Article

Student Perceptions of a Synchronous Online Cooperative Learning Course in a Japanese Women's University during the COVID-19 Pandemic

Chie Sugino

Department of Culture and Tourism, Komazawa Women's University, Tokyo 206-8511, Japan;
c-sugino@komajo.ac.jp

Abstract: As the coronavirus disease 2019 (COVID-19) pandemic expanded worldwide, most Japanese universities launched online learning as an emergent measure; hence, securing the quality of online learning remains a challenge. This study aimed to understand reasons behind students' preferred mode of online learning during the pandemic and to explore the impact of online cooperative learning on students' class participation by analyzing their voluntary comments. A qualitative content analysis identified three factors that are related to students' decisions and motivation about participating in synchronous online classes: mutuality resulting from interaction, the impact of COVID-19 on their life and learning, and individual circumstances. This small-scale study was conducted under the unusual circumstance of the pandemic, and the quality of student interaction was excluded from the analysis. However, their enjoyment arising from interaction encouraged their participation in a synchronous class and discussion. They expressed themselves and listened to others attentively, creating a favorable climate for learning. Students' positive interdependence observed in this study suggests that cooperative learning cultivates a classroom culture where students are willing to contribute without the fear of losing face. This study indicated that participation, cooperation, and active engagement create a positive feedback loop, promoting each aspect even in an online setting.

Keywords: informal cooperative learning; online learning; synchronous participation; small group discussions; case study; higher education; Japan; COVID-19

1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic has forced universities worldwide to introduce online courses [1–12]. This new learning style will continue to be in demand, considering the risks of new infectious diseases and disasters [12] and the expansion of distance learning supported by the development of technology [7,13,14]. Although a major advantage of online courses in times of emergency has been their fast-growing implementation, ensuring the quality of online learning remains a challenge [2,4]; for instance, college students in Japan have expressed frustration about instructors' lack of information and communication technology (ICT) skills, preparation for online classes, and consideration for students [15]. Traditionally, among OECD countries, Japanese schools have the lowest utilization of digital devices during lessons [16]. This trend also applies to universities; 70.3% of departments had not introduced real-time online education by 2017 [17]. Accordingly, online classes in most Japanese universities began in response to the pandemic [18], and research on online learning has been a less represented area in Japan. Although many articles began to appear on university bulletins after the pandemic, these articles reported how online learning was introduced and managed in each institution [19–21], leaving online learning as a research area requiring urgent attention and analysis with regard to its impact on student learning in Japan in comparison to international situations [1–11]. This study explores student perceptions of a synchronous

online course using content analysis to understand the implications of their participation in online cooperative learning.

1.1. Informal Cooperative Learning to Transform Classroom Culture

In Japan, active learning has been rigorously introduced in college classrooms since the 2010s, with the expectation that it will promote students' active involvement in learning and improve their attributes [22]. However, it is difficult to bring active learning that emphasizes interaction into college classrooms with students who have been exposed to the traditional one-way instruction and have not been encouraged to express their opinions at school [23]. Activities to promote student engagement may ironically lead students to develop passive attitudes; since these activities place pressure on students to participate, they are not required to decide whether to be involved, and the nature of the group activities may blur the extent of each student's responsibility [24]. Thus, active learning requires a paradigm shift in students' concepts of college classes and participation and makes it essential to cultivate a classroom culture that welcomes students expressing opinions and asking questions. Discussions in small groups encourage interaction [25–27] and arouse students' interests, enhancing student learning experiences [25]. Small groups are a useful platform for students to pay attention to other members' remarks [26]. For that purpose, I used group discussions in my classes as a method of "informal cooperative learning" [28,29] to facilitate classroom interaction and learning from other students.

Johnson et al. define that "Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning" ([28] p. 14). In "informal cooperative learning, students work together to achieve a joint learning goal in temporary, ad-hoc groups that last from a few minutes to one class period," so it is useful "to focus student attention on the material to be learned, set a mood conducive to learning, help organize in advance the material to be covered in a class session, ensure that students cognitively process the material being taught, and provide closure to an instructional session" in this kind of learning ([28] p. 16,17). Although cooperative learning in higher education has several theoretical bases, many research studies are based on social interdependence theory, which views positive interdependence as ideal to promote interaction when students realize that they need each other's effort to achieve their goals [29]. In line with this theory, Gillies indicates the following five points important to encourage cooperation among students: "establishing positive interdependence among group members; facilitating promotive interaction; encouraging individual accountability; explicitly teaching the appropriate social skills; and, encouraging groups to reflect on both the processes involved in managing the tasks and interacting with their peers" ([30] p. 51).

In Japan, Okada observes that some university students are uncomfortable with classroom interactions because of the fear of "losing face among peers" ([23] p. 95). The lack of opportunities to raise questions and express opinions in class makes it difficult for them to overcome their feelings of awkwardness. Similarly, when class discussions were introduced initially, the students in my classes were worried about joining discussions, sharing their thoughts, and communicating with others due to their lack of such experience. However, they eventually started enjoying exchanging opinions and creating a welcoming atmosphere for more reserved members [31]. This shows that students' negative preconceptions and passive attitudes about group discussions may change when they experience "positive interdependence" [29,32] through interactive communication.

1.2. Spread of COVID-19 and Students' Experience of Online Learning

The spread of COVID-19 infections in 2020 forced all classes to go online at the university in the present study, similar to the situation at other institutions [18–21]. Universities in metropolitan areas were particularly reluctant to resume face-to-face classes [33]; many cases of infection were reported among college-aged youth [34,35], which made the universities sensitive to the reporting of a cluster of infections or even a single infected student that could provoke criticism against the students and negatively affect the reputation of

these universities [36–39]. Thus, many universities developed and launched online classes to provide opportunities for learning in an emergent response to the pandemic [40]. The online classes continued throughout 2020 and are expected to continue, at least partially, throughout 2021 [41].

Although synchronous online learning was an emerging research area a few years ago [42], the pandemic has led to its sudden expansion and global attention. Over the past two years, thorough research on students' perceptions of synchronous online learning that has been introduced as emergency measures has been produced, reflecting experiences in higher education worldwide [1–11].

The sudden transition to online learning due to the pandemic provoked students' anxiety and nervousness [5,9]. They expressed their preferences for face-to-face classes [2,3,6,8,10]. High levels of interaction in face-to-face classes supported their preferences [2,8]; thus, those who preferred face-to-face learning experienced difficulty in adapting to online learning [2]. The lack of interaction with instructors and classmates caused isolation and loneliness [3,4]. While some students expressed a decreased quality of learning [2,4] and loss of motivation for learning during the pandemic [2,3,5,11], others welcomed the recording of live classes as flexible learning opportunities [9,10] and regarded online classes as improving their technology skills [10].

Students' perceptions of online learning depend on their "sense of community" ([7] p. 173) [10], which is enhanced by their "feelings of belonging" ([3] p. 13), "mattering as a student at the college" ([3] p. 14), and connectedness with faculty members and other students [2,10]. Although individual differences exist in their adaptability to the online environment [1,3,9,11], class interaction has a motivational impact on student learning [2,5,10]. Convenience and safety are associated with positive perceptions of online learning; the former saves the students time and money from not needing to commute [5,6,8]; and the latter maintains the necessary physical distance among students and faculty members [6].

The often-raised difficulties in online learning during the pandemic are distraction [2,4,6,8,10,11] and ICT issues [2,4–7,10,11]. Online activities may be useful for keeping students focused during the class [10]. With regard to students' ICT environment, Internet connectivity is particularly critical for students in rural areas where ICT infrastructure is developing [10] and for those who share communication devices and an Internet connection with their family members who work and study from home [2,6]. Students become fatigued from looking at screens [2] and are overwhelmed by heavy workloads [4,6] in the sudden shift to online learning. Students' negative perceptions toward online learning may influence their academic performance and motivation for learning, which may further deteriorate their attitudes [2].

1.3. Implementing Synchronous Online Group Discussions

Research on online learning prior to the pandemic indicates that interactive components are important for maintaining student concentration and preventing isolation during online classes [43]. Interaction positively influences student perceptions and participation in the class [44–47], creating a "sense of community" among the students [48,49]. Online interaction, such as small group work in synchronous settings, is useful because students feel others' presence [7,8,50,51]. However, implementing group work online requires careful planning, particularly with students who do not yet have sufficient experience in this type of learning.

In contrast to face-to-face sessions, nonverbal communication is restricted in online classes [44,52,53]. It is difficult for online participants to make eye contact and capture others' facial expressions [44]. An unstable Internet connection may also break off communication [7,10,44]. In this kind of environment, students may feel nervous about speaking and communicating online [4,53]. Those without personal computers find it frustrating to read materials and instructions shown on smartphone screens [54]. Thus, instructors in

online classes need to pay more attention "to creat[ing] a supportive climate" to encourage the students' participation ([52] p. 206) than they need to in offline settings.

The limited nonverbal communication results in a feeling of alienation among students [48,55,56] and may decrease their interest and motivation [55,56]. Audio and video use in online classes increase communication among students [49]. In particular, visual support helps students get acquainted with each other online [49,57].

While recognizing the benefits of seeing classmates in virtual classes, students participating with their videos turned off have often been observed [58,59]. Castelli and Sarvary [58] reported that 90% of the students in synchronous online classes did not use their cameras because they were concerned about their appearance and the background. These researchers also found that not turning on the camera, despite being encouraged to do so during the class, was regarded by these students as "unspoken social norms" ([58] p. 7). Participation with the video turned off may distract students' attention from the class because of their invisibility to their instructor [45,55]. However, Tonsmann concluded that the lack of video feed does not hamper communication and instruction when the students are communicating with each other verbally or through other interactive methods [58].

In addition, factors promoting extrinsic motivation, such as participation in an extra credit or an evaluative task, may be necessary to improve students' online participation [52,60].

It should be noted that synchronous online discussions may "stay at a fairly superficial level," as students regard it as an informal exchange ([61] p. 34). While the informal and impromptu nature of synchronous discussions may provide the students "security in being able to make comments with a level of confidence ([57] p. 197)," it could also "work against [student] engagement in purposeful dialogue" due to the lack of "sufficient reflective time to generate comments or input" ([57] p. 205). Difficult and complex topics require more preparation in advance and a longer time to discuss than less complex ones. For students without sufficient experience, an informal discussion may be a good option.

1.4. The Objective of the Study

This study aimed to examine the impact of online cooperative learning on students' class participation by analyzing the students' voluntary comments because "learner perceptions are of key importance in understanding online participation" ([62] p. 80). Since students who provided comments in addition to the reflections assigned to them tended to choose live participation and have a positive perception of the class, analyzing their responses helped highlight factors promoting their participation. The first objective of this study is to understand students' preferred mode of online learning during the pandemic and the reasons behind their preferences and the second is to explore the effects of online cooperative learning on their participation.

Accordingly, the following research questions were addressed in this study:

1. What influenced students' decisions to participate in live or video classes when they had alternative options?
2. What motivated them to participate in synchronous discussions when participation was optional?

2. Materials and Methods

This study adopted qualitative research methodologies that are suitable to deal with descriptive data, such as interview texts, fieldnotes, and other documents, and to analyze them contextually [63]. The qualitative approach was appropriate for exploring student perceptions about participation in online cooperative learning classes using their writing as the data source.

2.1. Context of the Study

This study was conducted with students from a political science course at a women's university in suburban Tokyo. The course of choice was an introductory course about

multicultural societies, immigration, and intercultural communication, intended for, but not limited to, first-year students.

Although classroom interaction was sacrificed mainly due to technical reasons during the spring semester at this university, the development of a virtual classroom system (Google Workspace for Education) and accompanying video conference tool (Google Meet) enabled us to use various tools for interaction, such as conducting polls and discussions in small groups and asking questions in the chat. I introduced interactive activities in the fall semester, starting with whole-class communication using chats and polls and then incorporating breakout discussion sessions. Table 1 shows the main topics of the course on which this research is based, and the interactive components employed in each class. The basic class delivery was synchronous and online (Table 2) and, considering student convenience and the communication environment, students could choose from either joining the synchronous class or watching the video of the synchronous class within three days after the class (asynchronous participation). Further, when moving from a lecture to a synchronous discussion session, students who did not wish to join the discussion could leave the class and watch the recorded wrap-up session later (hybrid participation); participation in the discussion was optional and did not count for extra credit so that students facing difficulty in live access were not disadvantaged. All the students, regardless of their preferred mode of participation, were required to submit reflections on the discussion topic of each class within three days after the class so that the next class could start with a feedback session on their reflections. I uploaded all the students' writings on the class post after deleting their personal information and anonymizing their names. I also commented and answered questions on some of these student inputs in the feedback session. When personal communication was necessary, I sent an email prior to the next class. As I tried to put the students at ease using small talk to create an accessible atmosphere, the feedback took 20–30 min, which was longer than the time taken in the previous year's face-to-face classes. I also encouraged the students to read their classmates' reflections, as one of the classes required students to respond to a reflection of their choice as an assignment. Each in-class activity took 20–30 min to fit in a 90 min class period.

A typical group-discussion-based class is shown in Table 2. After an introductory lecture on the discussion topic based on immigrant children and education, nine policy options on education in a multicultural society were shown to the students [64]. Those who did not prefer group discussion (hybrid participants) exited the class to write about their reflections on the topic. The students who joined the group session (synchronous participants) discussed prioritizing these policy options while representing the various stakeholders, such as an immigrant parent, a leader in the host community, school staff, and a member of the board of education as a coordinator of the discussion. After the discussion ended, the instructor wrapped-up the group session with all the synchronous participants by sharing each group's progress. Finally, the participants left the session to work on the same assignment given to the participants who did not join the discussion. The asynchronous participants watched the lecture videos and submitted their reflections. A student survey was conducted following this class.

In this class, students' participation style was roughly divided into three groups, 24 hybrid participants, 21 synchronous participants and 16 asynchronous participants. In a post-class questionnaire conducted after this class, among the synchronous participants, 15 students who joined the synchronous discussion stated that the synchronous class made them want to participate in the class; three students referred to the interactive aspects of the class; another three students felt that "watching the video later was bothersome."

For those who chose asynchronous/hybrid participation (37 students), poor quality Internet connection was a major reason for their choice (17 students). In addition, 10 students preferred asynchronous classes for convenience. While five students did not have specific reasons, four students expressed their negative feelings about (online) discussions. Two students mentioned their health conditions as the reason for not choos-

ing synchronous participation. Information on student participation gained from the questionnaire above was used as signposts for the content analysis.

Table 1. Course schedule and interaction.

Class	Main Topic of the Class	Interactive Component
1st	Introductory session: Overview of the course	Students join polls and respond to questions in the chat, and the results are shared with the class.
2nd	Intercultural communication	Students respond to questions in the chat and the results are shared with the class.
3rd	Cultural competency	Students answer multiple-choice questions and the results are shared with the class.
4th	Stereotypes	Same as in the 3rd class.
5th	Islam and Muslims	Lecture-based class with video watching.
6th	International students	Instructor facilitated an interview with two international students based on the questions provided by other students prior to the class.
7th	Discrimination	A group discussion among the students who wished to join; the wrap-up of the discussion facilitated by the instructor.
8th	Cultural conflict originating from different norms	Same as in the 7th class.
9th	Ethnic enclaves in Japan and overseas	Students answered quizzes prepared by those who were interested; the preparers made brief presentations about the answers.
10th	Immigrants' children and education	Same as in the 7th class.
11th	Immigration to and from Japan	Lecture-based class with video watching.
12th	Traveling and staying safe abroad	Same as in the 7th class.
13th	International marriage and nationality of children	Same as in the 7th class.
14th	A case study of a Japanese person working in an international organization	Same as in the 7th class.
15th	Wrap-up session: Living in a global and multicultural society	Concluding lecture.

Table 2. Basic structure of a discussion class and choices of participation.

Participation	Feedback	In-Class Activity			Assignment
		Short Lecture or Introduction of Discussion Topic	Small Group Discussion	Wrap-Up	
Synchronous	Live	Live	Live	Live	
Asynchronous	Video	Video	X	Video	Reflection on the topic
Hybrid	Live	Live	X	Video	

2.2. Participants

The participants included 61 female undergraduate students registered for this course during the 2020 fall semester, who agreed to participate in this study when the semester ended. They were full-time students aged between 18 and 21 years. Among them, four were juniors, two were sophomores, and the rest were first-year students. The majors of the first-year students were not decided at the time of the semester, and, since there were just a few second- and third-year students in this study, it should suffice to describe their majors broadly as the humanities. Most of the participants had not experienced online learning before the pandemic and some of them did not have personal computers. The research ethics committee of the university approved this study (approval number: 2020–006).

2.3. Data Collection

The data for qualitative analysis were collected from students' comments submitted via Google Forms. In addition to the assignments consisting of reflections on the topics covered in the class, I provided a voluntary comment section after each class where the

students could add messages to the instructor, along with any complaints and advice for class improvement. I made it clear that their comments in this section were not for evaluation and shared all the comments with the class in the feedback session. In addition, multiple-choice class surveys were occasionally conducted to determine the students' tendencies regarding class participation.

All data were obtained and analyzed in Japanese, following which they were translated into English for this study.

2.4. Analysis

This research employed a qualitative approach to explore student perceptions about participation in synchronous classes. The data were analyzed using inductive content analysis [65,66], which is suitable to "identify meaningful subjects answering the research question" [65] (p. 10). Further, a manifest analysis approach was chosen to understand what the students "actually say," staying "very close to the text" and focusing on "surface structure" [65] (p. 10). This approach was because the collected data comprised students' open-ended comments, rather than information gained through interviews where the researcher can clarify the intention and ask for elaboration.

The analysis procedure was based on that advanced by Bengtsson [65] and Elo and Kyngäs [66]. After 628 voluntary comments from 59 students were collected and reviewed, 158 comments were extracted for further analysis in light of the research questions. These 158 comments were broken down into 248 segments by theme. These segments were numbered, given headings, and open coded. During this process, a tentative coding list was created, and the codes were labeled for each heading. The list was updated several times to sort the headings into well-represented codes. The finalized codes were grouped into sub-categories by common concepts, and generic and main categories were generated accordingly. Finally, the results of the analysis were described.

3. Results

The coding process produced 31 codes, 13 sub-categories, and six generic categories under the three main categories of "mutuality, "impact of COVID-19," and "individual circumstances" (Table 3). Frequencies were calculated to avoid the duplication of entries by the same students. The main category, "mutuality," was related to the interactive aspect of the class; "impact of COVID-19" integrated students' responses to the pandemic and the new learning environment; and "individual circumstances" included the students' personal issues and external conditions beyond their control.

3.1. Mutuality

This category contained codes with greater frequencies than the other two main categories. Student comments on the interactive aspects of the class accompanied their expression of enjoyment and appreciation for opportunities to learn others' views. Such sentiments positively affected the class atmosphere so that they felt free to respond.

3.1.1. Reflection of the Interaction

Students often referred to their enjoyment of the class, as evidenced by the following comments: "The class was enjoyable" and "I enjoyed learning in this class that was atypical in a good sense." Although it was difficult to identify which aspect of the class they enjoyed from these comments, the frequent reference to class interaction suggested that was the source of their enjoyment. Many students found it interesting to exchange opinions through the chat and became aware of others' reflections during the feedback; for instance, students stated that "opportunities to know others' opinions make online classes interesting" and "I enjoyed writing my comments in chat." A student wrote that she found it easier to respond online than in face-to-face classes, and this attitude was generally confirmed by the students' quick responses during the class. Their enjoyment also related to their expectations for the next class, expressed as their willingness to participate and interests

in upcoming topics: "I am excited about what topic we will discuss the next class" and "I want to join the next class discussion."

Table 3. Categories generated from the abstraction process.

Main Categories	Generic Categories	Sub-Categories	Codes (Frequency)
Mutuality	Reflection of the interaction	Enjoyment	- Impression of class (18) - Enjoyment of interaction (18) - Expectation for the next class (15)
		Positive interdependence	- Learning from others' opinions (13) - Responsibility for contribution (9) - Support from other members (4) - Respect for others (3)
	Class atmosphere	Students' attitude	- Comparison with other classes (12) - Creating amiable mood (8)
		Instructor's attitude	- Informal chats (8) - Feedback (7)
Impact of COVID-19	Evaluation of online learning	Positive reaction	- Effective use of online tools for interactive participation (14) - Appreciation for alternatives for participation (8)
		Negative reaction	- Feeling of distance (4) - One directionality of video class (3)
	Reaction to social distancing	Sense of community	- Solidarity with class (7) - Feeling of a live class (5)
		Need for bonding	- Actual college experiences (3) - Lack of contact with others (1)
Individual circumstances	Home environment	Online connectivity	- Internet access (11) - Connection fee (1)
		Family affairs	- Family members in the room (1) - Difficulties in finding time (1)
	Motivation	Sense of growth	- Realization of personal growth (14) - Expectation of personal growth (6)
		Interests	- Want to hear others' views (9) - Motivated by a topic (6) - Time in class passes quickly (3)
		Demotivators	- Preference for face-to-face classes (9) - Invisibility (5) - Bad health (3)

Students' positive interdependence manifested in their affirmation of learning from others: "I was stimulated by different ideas at the wrap-up session" and "Group discussion gave me new perspectives"; assumption of responsibility for contribution: "I spoke and so did other members" and "All the members contributed actively"; awareness of support from the group members: "The members helped me in expediting the discussion [when I was allocated the leading role] "; and an indication of respect for other students: "The members of my group listened with an attitude that welcomes different views."

3.1.2. Class Atmosphere

The students also mentioned their observation of peers' attitude in classes by other instructors: "Contrary to certain other classes where the students were forced into groups, the discussions in this class went smoothly, and it was easier to express opinions" and "In other classes, one or two students spoke in a group and the discussion did not continue,

but students offered so many responses for one question in this class that we could spend dozens of minutes for discussion."

Although participation in discussions with the video turned on was encouraged at first to facilitate communication, no one took the lead, and the audio-based discussions continued. Despite this invisibility of the students, no serious problems during the interaction were reported. This was confirmed when the instructor visited each breakout room, where the students were having lively discussions. A student who experienced difficulties sensing who speaks next noticed that her group members "compensated for the disadvantages of online communication by voicing responses." Another student who was too shy to express her opinions wrote that she "became confident in a discussion because the members gave her positive responses without denying her opinion." When a student noticed her peer's silence, she wrote: "I will call her by name next time [to invite her opinion]." The students mutually made efforts to create a welcoming atmosphere where they felt comfortable expressing themselves.

The instructor's feedback and informal chats also helped the students form an attachment to the class and encouraged their participation: "I was glad when the instructor commented on my reflection, which does not happen in regular classes"; "I laughed out loud in front of my PC when I heard her feedback"; and "I like responding in chat because the instructor reads and comments on each entry."

3.2. Impact of COVID-19

This category reflected how the pandemic influenced their learning and daily lives. The restricted physical contact caused a shift to virtual communication, which made the students yearn for real exchange. Interactive components of the online class were regarded as second best to fulfilling their desire.

3.2.1. Evaluation of Online Learning

Students' evaluation of the online tools used in class was positive overall, which promoted their participation and formed a positive perception of the class; for instance, they stated: "This class fully utilizes benefits of the online system" and "It is new and enjoyable to answer questions using Google Forms." They "got accustomed to responding in different tools" as the class introduced new functions.

Responses to the questionnaire at the end of the course revealed that although more than half of the students chose to participate mainly in the synchronous class, students were appreciative of the participation being optional, regardless of their actual choice. Having alternatives for participation reduced their stress about a steady Internet connection and accommodated their preferred learning style: "This was the only course where the students can choose from live or video class, and I felt safe when I had a problem in connection"; and "I appreciate that the instructor provided different styles for participation."

Some other students confessed their negative impressions about online learning: "It was difficult to communicate because I felt distance online but I had to accept it" and "I am not positive about online discussion looking at a screen." Those who participated in video classes commented that they "got frustrated with the one-way style" and "it was boring just to listen."

3.2.2. Reaction to Social Distancing

The new social distancing measures isolated the students from society, as one student expressed: "I spent most of the time at home without opportunities in touch with the same aged youth." As a reaction to such a confined situation, the students sought actual college experiences in class; for instance, they stated: "I realized that I was a university student in this class when I communicated with other 19-year-olds with different backgrounds" and "I felt as if I was actually in university when I had chances to express my view and talk with others in a group."

The online interaction with the instructor and other students cultivated their sense of community, compensating to some extent for the lack of physical access to the campus: "The class interaction made me feel I was taking a class together with other students" and "Although it was online, I felt other students closer when the class shared their feelings and thoughts."

The real-time participation further enhanced their togetherness and helped them overcome the sense of distance originating from the remote nature of the online classes; as one student stated: "This is the only class in which I did not feel I was studying online!" The live class gave them the sense of participation: "I have a real feeling of participation when responding to questions."

3.3. Individual Circumstances

This category consolidated students' individual circumstances, including external issues beyond their control, representing their home environment and personal issues related to students' characteristics and physical conditions.

3.3.1. Home Environment

Most of the technical problems the students reported concentrated on online connectivity. It was either an unstable Internet connection or application malfunctioning that restricted their access to the class. As elaborated by the students: "The communication environment made me choose asynchronous participation for the latter half of the course"; "I was shut out from the Google Meet"; "The battery of my smartphone was dead"; and "The quiz using Google Forms does not load well." At an early stage of the course, a student sent a request "to shorten the live session, as it costs more communication fee." This concern was responded to after the second class by offering three types of participation (Table 2) to the students, and the students appreciated having choices regarding how to participate.

Although expressed by a small number of the students, family affairs had a significant impact on their decision for class participation: "I was not able to join the discussion because my family came back." This family interference in class participation was a particularly critical concern for students sharing a room with their families who were working or studying from home. Another student commented that she was not able to find the time when she was visiting her parents' home in a rural area due to family matters.

3.3.2. Motivation

This generic category had both motivators and demotivators. The former can be broken down into student sense of growth and their interests.

The classroom interaction gave them chances to explore certain issues themselves, which allowed them to broaden their perspectives: "I was able to think about issues that I had not usually paid attention to" and "This class often required me to express my thoughts, and it helped me consider different cultures."

Other students expressed their changes in attitudes: "I needed to have a broader point of view to live in this globalized world, and this class gave me a good opportunity to improve the way I think and to mature as a person" and "I was able to revisit my personal values at each class."

The students also commented on their expectation of personal growth: "I was not able to summarize my opinion today, so I would like to challenge it again in the next discussion." Some students who "do not usually enjoy group work" expressed their "determination to participate [in the next session] to get better at discussions."

In addition to students' experiences of personal growth, some of them were genuinely interested in listening to others' views; for instance, they stated: "It was interesting to find different sensibilities in other comments that mentioned things I had never questioned" and "I like a class where I can hear various opinions."

The topics covered in this course also motivated them: "I enjoyed this class because it delved into topics that other international studies courses did not deal with, such as international and cross-cultural marriages." When the students were interested in the topics addressed, they felt that the time in class passed quickly: "The content of the lecture is so interesting that ninety minutes are not enough" and "I enjoyed the quizzes today and the class ended too soon."

The final sub-category was demotivators. The students who preferred face-to-face classes and real interaction either expressed their resignation or desire: "I'd like a face-to-face class but I accept the current style for now," "I wish this class could be held face-to-face because I like the class interaction," and "I really wish for face-to-face classes as soon as possible."

The students' health condition influenced their participation style: "I was about to join a live class, but my stomachache continued, and it was difficult for me to discuss." The students who suffered from occasional bad health appreciated the video class.

Students' invisibility to the instructor and their classmates affected their concentration, as stated by a student, "An online class environment where I am not being watched makes me feel sleepy." In a class survey at the end of the course, one of the respondents who said they were sometimes disturbed during the class explained that "when I attended a class from home, my attention went to other things, and I kept rewinding the video."

4. Discussion

The previous section presented findings of the content analysis. Students' voluntary comments were sorted into three main categories: mutuality, the impact of COVID-19, and individual circumstances. The mutual nature of interaction resulted in student enjoyment and promoted positive interdependence among participants. It also affected class atmosphere because the interactive components made the instructor seem approachable to the students and encouraged them to express themselves, creating a friendly environment that welcomed student voices. The social restrictions during the pandemic had impacts on the students' daily lives and learning. Social distancing forced them to take online classes, kindling their need for bonding and appreciation of the campus life. While it was fortunate that many of them saw positive aspects in online learning, there remained challenges that remote access needed to overcome, such as students feeling alienated and experiencing technical problems. Sensing possibilities for personal growth motivated them to participate in live online classes and discussions.

Based on the social interdependence theory of cooperative learning and in light of the insights gained from the literature, this section elaborates on the reasons behind students' decisions to participate in either synchronous classes or asynchronous classes and their motivation to join live group sessions according to the two research questions and the obtained findings.

4.1. Student Choice Between Live and Video Classes

Among the three main categories, the impact of COVID-19 should be recognized as the first element that influenced student choice between live and video classes; they would not have to attend online courses nor decide which class style to join were it not for the pandemic [3–6]. In relation to COVID-19, the following factors can be considered to have had an impact on the students' choice of online class participation: the reaction to COVID-19 and the adaptation to online learning.

4.1.1. Reaction to COVID-19

The COVID-19 pandemic brought drastic changes and unpredictability to students' social life and daily routines, which intensified their anxiety [3–6,9]. The Japanese government declared the first state of emergency due to the pandemic in April 2020, when a new school year had just begun. Although elementary to high schools resumed face-to-face classes after a few months, most of the universities, particularly those in urban areas,

continued online learning throughout the school year. According to a nationwide student survey by the National Federation of University Co-operative Associations [67], 46.2% of students in Tokyo did not attend school during a given week between October and November 2020 when the survey was conducted; the percentage of the first-year students who enjoyed college life was 56.5%, which was the worst since 1983; the percentage of the first-year students who were worried about making friends increased by 20 points from the previous year.

This survey indicates that the first-year students suffered the most from COVID-19, as it is difficult for them to cultivate a sense of belonging when they are not allowed physical access to the university [3,5]. Moreover, as the pandemic expanded, the asymptomatically infected college-aged active youth were often blamed for passing on the virus unknowingly. Hence, many of the students refrained from going out and working part-time and stayed home instead, which made them long for real university experiences and connections with people. Such sentiments were expressed in their preferences for face-to-face classes, which is consistent with existing research [2,3,6,8,10], and their rating of synchronous online classes as the second-best choice. In Howland and Moore's research [43], students wanted to have a "face-to-face component" in virtual classes and introducing such a component helped ease their "feelings of isolation." The class interaction in this study also partially satisfied the students' desire for bonding. It created a sense of solidarity among them [7], and live access enhanced their feeling of taking classes together with other students, even if the students had connected from remote locations. In addition, the students felt an attachment to the class when their comments were responded to by the instructor, which reassured them that they mattered in this class as Besser et al. [3] point out. Their sense of mattering influenced the students' positive reaction. Combined with the occasional informal chat of the instructor, these factors created a friendly atmosphere when non-verbal communication was limited online [52].

4.1.2. Adaptation to Online Learning

Student perceptions of online learning depended on the extent of instructor and students' adaptation to the new learning style [3–5,11]. Prior experience of online learning made it easier for them to adapt during the pandemic [2]. While instructors who had difficulties in using online technologies conducted lectures intended for knowledge transfer, those with online communication skills tended to introduce interactive components in classes. The former style was seen as one-directional and monotonous by students.

Most of the participants in this study were first-year students who took, on an average, 15–20 classes each semester. The classes of their very first semester in the university were conducted online as synchronous lectures or asynchronous video classes. At first, they resigned themselves to this unexpected learning style out of fear of the pandemic [5]. However, as the same class method continued in the second semester, their discontent with this one-directional instruction grew greatly. Their frustration was expressed as a lack of motivation [2,3,5,11] during online lectures and a request for opportunities to chat.

From the students' perspectives, their adaptation to online learning when they lack previous experiences of online learning is attributed to their communication environment and personal preferences. No matter how much they wish to join live classes, unstable connections, lack of appropriate devices, and device malfunctions prevent them from accessing the classes. Students who have negative perceptions of online learning are demotivated even in an ideal surrounding for online classes. Their negative attitude may exert adverse effects on their online experiences, which in turn may lead to poor academic achievement [2].

4.2. Student Participation in Live Discussions

A multidisciplinary literature review conducted by Rocca [52] concluded that it is essential for participation to be evaluated for grades or extra credit to increase the students' motivation to participate. Although Lee and Martin's research [58] was conducted in

asynchronous discussion classes with graduate students, their research results supported that of Rocca's [52], indicating that the participants' main motivation was extrinsic. In this study, student participation in real-time group discussions was voluntary and was not counted as an extra point, in contrast to the previous year's face-to-face setting, where group discussions were part of the class and evaluated for grades. Nevertheless, a quarter to a third of the students joined each discussion session. Those who remained for the discussion were not necessarily outspoken but placed a high value on exchanging opinions and wanted to receive direct feedback from their peers. As a result, cooperation among the students was promoted, creating "positive interdependence" [29,32]; this was because understanding others' views was considered necessary in the discussion, particularly when each member represented a different stakeholder. The need for positive interdependence prompted the students to listen attentively, respect others' views, and offer their thoughts in the group, and emerged as an important participation motivator [25–27]. In addition, as seen in 4.1.1., group discussions enhanced students' feeling of belonging to a learning community and promoted their participation [7,62].

The next section discusses what lies behind their motivation. The findings of the content analysis indicate their eagerness for direct interaction and confidence in personal growth.

4.2.1. Eagerness for Direct Interaction

The content analysis confirmed that the students who willingly joined the discussions looked forward to opportunities for real communication. Interaction motivates student learning [2,7,10,47]. Responding to questions, reading others' comments, and listening to the instructor's feedback were the interactive elements of the class; however, all these elements were mediated by the instructor. As a student wrote, it was "a novel experience that live exchange develops discussion as members' add new perspectives to the comment expressed." Immediate communication let them feel the presence of others, which motivated them and encouraged their participation [50]. Students' welcoming reaction to interaction as observed in this study contrasts with the results by Abou-Khalil et al. [1], where students regarded online class interactions during the pandemic as "least effective strategies" (p. 14). The participants in both studies had experienced traditional one-way style instruction; however, the instructor in this study attempted to change the classroom culture by encouraging students' remarks and cultivating a friendly atmosphere. Such intentions might have positively influenced these students' perceptions about the interactions.

The students' eagerness compensated for the disadvantages of online communication, such as technical problems [7,10,44,47] and lack of non-verbal communication [8,48,52,53]. For instance, the students continued the discussion even when they did not see each other, as also observed in Tonsmann's research [59]. Considering that a video uses more data and may cause sound delay, participation with the video turned on may not be necessary for those who are motivated to participate. However, the number of participants is particularly crucial for an audio-based discussion because it is harder to identify the invisible speaker among a greater number of participants, and more participants place a burden on transmission speed; therefore, the optimum number of participants for audio discussions is three or four, slightly fewer than those of the face-to-face small group discussion in Fay et al.'s study [26].

4.2.2. Confidence in Personal Growth

Many students wrote that they learned from others in interactive classes. After joining the live discussions, they felt that exchanging opinions would expose them to new ideas that they probably could not develop on their own, thereby broadening their viewpoints. The students' realization of changes in their ways of thinking and acting was linked with personal growth. Students' confidence increased their self-efficacy and helped them to have a positive view of online learning [2].Those who joined the live discussions also

tended to express their determination to overcome their weaknesses, which emerged as an expectation for personal growth.

Although this motivational factor is not peculiar to online discussions, student beliefs that discussions develop communication skills and make them more mature by broadening their perspectives promoted cooperation during discussions and created a welcoming atmosphere among the students. Voiced agreement, which encouraged students' speech and boosted their confidence, was consciously used in these discussions, in place of the nodding that typically accompanies face-to-face discussions. It may be necessary that instructors advise students about the appropriate behavior in advance [30], however, the students reacted sympathetically to facilitate interaction by themselves. The students' successful experiences further motivated them to participate, similar to what has been observed in face-to-face classes [31].

4.3. Students' Lack of Video Participation

Many students refer to the enjoyment of interacting with others, where interactive components impact their positive perceptions of, and participation in live classes [43–47]; likewise the present findings also emphasized the importance of interaction for online cooperative learning. All the students in this study joined with their video turned off, which was more than the number of students turning off their video in Castelli and Sarvary's observational study [58]. Although this study was not able to explore in detail the reasons for this, some students expressed self-consciousness about their appearance, such as "I hate to see my face on screen," and the participants seemed to be sharing a "social norm" [58] of keeping their videos turned off and audios muted in a plenary session. Considering that Google Meet, the university's online interaction tool, introduced a function to blur users' backgrounds in September 2020, it seemed that the students' concern about their appearance and shared social norms more strongly influenced their decision to turn off the video than did the presence of other family members in the background as indicated in previous research [58].

Since the students participated in this class with their videos turned off, the lack of non-verbal communication was equally shared by all. Thus, the students' feelings of isolation were mainly triggered by technical problems, an unstable Internet connection, and their devices malfunctioning; those who were able to join the interactions deepened their cohesion with the class [7,51]. Distraction due to invisibility during the class as shown in previous research [44,45,55] appeared as a demotivator in this study. In contrast, when the students enjoyed their interaction by answering quizzes and writing in the chat, they were able to maintain their focus in the class despite their invisibility, as reported in Muthuprasad et al. [10].

4.4. Pedagogical Implications

The mutuality that comes from the interactive nature of the class influenced student decisions to participate in live classes during the COVID-19 pandemic. Classroom interaction has a positive impact on reducing alienation arising from distant participation and invisibility. While interaction creates closeness similar to that established in face-to-face classes and enhances the advantages of cooperative learning, real-time participation requires a stable communication environment. For this reason, technical disturbances may increase student isolation in online learning. Thus, providing alternatives for participation and securing other interactive windows between the instructor and students are necessary [9,10,42] to avoid compromising their sense of participation. It may help to have the students facing difficulties in live access take the same quiz as those taken by synchronous participants, have access to the other students' comments using online class bulletin boards, and respond to others' comments and questions by email, in an asynchronous manner.

Instructors' efforts to "create a supportive climate" [52] are necessary in an online environment [53]; students will respond to them, affecting the class mood, whether it is conducted synchronously or asynchronously. In addition, reading others' comments on

enjoyable and successful experiences during a discussion may encourage students to join the discussion on the next occasion.

In an asynchronous class, interaction and presence are different; students can communicate using the class chat and online posts even when they are not in the class [51]. Synchronous interaction accompanies presence, which enhances the students' "sense of community" [7]. When the students miss opportunities to connect with society, synchronous interaction makes them feel the presence of others and confirms that they are a part of a learning community [3]. However, their solidarity remained ad hoc at the class level. Online interactions, even in the case of a small group discussion among digital native students, did not necessarily help them develop mutual relationships beyond the class, as also observed by other researchers studying synchronous class activities [49,57]. The lack of non-verbal cues [44,48,52,55,56] might have constrained them from seeking friendship even in informal groups. Some of the online courses should be conducted in a "cooperative base group" with the same members; this can "provide students with long-term, committed relationships" ([28] p. 17) if online learning continues, since many first-year students express concerns about making friends at university [67]. In addition, blended learning that combine online and offline learning should be flexibly introduced to secure opportunities for real exchange among students [2,8].

Providing extra participation points may also motivate some students [52,60]. However, considering students' different communication environments [54] and instructors' difficulties in monitoring all the online breakout sessions, it seems fair to keep participation optional as long as there is another opportunity for those who do not participate to express and share their thoughts. In particular, when students engage in an audio-based discussion, those who remain quiet or do not respond, either intentionally or due to technical disturbances, may discourage their more motivated peers from participating.

4.5. Limitations and Future Research

This study was conducted in the unusual circumstance of most university classes in Japan being conducted online for the first time. Neither participants nor the instructor had ever experienced an online classroom in this university before the pandemic. Since the first-year students had not experienced any face-to-face university classes, they had no typical college classes to compare the online classroom to. Their anxieties and concerns over university education and the society in general due to the influence of COVID-19 were unprecedented. However, such sentiments were less directly expressed in this study than in the previous research [2,3,5,9] because it was beyond the scope of this study to explore students' feelings during the pandemic. The results indicate that acute-stage snapshots under stressful conditions had emerged from the lack of online class interaction in the previous semester. As online learning becomes the new normal in higher education due to the continuance of the COVID-19 pandemic, student responses and preferences for live classes may change; this should be the focus of future research.

Although this study addressed student interactions, the quality of the interactions was excluded from the analysis. Even when students participate enthusiastically and cooperatively and obtain good grades in online learning classes, their exchanges may remain superficial [61]; for instance, one of the students in this study confessed that she was not able to deepen her thoughts beyond the material provided for discussion. Synchronous discussions may fail to provide enough time for consideration and be challenging to some students [50]. Such frustration is observed in face-to-face discussions as well [31]; however, in comparison to regular classes, breakout room activities make it more difficult for instructors to render advice in a timely manner. An evaluation of the students' performance by their preferred mode of participation on a writing task related to the course topics may inform us of the qualitative impact on their performance; however, this goal was not pursued in this study in consideration of objectivity as the instructor and the researcher were the same.

It should be noted this research did not focus on the differences in student perceptions by their preferred mode of participation. There were five regular asynchronous participants, comprising of just about 10% of the sample, and, since they provided fewer voluntary comments than the synchronous participants, there were insufficient data for analysis. Large-scale research and different research designs are necessary to explore student perceptions by their preferred mode of participation further. Considering that this research was conducted in a women's university, balanced gender perspectives are necessary for generalization of the results. In addition, other methods of analysis should be employed to discover relationships among the codes found in this study, for the content analysis aimed at gaining "a condensed and broad description of the phenomenon" ([66] p. 108), and this study attempted to explore student perceptions of online cooperative learning.

5. Conclusions

A group discussion provides an effective cooperative learning opportunity for students to learn while helping each other. However, the COVID-19 pandemic changed classroom interaction in universities that shifted to full-time online learning to avoid physical contact between the students and faculty members in close and crowded spaces.

The pandemic also brought about a sudden change in students' relations with society, restricting their chances to connect with others. In particular, first-year students face difficulties in developing personal relationships on an online campus. Under such circumstances, it is critical to have interactive components in class to address student isolation. Thus, the course employed in this study encouraged classroom interaction using online tools and group discussions. Over half of the students mainly chose synchronous participation, and a quarter to third of the students joined the live online discussions. Through content analysis of the voluntary comments provided by the students, this study explored what influenced these students' decisions on online class participation and what motivated them to join group discussions. The abstraction and interpretation processes identified three factors related to students' decisions and motivations: mutuality resulting from interaction, the impact of COVID-19 on their lives and learning, and individual circumstances, including issues that were both personal and beyond their control.

This study indicates that synchronous interaction encouraged students to participate in online classes and confirms the results from the literature showing that interaction enhances motivation for learning in the situation emerging during the pandemic [7,8,10]. It is particularly important that students feel that they are essential parts of the learning community [3,7]. Thus, instructors need to be flexible and pay extra attention to students' learning environments and be flexible; this will help alleviate students' anxieties about online learning and isolation from society. Such strategies will expand instructors' options for classroom interactions, which can be updated with the latest online technologies.

Although this study was conducted on a small scale and in the broader context of the COVID-19 pandemic, the results revealed that the students who are motivated to learn from others can overcome the limitations of online communication through cooperation. The students, while acknowledging the disadvantages of online interaction, cooperated to compensate for the lack of non-verbal communication by intentionally voicing their agreement and adding constructive remarks in discussions. Thus, involving students in class interaction is vital to securing and improving the quality of education in a critical situation and moving toward a new normal of online learning in higher education.

Considering the background where active learning has been introduced broadly in universities in Japan, it is essential to change the students' view of university classes for the successful implementation of active learning. As Matsushita [24] warns, forcing students to join activities may deprive them of opportunities to make decisions regarding participation. The students in this study had to decide which style of class to join and then whether to join a discussion or not; they were responsible for their choices and learning that accompanies these decisions. Their enjoyment of the interaction influenced their decision about class participation. They were encouraged to express themselves and

to listen to others attentively in class, which created a favorable climate for cooperative learning. Students' positive interdependence, seen in their reflections, suggests that cooperative learning eventually cultivates a classroom culture where students are willing to contribute without the fear of losing face. This study indicated that participation, cooperation, and active engagement create a positive feedback loop, promoting each aspect even in an online setting.

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