

Improving Students' Participation and Collaboration With Adjusting Cloud Education Platform During the Real-Time Interactive Class

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The purpose of this study was to find a way to promote the collaboration and interaction of students and bring about the growth of learners through feedback while taking advantage of real-time interactive class via video conferencing tools. Although real-time interactive class with using video conferencing tools had great advantages, but there were also limitations of active interaction. To this end, real-time interactive tool and cloud-based educational platform were applied to create cases of learner participation classes and analyze the cases. The convergence of real-time interactive class tools and cloud tools has been able to draw students' participation and collaboration in non-face-to-face situations, and it can be seen that it is very helpful in creating learner-centered educational activities based on communication and interaction with students. Through this, the application of the cloud-based educational platform in real-time interactive class could lead students to participate and collaborate even in non-face-to-face situations.

Keywords: remote class, real-time interactive lesson, cloud-based educational platform

Introduction

Due to the situation caused by COVID-19, the current education system has entered the era of un-contact. In the non-face-to-face situation caused by the virus, the system at the school was also converted to online, and students' learning activities were also changed to full online learning situations. In this situation, the Ministry of Education of the Republic of Korea presented three class examples: content utilization-based class, task performance-based class, and real-time interactive class.

According to the survey on the actual conditions of remote education (Ministry of Education of South Korea, 2020), 40.9% of the above examples used content utilization-based class type, 10.6% of task performance-based class type, and 5.2% of real-time interactive class type. When looking at the case of combining two or more class types, 82.1% of them combined task performance-based class and content utilization-based class, 7.1% of them combined content utilization-based class and real-time interactive class, and mixed all three was 6.9% of cases. It was found that 3.9% linked task performance-based and real-time

interactive class. Therefore, it was confirmed that the real-time interactive class type was operated at the smallest rate (Kim, 2020).

Real-time interactive class means a class that takes the form of a video lecture or a remote video lecture. Video lecture or remote video lecture is called the term video conferencing, and originally refers to a technology that enables real-time interactive communication in different places (Gillies, 2008; Motamedi, 2001; Spodick, 1995; Strijbos, Martens, Prins, & Jochems, 2003). Among the three types of classes presented by the Ministry of Education of South Korea, real-time interactive class which is utilizing video teleconferencing platforms such as Google Meet, Zoom, and MS Teams is the only way to have a class with seeing each other's face. Video lectures allow for two-way communication by connecting geographically distant places at the same time (Thatch & Murphy, 1995), and utilize a variety of information such as voice, graphics, and video to face existing face-to-face in remote education situations. The educational potential has been evaluated in that it has similar educational effects to the class (Jung & Na, 2004).

The educational effects of remote video lectures are as follows. First, a video lecture provides a learner with a scene in which video and sound are effectively combined, giving the learner the feeling that they are actually taking lessons in the classroom. It has the effect of enhancing the "social presence" through social interactions in which exchange of active information and opinions takes place immediately (Hrastinski, 2008; Lombard & Ditton, 1997). Second, video lectures enrich the contents of the class by promoting the sharing of diverse backgrounds, experiences, and perspectives of students (Kang, 1996; Mejia & Meraz, 2011). In addition, it is possible to promote various team activities of learners in that the "co-operation" and "cooperation" of learners are effectively promoted in an environment similar to the actual situation (Strijbos, Martens, Jochems, & Broers, 2007). Therefore, it can be seen that the remote video lecture is a teaching and learning method that promotes the learner's interaction in an emotional situation that is most similar to classroom instruction in a non-face-to-face learning situation due to COVID-19.

However, the video lecture basically shows limitations due to the characteristic that the instructor and the learner are separated in different spaces (Lim, 2011; Anderson, Beavers, Vandegrift, & Videon, 2003). In fact, when effective two-way communication is not promoted, the effect of video lectures must be drastically reduced, so immediate feedback and careful attention of the facilitator to promote two-way communication are required (Canning, 1999; Lee, C. Lim & J. Lim, 2009; Willis, 1993). In particular, due to the sudden on-line schooling due to COVID-19, this effective two-way communication faced a situational limitation that is difficult to achieve in a class that is conducted for a large number of students who have not had distance learning training using video conferencing tools. For this reason, one-way knowledge transfer classes through screen sharing by one teacher, rather than classes based on communication and interaction expected when connecting students in real-time video, are often conducted.

Educational effectiveness in distance education depends on how meaningfully the learners interact in a spatially and temporally separated state (Anderson & Rourke, 2005; Webb & Street, 1997). In order to effectively conduct real-time interactive class, it is necessary to think about how to engage students and engage in collaboration. Therefore, in this study, we tried to find an effective distance education method by combining cloud tools with remote video lectures with the advantage of actively attracting the participation of various people (students, teachers, and parents) participating in the curriculum. To this end, G Suite For Education and Mentimeter, which are cloud-based educational platforms used in the school, are selected and applied to real-time interactive class together, while utilizing the advantages of real-time interactive-oriented classes to

promote students' collaboration and interaction and feedback. We tried to create a case that promotes learners' learning and examine its effectiveness.

Research Methods

The purpose of this study is to create a case where communication and interaction can be made by applying a cloud-based educational platform together in a real-time interactive center class using a video conferencing platform, and to obtain implications through this. To examine the effectiveness, we recorded the class activities and observed the video to check students' interaction and activities. And we interviewed the students about their opinion about adjusting cloud-based education platform with real-time interactive class with video conferencing tools. Therefore, we created a class case that applied real-time interactive class with video conferencing and applied the office tools of G Suite For Education, a cloud-based education platform, and Mentimeter, an interactive presentation.

[Case 1] Social Studies Class—Barrier-Free Learning Project

- Overview of the class: Barrier-free class is a part of education for people with disabilities to learn about places and facilities where people with disabilities are difficult to go and how to improve them. The key to this lesson is to brainstorm the places where people with disabilities are difficult to go and to think about how to change those places, then compose and present ideas on how to change those places.

- Tools: Google Meet, Mentimeter, Google Classroom, Google Docs
- Composition and stage of class

Stage		Content	Tools	Combination with video conferencing tool
Introduction		Brainstorming places for people with disabilities to go	Google Meet Mentimeter	-Gathering ideas with Mentimeter word cloud
Development	Activity 1	Share ideas on how to change existing locations for people with disabilities	Google Meet Mentimeter	-Share the ideas with Mentimeter open ended
	Activity 2	Organize your ideas, read ideas from other friends, and give feedback through comments	Google Meet Google Docs	-Sharing and gathering the ideas with Google Docs
Summary		Take a look at the final result and organize what you learned today with the quiz	Google Meet Mentimeter	-Check the understanding with Mentimeter quiz

- Effects of class

1. Students participated in classes rather than classes focused on knowledge transfer, allowing students to express their ideas freely.

2. By seeing each other's ideas together and providing feedback, it was possible to further refine the ideas of turning facilities that are not accessible to people with disabilities into a disabled environment.

3. Because the contents of each student's activities are visually visible, students were able to actively participate in classes based on high concentration.

- Video link of class: <https://bit.ly/2ZYH2jq>

[Case 2] Art Class—Drawing Kandinsky Abstraction

- Overview of the class: This class is to learn about Kandinsky's hot abstraction, learn the elements of hot abstraction, and draw his own abstraction. The key is to share your drawing process through video lessons, create your own work manual through Google presentations, introduce your work, and share your work with friends.

- Tools: Google Meet, YouTube, Google Slides (presentation), Google Survey
- Composition and stage of class

Stage		Content	Tools	Combination with video conferencing tool
Introduction		Learning about Kandinsky's hot abstractions and abstractions	Google Meet YouTube	-Watching YouTube resource
Development	Activity 1	Envision and draw your own hot abstract artwork	Google Meet Grid View	-Sharing artwork activities via camera
	Activity 2	Create an introduction paper about artwork and view other friends' artwork with feedback	Google Meet Google Slides & Survey	-Create and share artwork with Google Slide -Evaluate and feed back mutual works with Google Survey
Summary		Leave a testimony of class participation	Google Meet Google Classroom	-Leave class comments in the Google Classroom

- Effects of class

1. Rather than simply drawing art, it was able to write and organize the description of the work through Google Slides.

2. It was able to share each other's impressions through the Google Slides collaboration.

3. It was possible to grow through the systematic appreciation and feedback of works by allowing mutual evaluation and feedback through Google Survey.

- Video link of class: <https://bit.ly/3jD5T4e>

[Case 3] Social Studies Class—Find out What You Can Do to Protect Child Rights

• Overview of the class: This is a class to learn about the current state of child rights protection and to directly make a law for children by becoming a member of the Child Human Rights Commission. This class took place with half of the students at home and half of the students taking classes at school, and used video conferencing tool to overcome the physical separation between the two groups of students. Also, using Google Docs and Mentimeter to share each other's methods, share ideas, and create classes together is the core of this class.

- Tools: Google Meet, YouTube, Google Docs, Mentimeter
- Composition and stage of class

Stage		Content	Tools	Combination with video conferencing tool
Introduction		Watch a video about the realities of child human rights protection and learn about the problems children face now	Google Meet YouTube Mentimeter	-Watching YouTube resource - Write down
Development	Activity 1	Creating a law that can address child rights protection	Google Meet Google Docs	-Write and share ideas with Google Docs
	Activity 2	Find out what we can do to protect child rights	Google Meet Mentimeter	-Create and share ideas with Mentimeter
Summary		Take a look at the final result and organize what you learned today with the quiz	Google Meet Mentimeter	-Check the understanding with Mentimeter quiz

- Effects of class

1. It was able to participate in the same class together regardless of the physically separate learning environment.

2. Through collaboration between Google Docs and Mentimeter, they were able to gather ideas and send and receive feedback.

- Video link of class: <https://bit.ly/2WZuJS2>

Results

In order to examine the effectiveness of this study, an interview was conducted with seven students who participated in this class. First, it was able to see the thoughts and activities of friends in real time, so it helped students become more focused. Second, it was funny to be able to make results with friends. Third, even though the space was apart, students felt like taking classes together. Fourth, it was good to see the results of the learning activities.

From the teacher's point of view, the following advantages were confirmed by using a cloud-based educational platform in a real-time interactive class situation. First, it was possible to express each other's thoughts and opinions in a video class where a large number of people participated. Second, it was possible to check the learning outcomes of each other and to send and receive feedback. Third, because the real-time interaction class was visually displayed, the student's learning deviation was less. Fourth, it was possible to develop the same class as offline even in a physically separated online learning environment. Fifth, mutual evaluation and formation evaluation could be done together in the course of the class.

Conclusions

The convergence of real-time interactive class tools and cloud tools has been able to draw students' participation and collaboration in non-face-to-face situations, and it can be seen that it is very helpful in creating learner-centered educational activities based on communication and interaction with students. Therefore, through these results, it could be judged that the learners were able to make meaningful interactions during the real-time interactive class.

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