

***Assessing and Enhancing the Educational Environment for Hybrid Building
Construction Lectures at Korean Universities***

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Abstract

Online education at Korean universities is expanding and developing through COVID-19. One of the continued development directions of online education is the use of hybrid lectures. In hybrid lectures, learners can choose how they attend class. Learners can attend offline or online. This study aims to apply hybrid lectures to building construction education at Korean universities. That is, the purpose of this study is to analyze the current state of the educational environment at Korean universities and suggest ways to improve the educational environment. In order to apply hybrid lectures, a supportive educational environment is essential for successful hybrid lectures. In this study, the scope of the educational environment included educational infrastructure (facilities and equipment), teaching and learning support systems, and academic operation regulations. In order to analyze the educational environment of Korean universities, data on the educational environment of 30 Korean universities were collected. The universities being investigated were selected from among Korean universities in a balanced manner in terms of region, size, and founding entity. The data collection method included document analysis, on-site investigation, and interviews. The survey results showed that many universities are expanding their infrastructure year after year. Among the universities surveyed, only four universities were found to have added specific regulations related to hybrid lectures. It was analyzed that in order to apply hybrid lectures, Korean universities need to continuously improve their educational environment. This will allow Korean universities to more actively introduce hybrid lectures and improve the learning environment for students.

Keywords: Building Construction, Hybrid Curriculum, Educational Environment, Online Education

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Introduction

Online education is continuously expanding and developing with the advancement of ICT technology. Online education is evolving to increase learning effectiveness by improving learners' learning choices. Hybrid lectures allow learners to choose how they attend. Learners can attend offline or online. This study is a basic study for applying hybrid lectures to building construction education at Korean universities. That is, the purpose of this study is to analyze the current state of the educational environment at Korean universities and suggest ways to improve the educational environment. In order to apply hybrid lectures, an educational environment that can apply hybrid lectures must be established. We analyzed domestic and international research trends on the topic of hybrid lectures. It was revealed that various studies are being conducted to improve the learning effectiveness of hybrid lectures and develop hybrid curriculum (Table 1). Representative existing studies are as follows. Lim (2023) developed and presented a hybrid curriculum for university education (Lim, 2023). We are providing reference materials for instructors in the field of education by applying instructional design strategies to hybrid learning. Kim (2022) analyzed the learning effect of hybrid lectures (Kim, 2022). It analyzed the needs of university professors to derive the optimal plan for operating hybrid classes. Existing studies have mainly focused on designing teaching and learning methods for hybrid lectures and analyzing learning effects. This study is considered to be different from previous studies because it analyzed the educational environment of Korean universities and suggested improvement measures.

Table 1: Literature Review

Authors (year)	Research contents
Lim (2023)	Development of conceptual models and instructional design strategies for hybrid in higher education
Han, Jeong, Ahn (2022)	Study on Hybrid Class Operation in Korean Language Education
Kim (2022)	Needs Analysis for the Effective Operation of University Hybrid Classes in the Post-COVID Era
Cho (2023)	Investigating Academic Motivation and Achievement of College Freshmen in Hybrid, Online, and In-class Learning

Current Status of Online Education Environment at Korean Universities

Data Collection Overview

In order to analyze the educational environment of Korean universities, data on the educational environment of 45 universities were collected. The data collection methods included document research, on-site investigation, and interviews. The universities being investigated were selected from Korean universities in a balanced manner in terms of region, size, and founding entity (Table 2). In this study, the scope of the educational environment included educational infrastructure (facilities and equipment), learning management systems(LMS), and academic operation regulations.

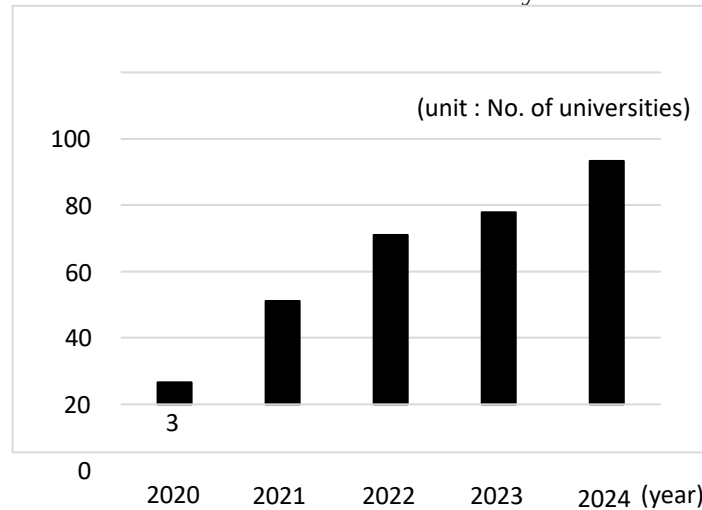
Table 2: Regional Distribution of Surveyed Universities

Region					National · Private	
Seoul· Metropolitan	Chungcheong	Honam	Yeongnam	Gangwon·Jeju	National	Private
9	10	10	10	6	20	25

Hybrid Lecture Room

We investigated whether Korean universities have hybrid classrooms. The number of universities with hybrid classrooms is expected to increase significantly from three in 2020 to 33 in 2024 (Figure 1). These results are believed to be due to Korean universities actively introducing innovative teaching methods such as hybrid lectures.

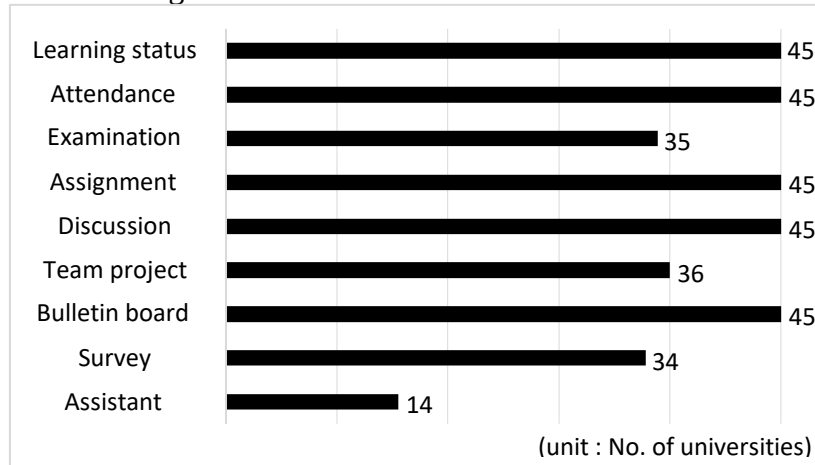
Figure 1: No. of Korean Universities With Hybrid Lecture Rooms



Learning Management System

Figure 2 shows the results of analyzing the functions of LMS used in Korean universities. Nine core functions were analyzed. It was found that five functions, including ‘learning status’ and ‘attendance’, are being utilized in all universities. On the other hand, there were many universities that did not have ‘exam’, ‘team project’, or ‘survey’ functions. It was analyzed that the LMS currently in use is structured around learning management. In order for LMS to support hybrid lectures, it is believed that functions supporting real-time interaction should be added.

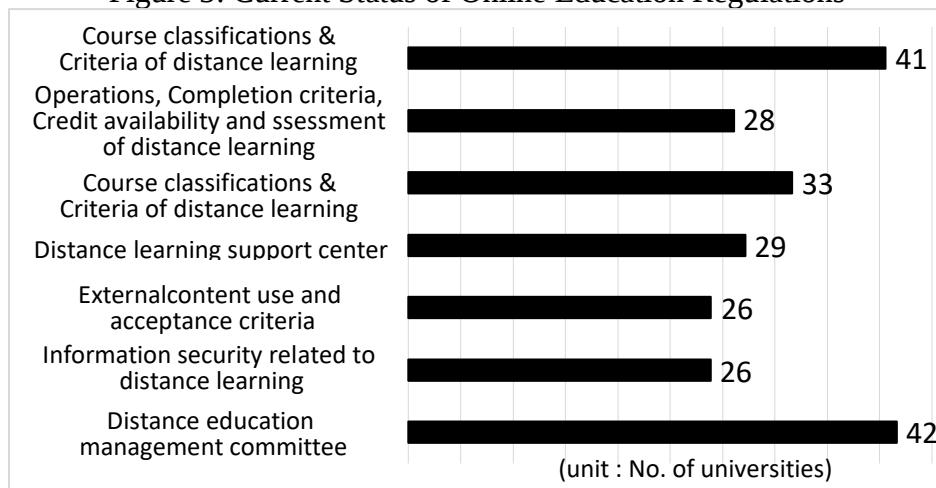
Figure 2: Current Status of LMS Functions



Regulations Related to Online Education

The results of analyzing the regulations related to online education at Korean universities are shown in Figure 3. We analyzed whether the regulations of Korean universities comply with Korean laws related to online education. The laws used as the basis for analysis were the ‘Distance Education Act’ and the ‘Ordinance on the Operation of Distance Learning in Universities, etc.’ The analysis results showed that most universities were complying with the ordinance regarding the ‘Classification and Opening Standards for Distance Learning Subjects’ and ‘Distance Education Management Committee.’ However, it was found that many universities do not have regulations for other items. In particular, the provisions of the ‘Matters related to information protection related to remote classes’ section were found to lack specificity. These results are believed to be due to the fact that the law was recently implemented (December 2023), and some universities have not yet completed the revision of the regulations.

Figure 3: Current Status of Online Education Regulations



Improvement of Educational Environment for Introduction of Hybrid Lectures

Educational Facilities and LMS

Table 3 presents a plan to improve educational facilities and learning support systems. Educational facilities were divided into three groups by user: instructors, learners, and instructors and learners. Auxiliary monitors are needed to check the status of online learners and respond quickly to questions and answers. Tracking cameras can automatically track the instructor's movements to increase online learner engagement in lecture activities. Microphones and speakers for learners can support smooth communication between offline and online learners. Cameras and monitors for learners can support smooth communication and learning activities. VR/AR devices can explain learning content in an immersive way. The discussion and team project functions of LMS need to be improved from the existing bulletin board format to enable real-time video conferencing and chatting.

Table 3: Improvements of Educational Facility and LMS

User	Classification	Improvement measures
Instructor	Secondary monitor	• Check the status of online learners and manage Q&A sessions effectively.
	Tracking camera	• Record instructor movements and lecture activities for enhanced learner engagement.
Learner	Microphone and speaker	• Facilitate auditory interaction between face-to-face and online learners
	Camera and monitor	• Enable visual interaction between face-to-face and online learners
Instructor · learner	VR/AR equipment	• Provide immersive learning experiences akin to real-world environments
LMS	Discussion	• Improve real-time communication functionalities
	Team projects	• Enhance collaborative capabilities for team-based activities

Regulations

Table 4 presents a plan to improve regulations for Korean universities to introduce hybrid lectures. It is necessary to define 'hybrid lectures' in regulations related to online education. It is necessary to supplement the regulations to allow real-time remote classes. Attendance management for real-time remote classes requires establishing clear attendance regulations according to the circumstances of each university. Teaching assistants need to be supported to the extent possible depending on the circumstances of each university.

Table 4: Improvement of Regulations for Hybrid Lecture Introduction

Classification	Improvement measures
Hybrid lecture	• Add hybrid lectures to distance learning definitions
Real time distance learning	• Allow real-time distance learning
Real time distance learning attendance management	• Requires attendance regulations for real time distance learning
Teaching assistant	• Assign to the extent possible

Conclusion

Hybrid lectures are gaining attention as a teaching method that can contribute to the realization of student-centered education by expanding learners' learning choices. This study analyzed the problems of the educational environment for introducing hybrid lectures to architectural construction education at Korean universities and suggested improvement measures. The results of the analysis of the educational environment of Korean universities are as follows. It was found that hybrid lecture facilities at Korean universities are gradually increasing. It was analyzed that some functions of the learning support system need to be supplemented and added in order to support hybrid lectures. It was also found that many improvements, such as ‘personal information protection’, are needed in academic regulations in order to apply hybrid lectures. The following are ways to improve the educational environment of Korean universities. Educational facilities and equipment need to be continuously expanded. This should minimize inconveniences in teaching and learning activities for professors and students. LMS should also be supplemented to enable smooth communication between online and offline learners. Academic regulations should be continuously supplemented to protect and support professors and students participating in hybrid lectures. This study is a basic study for introducing hybrid lectures to Korean universities. It is believed that the contents presented in this study can be used as reference material for introducing hybrid lectures to Korean universities.

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