of Korea judged that it would be impossible to execute the school's normal academic schedule, and they issued a recommendation that included avoiding face-to-face courses and conducting distance learning (Ministry of Education, 2020).

However, various problems were raised while switching most courses to distance learning. In particular, since design universities primarily involve practical applications, the tuition is usually higher than other majors. Not only is the use of facilities restricted due to COVID-19 but there are many cases in which lectures and assignments were replaced with videos or teaching materials, and this change inevitably led to a growing number of complaints from learners. Some universities partially allowed face-to-face practical courses to facilitate smooth progress; however, COVID-19 has continued to be an obstacle, and limited face-to-face courses are expected to continue until the situation stabilizes.

In this context, this article attempts to discuss the implications for design education by focusing on actual distance learning cases at college. Using a qualitative case study approach, we examine the teaching experience of instructors who have experienced distance learning, the types of challenges they have faced, and future possibilities and reflections.

1.1 Online Distance Learning after COVID-19

Distance learning is essentially a form of education in which instructors and learners do not meet face-to-face. Simonson et al. (2006) defined the basic components of distance learning in four ways: institutionally-based, separation of instructors and learners, interactive telecommunication, and sharing of learning experiences through the media. The purest form of distance learning requires that participants are separated by both time and space (Keegan, 1996). However, currently, with the development of technology, instructors and learners

can communicate simultaneously even if they are spatially separated. Currently, in distance education discussions, various cases such as blended learning or flip learning have been explored.

The results of analyzing more than 240 studies show that there is no significant difference between traditional classroom education and distance learning, and that distance learning can be as effective as face-to-face education (Russell, 1999, as cited in Simonson, 2006). The types of online distance learning held at Korean universities after COVID-19 are shown in Table 1 (J.H. Oh, 2020).

Table 1. Types of online distance learning

Real-time video lecture	Pre-recorded video lecture	Lecture recording and teaching materials	Utilization of existing media
Instructor and learner meet at a specific time and interact in real time.	Video materials are produced and posted in a classroom or studio using camcorder equipment.	A file is created and posted by adding the instructor's voice to the teaching materials such as PPT or images.	Instructors select and provide existing videos addressing class-related content.
			

Different from traditional classroom instruction, where learners rely heavily on instructors, distance learning allows learners to learn autonomously; additionally, remote communication is not just a means of education but a system that communicates through media (Moore & Kearsley, 1996). In other words, distance learning pursues learning with high learner autonomy and independence, but it is planned learning and requires strategies that require active activities and experience from learners within the remote system.

1.2 Practical Design Courses

In education, practice refers to a form of learning accompanied by physical activity. In this article, the practical design course involves a process of observation, discovery, and application based on a specific theory, and these courses focus on practice that facilitates educational goals.

Design addresses both aesthetic and functional aspects based on mass production and a functionalist philosophy with the development of machinery and technology since the 19th century. The design process is quite complex and diverse. Designers work individually or jointly, begin spontaneously due to creative inspiration, and proceed precisely according to close market analysis, prospects, and technical background (Heskett, 1980). Therefore, in practice, design courses not only involves the creation of aesthetic works but also includes various activities such as field surveys, group activities, and technology utilization.

1.3 Proposal

Currently, few studies conducted in Korea have focused on the process of converting existing face-to-face courses to distance learning using online platforms (J.U. Do, 2020). In Korea, the importance of distance learning has not emerged as dramatically as it has in other countries because physical access to educational institutions is more accessible compared to other countries with large national areas. The majority of studies were primarily conducted to discover the availability of media.

This case study explores the difficulties and strategies used to overcome the limitations of remote design courses by interviewing instructors who designed and operated actual design practical courses. This exploration could provide insight into the problems experienced by instructors and an exploration of the implications that should be considered in instructional system design for distance learning courses related to design in the educational field.

2. METHOD

This case study focused on specific situations and collected in-depth data using various sources of information such as observation, interviews, and documents (Creswell & Poth, 2018). Case studies have a naturalistic approach and are sensitive to complexity and interaction in a specific context (Stake, 1995), so it is necessary to define cases that can be categorized using certain characteristics, such as the specific time or place, during this process. The important consideration when conducting these types of studies is not to provide generalized statistics based on a quantitative collection of events but to expand and define theories by considering cases, and accordingly, this study was conducted by collecting multiple cases and finding interrelationships and deriving meanings within a context.

2.1 Research Process

Researchers can use the maximum deviation method to present various perspectives on specific cases (Creswell & Poth, 2018). In this article, it was judged that various variables such as the guidelines, situations, course contents, and teaching characteristics of the instructor could not be generalized, so multiple cases were selected. However, the characteristics of the instructors who participated in the interviews were different.

A few extensive and non-judgmental questions can facilitate the emergence of the participants' narratives (Charmaz, 2006). The interview was guided deliberately to five open topics: The guidelines and responses from the school, issues regarding the usability of online platforms, things that have been replaced or changed, the experience of running the courses, and the participant's opinion on the role of each subject in terms of country, school, instructor, and learners. Recorded videos of actual courses, teaching materials, evaluation, learner assignments, and guidelines from the Ministry of Education and each school during the classes' periods of operation were collected and analyzed. Since all the instructors who participated in the interview agreed to provide the data on the condition of anonymity, some data containing information or images that could reveal the subject's identities were deleted or reconstructed.

Table 2. Participant information

Type	Age group	Course	Teaching experience	Most used platform
Instructor A	30s	Project of design	6-year	Blackboard
Instructor B	30s	Project of design	2-year	Zoom
Instructor C	50s	Industrial design	11-year	Zoom
Instructor D	60s	Visual design	23-year	YouTube, Web log

Table 3. Interview proceedings

Type	Date	Additional interview
Instructor A	August 27, 2020, 6:20-7:10PM.	· Telephone (30 minutes) · Letters exchanged twice
Instructor B	September 7th, 2020, 4:00-5:00 PM.	· Zoom meeting (40 minutes) · Letters exchanged once
Instructor C	September 17, 2020, 2:00-3:40PM.	· Letters exchanged twice
Instructor D	September 10th, 2020, 12:00-1:40PM.	· Letters exchanged twice

2.2 Analysis

The notion of story is central to research on teaching and learning (Frelin, 2013). An average of 95 minutes of conversation was collected for each interviewee, including phone questions and answers, and transcription of the oral data collected through this process was conducted.

General data analysis of qualitative research involves a coding process in which sub-themes are classified, named, and then woven into a larger category or topic for later comparison (Creswell & Poth, 2018).

Accordingly, all of the experiences of the instructors who participated in the interview were derived, and then the experiences that were unrelated to overlapping experiences or research topics were filtered out. The concepts of attributes were then collected and categorized using case analysis and continuous comparison of the subject (Charmaz, 2006). In quantitative analysis, the category names may be applied when they are from other researchers, or the vocabulary used by the research participants can be determined by the researcher (Merriam, 2009), and in this article, the researcher applied the vocabulary of the higher concept.

3. RESULTS

According to the Ministry of Education's guidelines, which proposed the detailed method for class management involves collecting opinions from teachers and learners and entrusting the implementation to their discretion (Ministry of Education, 2020), the specific experiences of each instructor's case were different. In each case, the statements were examined by dividing them into "Impasse", which was experienced while operating distance learning courses in design subjects, "Attempt" for smooth teaching in courses, "Potential" found in this process, and "Reflection". Twenty-five subcategories and 12 core topics were derived using meaningful statements.

Table 4. Instructor teaching experiences with online distance learning for practical design courses

Categories	Core topics	Subcategories
Impasse	Carry a burden alone.	(A)(B)(C)(D) Not enough time to prepare for online distance learning. (A)(B)(C)(D) The environment and support are insufficient.
		(A)(C)(D) The instructor feels the difficulties and limitations of using the online platform. (A)(C) Instructors are tired of things that they do not have to do in face-to-face courses.
	Never get over things.	(A)(B)(C)(D) The instructor feels the limitations of making activities and effects. (C)(D) It is difficult to communicate online rather than face-to-face.
	Meaningless evaluation standard.	(A)(B)(C)(D) It is hard to reflect the learners' participation and attitudes in the evaluation.
Attempt	Students who can't concentrate.	(D) A skeptic about real-time online distance learning. (D) Learners who are not voluntary.
		Variety of uses for online platforms.
	Specific instructions for learning.	(B) Various activities are presented so that learners can focus. (B)(C) Class rules are set and reflected in grades.
	Students who adapt well to online distance learning.	(A)(B)(C)(D) Learners' good use of online platforms. (A)(B) Learner's approach instructors more easily.
Potential	Discover the advantages of online distance learning.	(A)(B)(D) The advantages of distance learning when using online platforms. (A)(B)(D) It is useful if distance and face-to-face methods are mixed.
	The learning effect is valid depending on the situation.	(C)(D) Distance learning is not a big problem for senior students. (B) Face-to-face learning is not necessary. (B) There is no significant difference between distance learning and face-to-face classes in terms of results.
Reflection	The direction of future online distance learning for design education.	(A)(B)(C) In future distance learning, changes in educational content and goals are needed. (C) Distance learning is positive but limited.

Training is needed to improve delivery skills.	((B)(D) Online remote classes require lecture skills that are different from face-to-face classes.
Control and rules that ignore each course are poison.	(D) Instructors require autonomy when using the platform. (D) Time standards cannot be applied to design course subjects.
Instructor A = (A), Instructor B = (B), Instructor C = (C), Instructor D = (D)	

All instructors had no experience with distance learning, and they had difficulties because the environment or support for the courses was not suitable. To induce the full participation of learners in distance learning using online platforms, it is essential to establish an environment in which both learners and instructors can smoothly access the online system before classes begin (Salmon, 2013).

"Basically, the Wi-Fi provided by the school does not connect well with the Blackboard for security reasons. I had to change some settings to connect, but it wasn't working, so I used the Tethering function. The same goes for students." (Instructor A)

Instructor C's school used its own learning management system(LMS) before starting distance learning. However, it was inconvenient to use in practical classes, and there was no function in terms of real-time classes. Since then, the school has provided data and educational programs regarding the use of Zoom so that real-time distance learning can be conducted, but they are not useful. Rather, Instructor C had to work much harder because of the guidelines for posting records of the course on the school's LMS.

"In the school guidelines, there should be evidence to see if the class was actually held or not. So I uploaded a class video. Also, submit assignments, give feedback, check attendance by LMS, but the actual class is operated at Zoom. I had to work twice and three times." (Instructor C)

Prensky (2001) referred to the generation born between 1980 and 2000 as Digital Natives. Compared to learners, instructors were not familiar with the digital environment, so they felt difficulty and became tired of communicating online.

"The biggest problem with online is that I'm not good at it. I can't use it, not used to online. Instructors are in a hurry. Why isn't this turning on? That's how I lose all the trust in the class by students." (Instructor D)

The problem regarding the instructor's ability to use the online platform was also revealed in the experiences of Instructors A and C. Instructor D easily adjusted the difficulty of the last task among the three project tasks in the class, but learners did not reach the level expected by the instructor. In fact, in Korea, concerns have been raised that the ability to discriminate has decreased as most universities have changed the evaluation method for their grades to absolute evaluation (M.H. Cho, 2020). In distance learning, it is difficult to control learners who do not focus on classes, and there are limitations in forming rapport. Therefore, curricula and evaluation criteria that are distinctly different from face-to-face classes must be applied.

"I split it into small unit groups. If there are about 20 students over, they don't talk to each other. They didn't concentrate. Feel awkward and shy. So divide into small groups, communication takes place within them, and projects are carried out. And while I feedback to other students' groups, they solve the task in my directions. I think that kind of interaction was good." (Instructor B)

The most representative limitations appeared when providing solid visuals that are not implemented on digital screens.

"The quality of the mock-up is important. These course contents were to made mock-up. But now the focus is on how well they show the work online rather than actual things."(Instructor A)

"They could select a target user, and do various platforms, products, services, environments, and exhibitions that fit the needs of the target. But, most of the students showed in service design. Limitations seem to have come naturally from the environmental aspect." (Instructor B)

"They don't know how it can improve the completeness of the mock-up. No matter how much I talk, I can't explain it well. Also, they all look similar through the camera. I can't see the details." (Instructor C)

On the contrary, distance learning was more efficient in senior classes centered on personal production activities, and the results of tasks such as data collection and field research were superior to a face-to-face class. Due to the nature of distance learning, where guidance and learning processes are recorded, it can be seen that it has a positive effect on post-class review and reflection.

In the case of learners, when engaging in distance learning, they asked instructors questions more frequently, and they quickly accepted the new ways of the class and teaching methods online and showed more preference.

"Because the records are left, students remind them of every comment. It is much more realistic than words that flow. So I said every word more carefully." (Instructor A)

"Except for some practical courses, it's the same as a face-to-face anyway. Rather, if they come in person, you have to wait for the instructor's criticism for a long time. There was no problem with the 4th-grade graduation exhibition course. They're good on their own." (Instructor C)

"Regardless of the quality of the task, it can be seen that they tried to reflect my feedback by watching the video very meticulously. Even if it's not a COVID-19, I think that kind of online learning is very beneficial."(Instructor D)

Table 5. Learner assignments in distance learning of instructor B

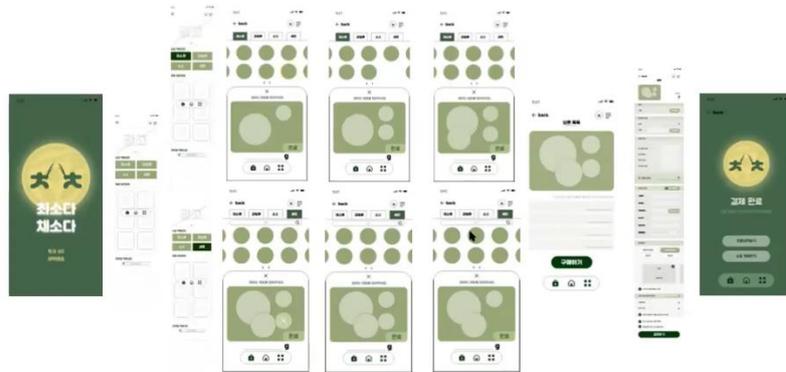
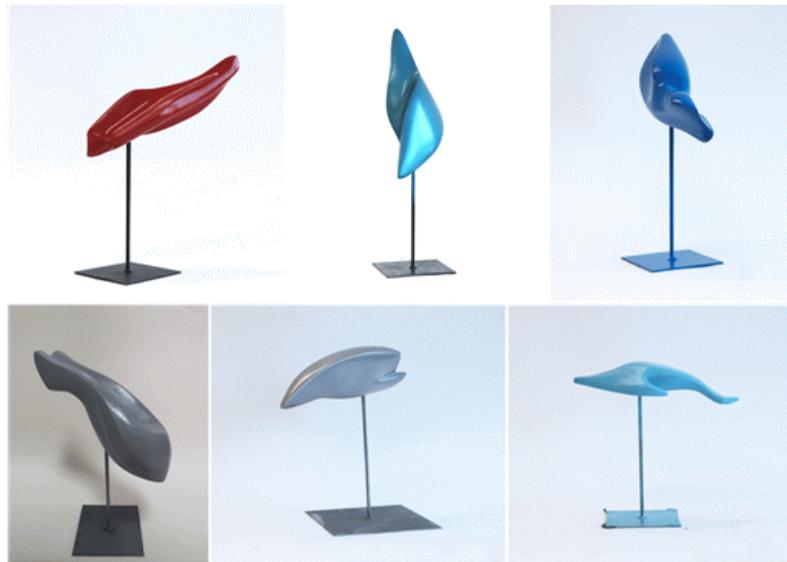


Table 6. Learner assignments in face-to-face classes(above) and distance learning(below) of instructor C



After the course, the instructors felt that the educational goals, contents, outcomes of distance learning and face-to-face classes were different, and the teaching method should also be different. Therefore, blended learning-type classes mixed with distance and face-to-face methods were considered the best.

"Theoretical classes or presentations can be heard (online) well and clearly seen. It was much better." (Instructor A)

"I think the curriculum of Korean design is very biased toward teaching the skills. For example, students who study the humanities also use it in other fields or their own positions, not only in writing or writing books. The design likewise can use in a wide variety of fields" (Instructor B)

In addition, the improvement of lecture delivery skills through video media, the use of the platform according to the subject, and the guarantee of autonomy by the teaching method should be supported.

4. DISCUSSION

Distance learning is positive in that it can expand experiences and opportunities for overall design centering on technological development. However, there are clearly practical activities that cannot be realized through distance learning. Therefore, it is necessary to discuss whether to develop classes that focus on currently used effective activities to find new strategies in the case that these limitations are fundamental to distance learning.

4.1 Practical Activities for Online Distance Learning

There are many restrictions on communication through video media, but in some activities, it is possible to find components that were similar to or more effective than a face-to-face class. Learner satisfaction according to the type of distance learning is much higher for classes using video media than those that provided only teaching materials and assignments (D.J. Lee, & M. S. Kim, 2020). Therefore, in distance learning, video media should be considered.

First, in the case of all instructors, a validation of whether practical classes for visual design could be implemented on the screen was derived. The validity of implementation depends on whether the visual component can be completely checked in the video media, and if the final task performed by the learner is a practical task delivered in the form of digital graphics or video, the limitations of distance learning can be negated.

In particular, it was found that there was no difficulty in remote guidance through video media in courses for senior students. According to the statements from instructors C and D, they were already familiar with the university's courses and formative practical activities and were 'on their own'. Since the role of the instructor is simply to provide appropriate feedback according to the activity stage, it was possible to flexibly and efficiently manage the course and learning schedule. When a tutorial or demonstration for practical activities is needed, the learner's understanding is higher when they are provided videos than when they are experienced in real time.

4.2 Blended Learning

Blended learning provides a variety of learning methods that are suitable for learners' needs by properly mixing distance learning and face-to-face class, providing efficient access to knowledge through various delivery media, mitigating Spatio-temporal constraints, and reducing the cost of teaching and learning (Graham, 2003). Instructor D predicted that the best teaching method could be facilitated if approximately one-third of all courses were guaranteed face-to-face class time. Learners can watch video classes at any time without requiring time, physical presence, and cost of attending the classroom, and the rest of the class can then focus on theoretical learning and research activities.

Opinions were divided among the instructor regarding group activities and tasks, but it was found that overall, research activities by students proceeded smoothly. Blended learning is a strategy that can overcome the limitations of both distance learning and face-to-face classes and also make use of their strengths.

4.3 Mechanisms that Facilitate Class Activity

For enjoyable learning and knowledge creation to occur based on a certain sense of purpose within the learning group, a support device that promotes activities is needed (Y.M. Yu, 2018). In the case of Instructor B, it can be seen that the degree of participation improved when the learning group was divided into small units and group activities were conducted. Instructors B and C required small task units to be performed and communicated about them frequently. Instructor C set rules so that the activities were completed during class time. The results were all effective. In distance learning, providing units of knowledge repeatedly and presenting specific methods for learners and instructors are consistent with previous studies (J.K. Lee, J. K., Jeon, 2018; Y.K. Lim, Kim, 2019), which show that acting as thinking facilitators can activate learner participation. For all of the instructors' courses, learners were competent at using the online platform and were also active in communication with instructors. Given the research results (Y. Noh, 2019) that interest in the platform itself can lead to an interest in learning, efforts are needed to find the most suitable online platforms for classes and apply them in combination.

4.4 Social Network for Sharing Instruction Strategies

It was noted that designing blended learning-oriented classes that mix distance learning and face-to-face class methods is not only much more difficult than traditional classrooms but also costs three times as much (Bersin, 2003). However, even regular meetings by instructors were reduced or omitted due to COVID-19, and they had difficulty finding communities with which to share information.

The Ministry of Education and schools left a significant portion of the class management at the instructor's discretion, and the instructors used an unfamiliar online platform and remotely operated the class. During this process, it was found that the instructor felt considerable fatigue due to collective guidelines that did not account for the characteristics of the class, an unstable online access environment, digital infrastructure, and an increased workload. If each case is shared and in-depth research and class development are conducted to account for these problems, the burden for individual instructors can be relieved and continuous growth for remote classes can be expected.

4.5 Provision of Standardized Guides and Systems for Design Practical Courses

The design process for distance learning requires a supportive teaching guide and systems at the national or institutional level should be based on these guidelines. Practical support for the use of online platforms and digital devices by instructors is needed. All of the instructors stated that although they majored in design and had relatively frequently used online platforms or digital devices, some had difficulty using them in class.

Instructors and learners should be provided with an environment for smooth online access. The first step in ensuring that learners have the motivation and willingness to participate in distance learning classes is to construct an environment in which online systems can be accessed smoothly (Salmon, 2013).

In addition, evaluation criteria suitable for distance learning should be prepared. In all of the instructors' cases, in terms of learner evaluation, it was difficult to apply the existing face-to-face class standards. In the post-COVID-19 era, distance learning is no longer a substitute but a regular teaching model. A standardized instructional design model for distance learning that considers the characteristics of the design field should be developed.

5. CONCLUSION

Distance learning courses are based on information and communication technology. Online, distance has disappeared, and there is only an infinite virtual space. Therefore, how can educators and administrators make this virtual space an effective place for teaching and learning? Even though the 'Place' is not necessarily visible, to make the 'Space' into the 'Place' is to give value (Tuan, 1977). While the virtual world is not necessarily visible, to make the virtual space into an educational place provides value. When classes use online spaces and learners' positive experiences accumulate, the online space will become a meaningful place for learning and provide a new classroom that transcends physical limitations due to distance.

The development of information and communication technology, which is also the core of the 4th Industrial Revolution, removes distance and connects the world (Cairncross, 1998). The rapid development and dissemination of technology have completely changed the way learners obtain and process information, but education is still following the traditional implementations without understanding the needs of learners (Prensky, 2001). In particular, distance learning in design education, which involves many practical activities, is only an alternative to face-to-face classes, and attempts to reconstruct or develop existing classes into online remote classes have not yet emerged. The gap between online virtual space and real space will gradually narrow. Now is the time to find specific ways to change for the future of education.

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