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Efficiently Organizing Student Groups in Hybrid Classes Using Attendance Confirmation Tools

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Abstract

The present study investigated a method that enables faculty members to efficiently organize student groups in hybrid classrooms wherein physical and online methods of teaching are combined. Three types of tools were assessed: Moodle, Zoom, and a developed system that utilized the student card (IC card). The results revealed that student attendance (in the classroom or online) could be monitored in real-time and groups could be formed more efficiently by employing Zoom and IC cards.

Keywords: Group work, Hybrid class, Attendance confirmation tools.

1 Introduction

Classroom lectures have not been possible because of the Covid-19 pandemic and its related restrictions. Furthermore, when conducting classroom lectures, it has been necessary to ensure social distancing as much as possible. Consequently, faculties have had to use trial and error methods to conduct group work. First-year students generally do not have friends and thus it is crucial to incorporate group work as much as possible to afford them opportunities to communicate. For example, if the class was held online on Zoom, it was possible to conduct group work activities by utilizing Zoom's breakout room function. However, in hybrid classes, when some students were in the classroom and some were online, organizing group work was more difficult, especially when the number of online and classroom participants was different each time. When seeking to organize group work, it became very complicated to determine the attendees present online and those present in the classroom.

Therefore, tools for confirming attendance were developed to facilitate efficient group formation. The present study reports on the practical results from hybrid class group formations that utilized three attendance confirmation tools in the first semester of 2021.

2 Attendance Confirmation Tool

Many previous studies on class improvement and attendance confirmation have examined the use of information and communication technology [1]. Therefore, the present study examined the tools that have been most widely used in recent years.

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- **Attendance confirmation using Learning management systems (LMSs)**

LMSs were introduced at each university before Covid-19, with one of the LMS functions being attendance confirmation [2]. The present paper discusses Moodle used by Ochanomizu University; however, most LMSs have similar functions.

- **Attendance confirmation using an online conference system**

At many universities, online (remote) classes and e-learning have been used to overcome the pandemic restrictions, and even classroom lectures have been conducted online, many of which have employed video conferencing tools such as Zoom [3]. Zoom can output an attendance file after the class, which can be used to confirm attendance. For example, it is possible to confirm if a student is late because the report indicates when the student participated and the activity times. Zoom also has functions for group work, such as a chat function and breakout rooms.

- **Attendance confirmation by IC card, etc.**

Currently, most universities have student cards (IC cards), and many universities have adopted systems that allow students to automatically enter and leave a classroom by touching their IC cards to a card reader in the classroom. This type of attendance confirmation system for tablet terminals was originally developed by Ochanomizu University (a system was developed by Prof. Hasegawa when he was in office at Ochanomizu University that allows immediate attendance confirmation) (Figure 1).

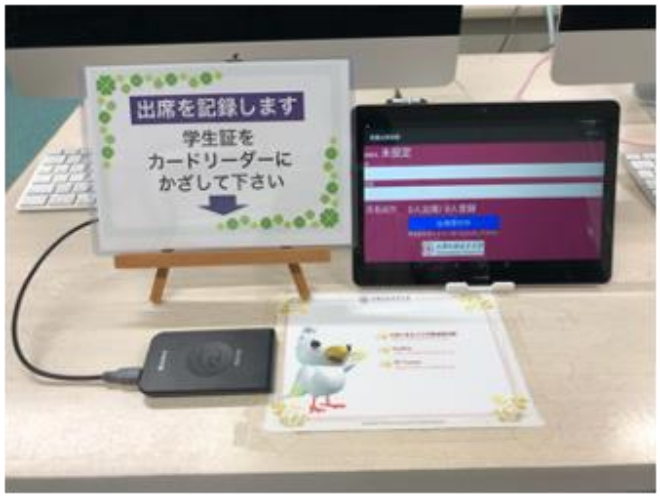

Figure 1: The attendance confirmation system developed by Ochanomizu University

3 Practice Method in Class

The 2021 first-semester class in Ochanomizu University was selected for the survey wherein group work was conducted. Based on a combination of lesson styles and attendance confirmation tools (Table 1), the present study sought to verify the most effective combinations. When students were all in the classroom, they could be easily divided into groups on the spot, and if all students were online, Zoom's breakout room function could be used to organize groups automatically. However, in hybrid classes, it was necessary to determine the most efficient method for semi-automatically organizing the online and classroom attendees into groups in real-time. That was the focus of the present study.

Table 1: Lesson style and attendance confirmation tool combinations

Type of class	Attendance confirmation		
	(a) Moodle	*(b) Zoom*	*(c) IC card*
(1) In classroom	Available	Available	Available
(2) Online	Available	Available	Not available
(3) Hybrid ((1)+(2))	Available	Available	Available (partial)

Table 1 shows the class and the attendance confirmation tool combinations. The present study specifically examined group formations in hybrid classes (Table 1 (3)), for which there were three attendance confirmation tools: (a) Moodle, (b) Zoom, and (c) IC card; the details for the same are given as follows:

- **Attendance confirmation method in Moodle**

Students were instructed to log into the relevant Moodle course during class hours and check their attendance.

- **Attendance confirmation method in Zoom**

Students were instructed to access Zoom during class hours and enter their names and student numbers.

- **Attendance confirmation method using an IC card (student card)**

Students were instructed to touch the IC card (student card) to the card reader installed in the classroom during class hours.

4 Results and Discussion

The present report outlined the results of hybrid classes and their methods for group work. Attendance was confirmed using the three group formation tools when there were 15 and 32 students present in the classroom and Zoom, respectively. Then the method most suitable was determined.

First, when attendance was confirmed using Moodle in the hybrid class, it was not possible to distinguish whether the students were in the classroom or online, which made it difficult to organize the groups. Second, when attendance was confirmed using Zoom, as it was not possible to distinguish whether the student was participating in the classroom or online, the classroom attendees needed to take other measures, such as not logging in to Zoom, which made the group formation process quite complicated. Third, when attendance was confirmed using an IC card, only classroom students could definitely show their attendance. Consequently, the most efficient attendance confirmation method was found to be IC card and Zoom for classroom and online group work, respectively.

While the combination of (b) Zoom and (c) IC card was deemed effective for group work in hybrid classes, it was not possible to automatically organize the groups. It was possible to randomly form groups by logging into Zoom using a headset; however, it was not possible to rent headsets due to pandemic restrictions, which meant that classroom students were organized into groups and the online students were organized into online groups. This method allowed the students to directly communicate with each other in the classroom. Even though communicating online can be effective, communicating in the same space seemed to be exceptional. We considered that it is effective to assign students with the same participation form to the same group after understanding the participation form of students (online, classroom 1, classroom 2, etc.) It was found that grouping without considering student participation was half as effective.

Because the present study aimed to assess three possible tools, all three were implemented at the same time. However, because various procedures were needed to confirm attendance, this took time and effort. Therefore, based on the knowledge gained from this assessment, we plan to incorporate efficient attendance methods according to the class format. It was also found that it was necessary to comprehensively consider various aspects to ensure effective classes, such as the questions in the chat during class and the browsing of materials within Zoom.

5 Conclusion

The present study examined three attendance confirmation methods to determine the most efficient method to conduct group work in hybrid classes. Because some classes involved mixed departments, future work will examine mechanisms to gain information about the student departments to more effectively organize the student groups. In the feature, we will evaluate the usefulness of the system.

References

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