

# Evaluation of emergency online education at a private rural university during COVID-19 using a CIPP (context, input, process and product) model

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## Abstract

**Objectives:** Using a cross-sectional approach, the aim of this study is to evaluate the emergency online education (EOE) based on the context, input, process and product (CIPP) model at a private university in Japan. **Methods:** The source of data was obtained through an online questionnaire from 158 students and 15 lecturers. The data was analysed using the Mann-Whitney test and chi-squared test. The responses to the open-ended questions were coded and put into schematic representation. **Results:** The findings showed that the transition to EOE was not seamless, which is understandable as the transitional period took place within a very short timeframe. The EOE evaluation from both students and lecturers achieved a satisfactory result. The major problems for students were with difficulties in understanding lecture content, difficulties with communication and lack of peer friendship. For lecturers, difficulties with network environments and lesson content/delivery were observed. On the flip side, both students and lecturers believed that they were contributing to infection control and lessening their risk of contracting the disease by staying at home. **Conclusion:** Using the CIPP model was a relevant and effective way to evaluate our sudden thrust into emergency online education. Original models place importance on context and input, which is usually formulated and executed prior to the implementation of a program. However, in our circumstance we did not have the advantage of being prepared pre-pandemic, thus our context and input were based on explanations and preparedness with technology and digital literacy. In the future, equal attention should be paid to context and input, in addition to process and product. In the future, closer attention to equity issues, pedagogy, and improved online delivery skills are necessary to prepare for the shift to online instruction in mainstream education.

**Keywords :** emergency online education, emergency remote teaching, school closure, CIPP model, program evaluation

## Introduction

The spread of COVID-19 has induced a public health crisis, unprecedented in our current lifetime, which has caused loss of life and severe human suffering. Hospitals and health professionals have been over-

whelmed by the significant strain on the health sector as infected patients and serious cases continue to rise exponentially. Widespread restrictions on mobility and the closing down of entire sectors of the economy are bringing about a major economic crisis that is ex-

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pected to impact on society for years to come. The impact on education has also been severe with disrupting the schooling of students worldwide and lockdowns instigating school closures for varying periods of time to protect public health and safety [1]. In April 2020, UNESCO (2020) reported that there have been 1,576, 921, 818 affected learners out of a 91.3% total enrolled learners in 188 countries in all levels of learning [2]. Worldwide, children and students of all ages have had to rely on their own resources to continue learning remotely through the Internet, television or radio with disadvantaged students being the hardest hit. Emergency public funding will most certainly be directed to health and social welfare, thus long-term public spending on education is at risk in the coming years.

On March 24, 2020 the Ministry of Education, Culture, Sports, Science and Technology (MEXT) issued a notice with regards to the commencement of classes at universities for the spring semester [3]. This notice issued the directive to cancel the face-to-face classes on the premise that the guidelines by the Prime Minister's Office of Japan in conjunction the Ministry of Health, Labour and Welfare could not be executed. The important notice for the prevention of COVID-19 outbreaks are to avoid the three Cs: 1. Closed spaces with poor ventilation 2. Crowded places with many people nearby 3. Close-contact settings such as close range conversation [4]. As a preventative measure, remote learning should replace face-to-face delivery as the method of instruction. In that case, it is not necessary to change the school regulations, and there is no problem even if the number of credits exceeds 60 credits in the university establishment trial. As a response to this notice, our University postponed the commencement of classes for one week from Wednesday, April 8, 2020 to Wednesday, April 15, 2020. All classes were conducted remotely (using the student portal site). However, practical skills, experiments, practical training subjects were temporarily suspended. The next administrative notice was released on June 5, 2020 and was with regards to the guidelines for preventative measures to combat coronavirus infections on campus. As the state of emergency ban imposed was lifted on May 25, 2020 it enabled movement

outside the prefecture from June 1, 2020. After taking into consideration the occurrence rate of COVID 19 in the region and the surrounding regions from where students commute to university, our university made the decision to resume face-to-face classes by allowing students to attend university for classes that were necessary for national exam qualifications. All general education subjects, however, continued to be provided remotely online using the university portal site and ZOOM for the entire 2020 academic year.

Traditional online instruction and distance learning are well planned and offer meaningful learning experiences for students. Online courses are those in which at least 80 percent of the course content is delivered online. Face-to-face instruction includes courses in which zero to 29 percent of the content is delivered online; this category includes both traditional and web facilitated courses. The remaining alternative, blended (sometimes called hybrid) instruction is defined as having between 30 percent and 80 percent of the course content delivered online [5].

There has been a rapid growth in online education (in terms of both online course offerings and student enrolment) in many countries, including the US and the UK over the last two decades [5, 6, 7]. Throughout the 1990s, the rapid growth in distance learning at universities was facilitated by using a variety of both real-time and asynchronous online technologies. Education technology was nurtured in sub-disciplines of online and distance learning with pilot program development and the development of ready-made templates for course content online delivery. It was during this era that some institutions offered real-time education completely online. The 2000s saw the explosion of online technology as access to the internet and new platforms became increasingly available. In 2014, the first online-only public university in the United States, UF Online was launched [8].

New terms such as distance learning, distributed learning, blended learning, online learning, mobile learning and so on were coined and new research fields cropped up to evaluate and scrutinize the ins and outs of such modes of delivery. Therefore, on the one hand, while online learning has been widely imple-

mented and offered at institutions around the world over the past few decades, on the other hand, it has by no means totally replaced the more traditional methods of face-to-face delivery.

Due to the threat of COVID-19 colleges and universities were face with the dilemma of how to switch from traditional face-to-face instruction to emergency remote online learning. Hodges et al (2020), Bozkurt & Sharma (2020) and Vlachopoulos (2020) describe this type of instruction being delivered in pressing circumstances, as emergency remote teaching and suggest that during the scramble to protect the safety of both students and teachers, a distinction between online learning and emergency remote teaching should be drawn when evaluating their effectiveness [9, 10, 11]. For the purpose of our study, we decided to use the term 'emergency online education' (herein EOE) as this term correctly covers and reflects the goals to evaluate both the students' experience of learning and the lecturers' experience of teaching during this tumultuous time.

The general objective of this study was to evaluate the implementation of the emergency online education using Stufflebeams' CIPP Model of evaluation. The CIPP Model is a "comprehensive framework for guiding formative and summative evaluations of programs, personnel, products, institutions, and systems" [12]. Stufflebeam Evaluation Model Stufflebeam (1973) defines evaluation as a process to describe, obtain and provide information that is useful to assess alternative decisions[13]. Many educators and researchers regard evaluation as the process of obtaining information and using it to form judgments which in turn are to be used in decision making. Knowledge of this model can facilitate changes as educators may find themselves better equipped to instigate change which will in turn benefit the stakeholders, the students.

Because of its breadth, flexibility, focus on values, emphasis on utility, and incorporation of data from diverse sources, the CIPP model is a strong addition to the professional practice of any educator, providing a formal but flexible system of evaluation which encourages educators to employ multiple forms of assessment. Stufflebeam (2003), the creator of the CIPP, op-

erationally defines evaluation as "a process of delineating, obtaining, reporting, and applying descriptive and judgmental information ... in order to guide decision making, support accountability, disseminate effective practices, and increase understanding of the involved phenomena" [14]. While the CIPP model can be applied to "programs, personnel, products, institutions and systems" [15]and is now used in "philanthropy, social programs, health professions, business, construction, and the military" [16], it was originally applied in education and was designed based on the creator's experience in inner-city Chicago schools [17].

Knowledge of the CIPP model can make educators more effective change agents. Language educators who apply the CIPP model may find themselves both more included to advocate for their other stakeholders and better equipped to do so. Many universities and schools rely on the CIPP model for high-level decision-making [18]. By becoming conversant in the methods and terminology of the CIPP model, educators can communicate more effectively with executives within their respective institutions. Teachers can become better advocates for the needs of their students, their students' parents, and other key stakeholders. Program administrators can become better advocates for their teachers. The language of the this model — stakeholders, triangulation, context evaluation, etc. — can be a powerful tool in promoting stakeholders needs, acquiring necessary resources, and requesting permission to implement beneficial changes. For these reasons, the model is a valuable tool for any educator and the reason why we chose to incorporate it for this research.

One specific objective was coined for this study: to evaluate context, input, process and product stages of the implementation of emergency remote education during the short period it was used. The results will then be used and refined in preparation for future emergency online education, and/or for the development of online courses. In order to prepare for future EOE, by using the results obtained in this study, we can formulate a revised model to be implemented that has clear key questions addressing the needs, solutions, implementation and outcomes prior to its future imple-

mentation. This was a step that was omitted this time due to the time factor, however, in the future, it should be included in order to construct clear core values of goals, plans, actions and outcomes to be followed by the evaluation of just how effective they were.

According to Stufflebeam [13], the main questions to be asked when implementing a CIPP model are: What needs to be done? How should it be done? Is it being done? Did it succeed? Based on these questions we chose two research questions.

Our research questions are:

1. How did students cope with emergency online education?
2. How did lecturers cope with emergency online education?

Accordingly, our hypothesis for question 1 with regards to students is that the various questionnaire results would be the same for all grades (1<sup>st</sup>-3<sup>rd</sup>) because all students were in the same position. We also assume that students with/without experience of online learning will have different results. Our hypothesis for the second question with regards to lecturers is that lecturers would not be positive about classes being held online and would be unprepared.

## Methods

A cross sectional study approach is used to evaluate the emergency online education that was experienced by students and lecturers, during the short tumultuous period during COVID-19. The survey was used to evaluate the emergency online education employed during the period April 15 – June 1, 2020. In accordance with research ethics, the researchers obtained permission from the Ethics Committee at the institution (20 LSE 14) to conduct this research.

Survey and data collection was carried out online

using a custom-made questionnaire. Through analysing both quantitative and qualitative survey data, the study aimed to evaluate the quality of emergency online education by measuring students' and teachers' experiences and use inductive reasoning to find any patterns and to offer insights as to how to use this experience as a valuable lesson for future implementation.

This research took place at one faculty of a private rural university in Japan. A total of 158 students in their first to third years in one faculty and a total of 15 lecturers consented to participate in this study. First, all students received an oral explanation about the nature and purpose of the survey. Next, the online survey with a written explanation was then distributed to all students enrolled in the faculty by email. Students were aware that the survey was anonymous and optional, but by completing it they were consenting to participate. Teachers received an oral explanation at a faculty meeting and received an additional explanation in writing via email with the URL to the survey. The questionnaire was active for two weeks at the end of the year via Google forms. The student gender breakdown is 81 participants identifying themselves as female, 75 as male and 2 participants preferred not to say. The lecturer breakdown is 3 female, 11 male and 1 participant preferred not to say (Table 1).

We divided our questionnaire questions into the four areas of the CIPP model, based on Stufflebeams' evaluation model checklist [19]. We tailored it to suit our university education style and goals in an original questionnaire. We formulated the following tables, targeting students in Table 2 and lecturers in Table 3.

The survey consisted of three sections: demographic information, 5-point Likert-scale responses

**Table 1.** Demographic characteristics of participants

Gender	Students				Lecturers
	1st	2nd	3rd	Total	
<i>Female/Woman</i>	32	25	24	81 (51.27%)	3 (20%)
<i>Male/Man</i>	35	19	21	75 (47.47%)	11 (33.33%)
<i>Prefer Not to say</i>	-	1	1	2 (1.27%)	1 (6.66%)
<b>Total</b>	<b>67 (42.40%)</b>	<b>45 (28.48%)</b>	<b>46 (29.11%)</b>	<b>158</b>	<b>15</b>

**Table 2.** Questions divided into CIPP categories for students

CONTEXT	Did students understand the need for the implementation of the shift to EOE?
	Did students receive adequate explanations on how to use the university portal site?
	Did students understand the curriculum and what was expected of them?
INPUT	Were students prepared with adequate equipment and WIFI?
	Did students have adequate digital skills?
	In satisfying the above two categories, was there adequate support from the university administration?
PROCESS	Was the volume of homework appropriate?
	Was the amount of time needed to complete the homework adequate?
	Were communications (student-teacher, student-student) sufficient?
PRODUCT	Were students able to understand the content?
	Were students able to keep up with classes?
	Did students achieve the required learning acquisition goals?

**Table 3.** Questions divided into CIPP categories for lecturers

CONTEXT	Did lecturers understand the need for the implementation of the shift to EOE?
	Did lecturers receive adequate explanations on how to use the university portal site?
	Did lecturers think students understood the curriculum & what was expected of them?
INPUT	Were lecturers prepared with adequate equipment and WIFI?
	Did lecturers have adequate digital skills?
	In satisfying the above two categories, was there adequate support from the university administration?
PROCESS	Was the volume of homework appropriate?
	Was the amount of time needed to correct the homework adequate?
	Were communications (student-teacher, student-student) sufficient?
PRODUCT	Did lecturers think students were able to understand the content?
	Did lecturers think students were able to keep up with classes?
	Did lecturers students achieve the required learning acquisition goals?

and open-ended comments. Students completed a 20-item-survey (3 close-ended, 15 Likert scale, 2 open-ended). Lecturers completed a 22-item-questionnaire (3 close-ended, 17 Likert scale, 2 open-ended).

The data was analysed using IBM SPSS statistics version 26 using the Mann-Whitney test to compare the different grades. The chi-squared test or Fischer's exact test was used to compare the group with experience to the group without experience [20, 21]. The 5-point Likert-scale was measured as Strongly Agree =2, Agree = 1, Neither Agree nor Disagree = 0, Disagree = -1, Strongly Disagree = -2. The responses to the open-ended questions were coded and put into a schematic representation.

## Results

There were three close-ended questions asked to the students : grade (1st, 2nd or 3rd), gender (F/M/prefer not to say) and previous online experience (Yes/No). The teachers were also asked about gender and previous online teaching experience. The data related to grade and gender can be seen above in Table 2. With regards to previous experience, 65.82% (n=104) of the students never experienced an online learning experience, while for teachers 53.33% (n=8) had never taught online. In addition, teachers were asked a third close-ended question about their main mode of platform delivery for their classes during the period with multiple answers to be chosen from University Portal site, YouTube, Zoom, Learning Management System, and/or Other. The highest three modes were Zoom

**Table 4.** Comparison of questionnaire results for Content, Input, Process and Product and preparedness for the future for students grade

	Overall (N=158)	Students Grade			p-value
		1 (n=67)	2 (n=45)	3 (n=46)	
Content Evaluation					
1. I understood the need to shift to emergency remote lectures	1.04(0.97)	1.19(1.01)	0.82(1.00)	1.02(0.83)	.049*
2. The explanation on how to conduct classes was adequate	0.51(1.02)	0.51(1.16)	0.40(0.96)	0.61(0.83)	.577
3. I understood the curriculum for emergency remote lectures	0.43(0.97)	0.39(1.11)	0.51(0.84)	0.41(0.88)	.867
C total	1.97(2.24)	<b>2.09(2.40)</b>	1.73(2.24)	2.04(2.04)	.701
Input Evaluation					
4. I was prepared with adequate equipment	0.96(1.03)	1.09(0.93)	0.84(1.10)	0.89(1.10)	.501
5. I was prepared with adequate WIFI	1.10(1.11)	1.21(1.03)	0.82(1.26)	1.22(1.05)	.337
6. I had appropriate digital skills to use my equipment	0.52(1.14)	0.58(1.11)	0.44(1.11)	0.50(1.22)	.811
7. I received adequate support from the university	-0.65(1.25)	0.57(1.28)	-0.51(1.16)	-0.91(1.29)	.197
I total	1.93(3.14)	<b>2.31(3.29)</b>	1.60(2.934)	1.70(3.133)	.33
Process Evaluation					
8. The volume of homework was appropriate	0.46(0.94)	0.60(1.03)	0.31(0.84)	0.41(0.90)	.108
9. The time needed to complete the homework was appropriate	0.36(0.97)	0.52(1.03)	0.16(0.90)	0.33(0.92)	.094
10. I was able to communicate sufficiently with my lecturers	-0.13(1.12)	-0.15(1.20)	-0.20(0.94)	-0.04(1.17)	.668
11. I was able to communicate sufficiently with my classmates	0.28(1.24)	0.27(1.29)	0.42(1.11)	0.17(1.28)	.794
P total	.97(2.97)	<b>1.24(3.22)</b>	0.69(2.65)	0.87(2.92)	.51
Product Evaluation					
12. I was able to understand the lecture content	-0.15(1.08)	-0.19(1.15)	-0.22(0.95)	0.00(1.09)	.562
13. I was able to keep up with the lecture content	0.10(0.96)	-0.10(1.03)	0.22(0.90)	0.28(0.88)	.092
14. I was able to achieve the required learning acquisition goals	-0.11(0.94)	-0.06(0.96)	-0.16(0.79)	-0.13(1.04)	.878
Pt total	<b>-0.15(2.65)</b>	-0.36(2.83)	-0.16(2.31)	0.15(2.72)	.655
Preparedness for future emergency remote lectures					
15. I would be well prepared to take emergency remote lectures	0.41(1.08)	0.46(1.14)	0.47(0.94)	0.28(1.12)	.623

NOTE: \* $\alpha < 0.05$ , (SD), Strongly Agree=2, Agree=1, Neither Agree or Disagree=0, Disagree=-1, Strongly Disagree=-2, TOTALS (C=MIN/MAX -6~6, I=MIN/MAX -8~8, P=MIN/MAX -8~8, Pt=MIN/MAX -6~6)

86.7% (n=13), Portal site 73.3% (n=11) and YouTube 13.33% (n=2). In addition, Other 26.7%(n=4) and there were no teachers who employed LMS as a means of delivery.

Table 4 shows a comparison of questionnaire results showing the mean and standard deviation for each evaluation category and preparedness for future online learning for students. Initial analysis shows that there was a significant difference ( $p=.049$ ) between 1st grade and the other two grades for the answers to *Q1. I understood the need to shift from face-to-face learning to EOE*. There was no significant difference observed for answers Q2-15 between the grades ( $p=.092 - .878$ ). In a subgroup test of previous experience/no previous experience and *Q15. I would be well prepared to take emergency remote lectures in the future* using Mann-Whitney test, there was no statistical difference between the groups ( $p=.12 - 1.0$ ). For the other answers to the remaining questions, no statistical differences were found ( $p=.69 - .98$ ).

The totals for Content Evaluation show that the mean for 1st graders was higher  $2.09 \pm 2.40$  despite the fact that they were new to university life and to using the university portal site. The overall total for the three grades was  $1.97 \pm 2.24$  which is a positive score for content. The totals for Input Evaluation again show that the totals for 1st graders were the highest  $2.31 \pm 3.29$ . Student preparation with equipment and devices was lower than WIFI preparation, with literacy skills being lower and support from the university ranking at the lowest with an overall total of  $-0.65 \pm 1.25$ . The total for Process Evaluation which is directly related to the delivery and course content shows that communication with lecturers being ranked lowest at  $-0.13 \pm 1.12$ . Students were able to communicate better with their peers during this experience. The totals for Product Evaluation were the only minus figure with the overall total being  $-0.15 \pm 2.65$  showing that acquisition and achievement ranked lowest out of the four components of CIPP.

In the results, there are no differences between students and lecturers in any CIPP contents. However, when we did a comparison between students with experience of online lecture and students without experi-

ence using the chi-squared test, we found that there were significant differences in Input and Product evaluation (Input  $p=0.002$ , Product  $p=0.035$ ). The following figure, Figure 1, breaks down the input evaluation into individual question responses (Q1- Q4) and the results show the differences for preparedness of equipment, wifi, appropriate digital skills, adequate support from the university between the two groups.

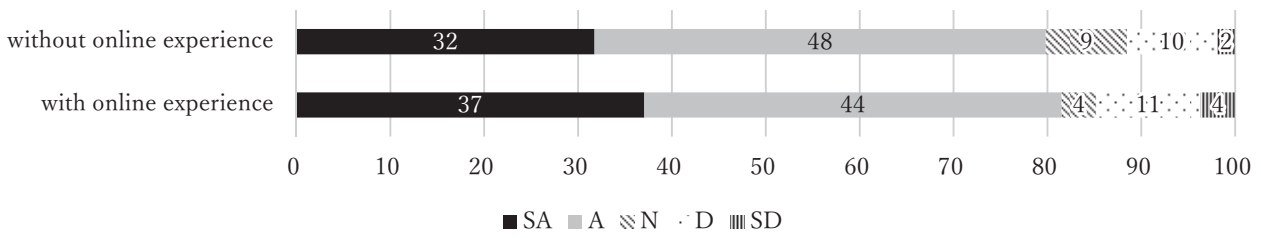
The following figure, Figure 2, break down the product evaluation into individual question responses (Q12- Q14) and the results of the chi-squared test show the differences for understanding lecture content, keeping up with lectures and achievement of required acquisition between the group of students with and without online experience.

The data for lecturers was calculated as a mean and standard deviation. Lecturers found difficulty in explaining the curriculum online and did not feel they received adequate support for the university. mmunication between lecturers and students was lower than perceived student-student communication. Evaluation of product was lowest for lecturers, too with lecturers worrying about whether students had carried using Mann-Whitney test for previous experience/no previous experience and the other variables, however the results showed there was no significant difference ( $p =.12 - 1.0$ ) understood the content, could keep up and could achieve the relevant acquisition goals. A subgroup test was also

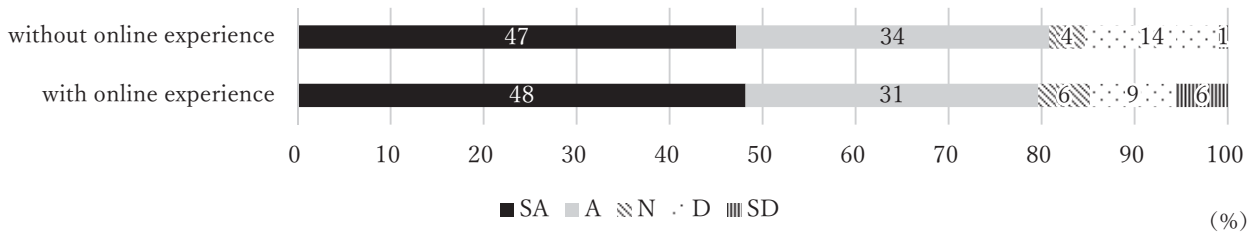
In addition to the above 15 questions, the lecturers were asked an additional 3 questions: *a. Did you need support from the University administration during EOE?*,  $-0.33 \pm 1.11$ , *b. Did you feel inconvenienced by the shift to EOE?*,  $1.07 \pm 0.79$ , and *c. Did you have enough time to prepare materials for EOE?*  $-0.13 \pm 1.30$ .

The totals for CIPP reveal that for content, process and product evaluation by teachers received a slightly negative result. This can be interpreted as an overall neither good or bad evaluation for these three components. For input evaluation, with regards to teacher's Wi-Fi/device preparation and skills there was a positive score  $1.13 \pm 2.29$  and for preparedness for future emergency remote lectures also positive  $0.53 \pm .83$ . However the scale of the for input evaluation

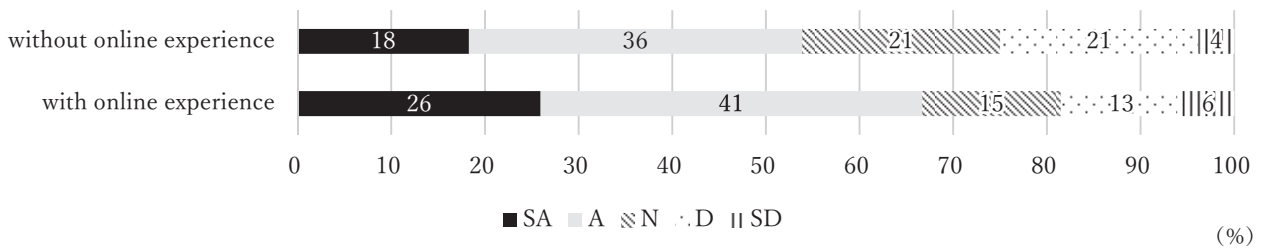
Q.4 I was prepared with adequate equipment



Q.5 I was prepared with adequate Wi-Fi



Q.6 I had appropriate digital skills to use my equipment



Q.7 I received adequate support from the university

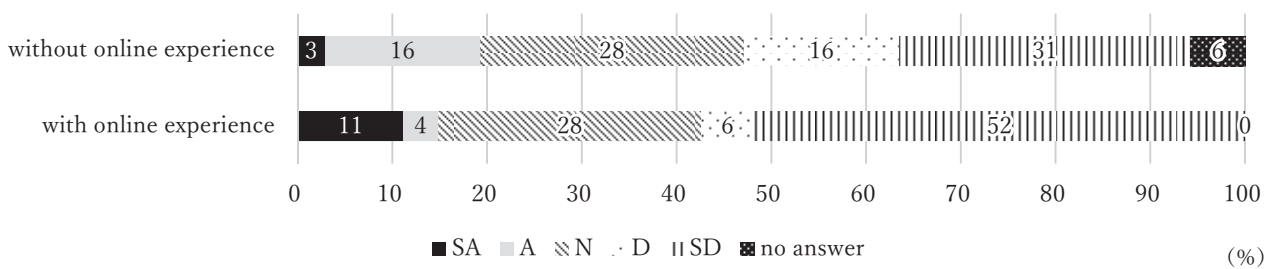


Figure 1 : Breakdown of individual question responses to the input evaluation (Q4- Q7)

is -8 -8 and the scale for preparedness is -2 -2.

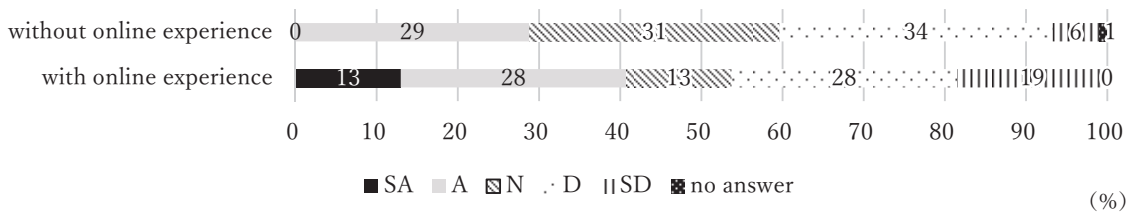
The answers to open-ended questions were analysed using a coding system whereby they were divided into categories and given a number. For the student answers, the pros were divided into four main categories: mobility,

infection control, lecture content and time management. The cons were also divided into four categories: lecture content, personal demeanour, teacher-student interaction and network environment.

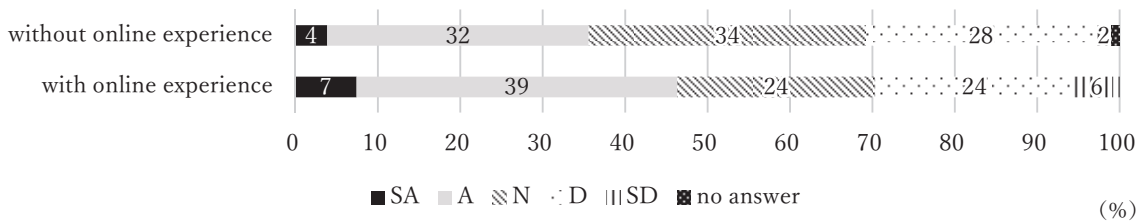
The data shows that students felt that not having to travel daily to the university was the biggest merit,



Q.12 I was able to understand the lecture content



Q.13 I was able to keep up with the lecture content



Q.14 I was able to achieve the required learning acquisition goals

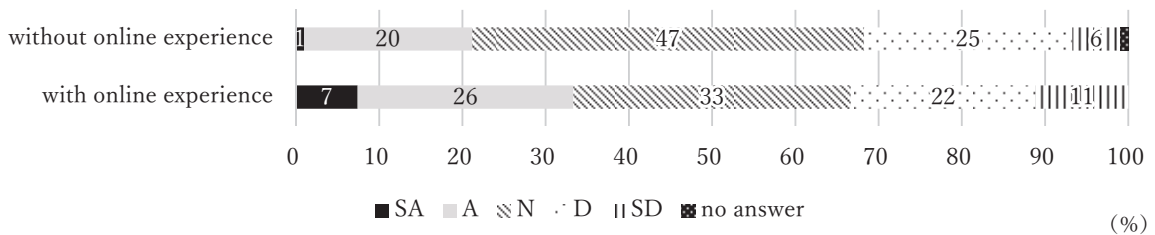


Figure 2: Break down of individual question responses the product evaluation (Q12- Q14)

which in turn meant students were actively involved in infection control as they were following the Stay Home procedure which also led to lower anxiety levels about contracting the disease. The time saved on daily travel was also reflected in the time management category, where students stated they have more free time and more time to sleep. Lecture content featured as the third category with students stating that it was easy to take part in lectures from home and this in turn meant that there was no blank in learning, as was the case in many elementary, junior and high schools in the prefecture.

On the positive side of emergency online education, it can be noted that students felt safer and spent less time traveling, had more free time and experienced no disruption to their education. However, as you can see by the centre line, lecture content was featured in both the pros and the cons. It featured as the

top category being the most commented on open-ended answer. Lectures were difficult to understand and there were problems with the delivery platform. In addition, hands-on practical training which is a vital part of course content from the freshman years, was unable to be obtained via an online platform.

In addition, whilst students had more free time, they were not using it to study more and actually were less motivated, lacked concentration and felt sleepy. The ZOOM experience was problematic with only two direct positive comments compared to thirty-seven negative ones with the teacher’s lack of expertise and lack of explanation, along with difficulties in contacting or asking questions to teachers and being unable to make friends as high ranking negative ones.

For the lecturers’ answers, the pros were divided into three main categories- infection control, continuance of education and faculty skill-up. The cons were

also divided into two categories – network environment and lecture content.

The data with regard to the pros from the lecturers show that student safety was considered to be the most important factor in holding emergency remote online education. Followed by that the continuance of education without disruption in the summer holidays were able to be avoided. Lecturers viewed it as a good experience to brush-up on online education skills.

The data with regard to the cons was predominantly directed to the network environment with Wi-Fi and inadequate transmissions the top answer, followed by the lack of preparation of equipment by students to cope with online classes. Secondly, lecture content was deemed as unsatisfactory with difficulties in information transfer especially in the topics of practical training. It was also noted that interaction with regard to understanding and student reactions was also deemed a con of emergency remote online education.

### Discussion

Our aim was to evaluate education that was conducted during the abrupt transition to EOE during COVID-19 at a rural private university in Japan. Students and teachers consented to participate in an online questionnaire. The results were analysed and we found that while there were no outstanding statistical differences found in the data, many insights and valuable lessons were learned through conducting this research.

First year students whilst being new to the university system seemed to adapt well with the implementation of EOE, using the portal site and understanding what was expected from them. Students of all grades were reasonably prepared with devices, Wi-Fi and IT skills but expected more support from the university. The university offered various forms of support so if our question was more specific we may have been able to define this problem better. The World Bank (2020) lists equity and infrastructure as two top issues that need to be addressed and our study also revealed these problems [22]. Solutions include comprehensive support from not only the uni-

versity, but by local and national government and should not be limited to monetary support. In Japan, fees for telecommunications are extremely high in comparison to other countries, so there is a need for cheaper, faster and effective services, so as to lessen the financial burden on students. What students saved on transport costs, they would have spent on telecommunications.

Convenience was one of the most positive attributes of EOE that students listed. The convenience of not having to travel, of tuning in at any time, of more free time, of not having to get dressed, etc. which is consistent with observations made by Zimmerman (2020) [23], but there is also the question of how effective this convenience may have on academic studies. Our study showed that in general, students could not keep up with classes and had difficulty understanding content. They also lacked motivation and had low concentration levels, which in some cases can be attributed to human and pet interruptions [24].

Communication is another issue that needs to be addressed. Communication between teachers and students was less satisfactory than between students and their peers. The reasons for this could be due to limited time to ask lecturers or could be shyness about asking in front of the whole class. In classroom situations, if a student who has a question waits until the class finishes, there is usually an opportunity to approach the lecturer without peer scrutiny.

As Kusahara & Yoshida (2020) states in regard to her interviews with students, one thing that was common between freshmen at all levels of education, the pandemic interrupted peer relationships and it was one of the first issues students opened up about [25]. Social relationships between peers is an integral part of education at all levels and at the university level, students who have never even stepped foot on campus, initially found themselves isolated. Attention to social-emotional support for students and teachers alike should be emphasized [26].

Teachers experienced the difficulty of presenting content on a new platform and experienced problems with not only technology and Wi-Fi but with their own lack of literacy. From our research, results did not sug-

gest that teachers were most engaged and coped best with the transition when they had prior experience with remote instruction, as Jelska & Paradowski (2021) concluded in their research, that teachers were most engaged and coped best with the transition when they had prior experience with remote instruction, worked in the higher education sector, and used real-time synchronous modalities [27]. But our small scale data is indeed no match for their comprehensive global survey.

Lecturers expressed the opinion that due to the pandemic it was a good chance and good experience to overcome obstacles, as Toquero (2020) notes also happened in the Philippines [28]. However, by suddenly being thrust into EOE, further studies are needed to gauge how faculty institutions coped with providing various technical support [10].

Lecturers expressed uncertainty about the effectiveness of their content and presumed students had difficulty in understanding the content (which above results show). Lecturers were especially concerned with teaching practical techniques common in their department necessary for specialized practical training lectures. Several students also commented that it was confusing to learn about practical techniques online. This suggests that attention to pedagogy and the use of visual aids may enhance comprehension in such areas.

The implementation of the CIPP model as a tool to evaluate how our students and staff fared during the pandemic was a useful and beneficial exercise. Without such a model we would not have been able to conduct such a thorough and informative exercise. Whilst our results showed that there were no significant differences between grades, the comparison between students with online experience to those without proved to show significant differences. Hence we need to implement online education on a regular basis and encourage students to improve their digital skills and environments.

In the 2021 academic year, the university has stipulated that all first year students must start classes with a personal computer and have access to Wi-Fi. In future, problematic situations of not only pan-

demics but in case of natural disasters too, this will prove to be beneficial. Microsoft Teams will be predominantly used instead of Zoom and YouTube, so the platform for presenting classes and receiving classes should be easier and less time-consuming.

However, given that distance learning is likely to increasingly become part and parcel of mainstream education [29], we need to focus our attention on developing online programs not just in case of emergencies, but for mainstream classes as well.

More attention to content needs to be addressed, not just the delivery/ technology side. In the words of Genone (2020), "one of the most important lessons of the forced adoption of remote instruction may turn out to be the realization that pedagogy, rather than technology, is the key ingredient for delivering effective education online" [30].

This study targeted only the students and lecturers of one faculty within the university. A larger scale collection of data from other departments may have shown a different result. The number of teachers compared to the number of students made it difficult to compare results. With regards to asking about previous online experience, additional questions should have been included to elicit information about how much teaching experience (for lecturers), how much online experience (for students) and details of what kind of experience would have been beneficial.

We looked at the implications our results had on online education and CIPP model. Online learning in its entirety is dependent on current devices and the internet. From our results we discovered that students and lecturers with dated devices and bad internet connections are liable to be denied access to online learning. Hence strict guidelines with regards to both need to be implemented. In addition, lecturers expressed concern and uncertainty with regards to content and effectiveness of their lectures during this period. Hence, the broadening of knowledge in the field of education technology and online education is of utmost importance.

CIPP model was a relevant and effective way to evaluate our sudden thrust into emergency online education. Original models place importance on context

and input, which is usually formulated and executed prior to the implementation of a program. However, in our circumstance we did not have the advantage of being prepared pre-pandemic, thus our context and input were based on explanations and preparedness with technology and digital literacy. In the future, equal attention should be paid to context and input, in addition to process and product.

### Conclusion

The findings showed that the transition to EOE was not seamless, which is understandable as the transitional period from face-to-face to online mode took place within a very short timeframe. The pandemic opened up opportunities for students and teachers alike to upgrade their IT skills. We conclude that the CIPP evaluation from both students and lecturers achieved a satisfactory result, except for understanding content. The major problems for students were with difficulties in understanding lecture content, a lack of motivation, difficulties in asking questions to lecturers and lack of peer friendship. For lecturers, problems with network environments and lesson content/ delivery were listed. On the flip side, both students and lecturers believed they were contributing to infection control and lessening their risk of contracting the disease by staying at home. In the future, attention to equity issues and comprehensive support are necessary along with online content development and delivery skill-up workshops for lecturers in preparation for the shift to the trend of online instruction in mainstream education.

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### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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