STUDENTS' READINESS FOR ONLINE LEARNING SYSTEM IN NIT

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ABSTRACT

The Coronavirus (COVID-19) outbreak has forced closure of educational institutions in Japan. In response to the prevention and control of this pandemic, UNESCO recommended the use of distance learning measures and open educational applications and platforms to reach learners remotely and limit the disruption of education. Therefore, many National college of Technology (hereafter NIT) are offering distance learning courses across the country. In an effort to continue the classes, Nagaoka National Institute of Technology (NNIT) has implemented online learning class. The goal of this study is to understand the effectiveness of the online learning from the student's readiness to continue it. Among the various classes undertaken, this study focused on English class. A total of 274 students from first and fourth year of NNIT participated in the survey and presented their perspectives. The results showed that the fourth-grade students preferred online learning as they could learn at their own pace and this format of learning was convenient for them. On the other hand, the first-year students preferred face-to-face classes due to the difficulties in time management and understanding of class content. Further, findings of this study also highlighted the benefits and challenges of taking online classes and effect of this pandemic on the students' readiness. Based on the student's opinions, the blended form of learning (i.e., face-to-face and online learning) was found as the most suitable format of learning. Therefore, it is expected that this study would assist higher education professionals in NITs to develop more feasible and supportive approaches for effective distance learning in near future.

KEYWORDS

National Institute of Technology (NIT), face-to-face classes, online learning, students' readiness, Standard: 2,11

INTRODUCTION

There is no doubt that the coronavirus (COVID-19) pandemic has influenced global education system due to localized and nationwide closures around the world. According to the reports of UNICEF (2020), more than 60% of the world's student population are being affected. In Japan,

first corona patient was confirmed in the middle of January and the Prime Minister requested entire educational system to suspend their classes from the beginning of the March (NEWS, 2020). Compared to other countries, Japan emergency law does not allow to impose lockdown in the country. Therefore, Japanese government has appealed people to stay at home and avoid 3Cs (Closed space, Crowded space, Closed contact setting) during emergency period (Tashiro & Shaw, 2020). All education systems including institutes and universities is moving to digital learning or distance learning approach, avoiding traditional face-to-face classes.

One of Japan's most unique systems of higher education is the National Institute of Technology (NIT) system which combines high schools, universities of technology and other universities. At present, there are 51 colleges (55 campuses) across Japan and it has 5-year regular course starting from the age of 15 offering an associate degree. After finishing two more-years of advanced course, students get their bachelors' degree. Wedge shaped education is a special feature in its curriculum where junior students mostly learn general subjects and senior students mainly learn specialized subjects. It is designed to generate upward spiral of knowledge and ability improving their learning skills through three steps such as lecture phase, experiment phase and practical phase (Siswanto, Budiyono, Kasai, Fujiwara, & Mizuno, 2020). Through this curriculum, more practical engineers suitable for industries are produced with high creativity and humanity (Shimoda & Maki, 2018). After lifting of emergency of state in Japan in the end of May, NITs are opened, however most of them are still following distance learning patterns considering safety guidelines of UNICEF (2020).

Distance learning (or online learning) in Japan has undergone a major transition from postal system learning to streaming learning due to various telecommunication breakthroughs facilitating the worldwide access to Internet. Distance learning allows the learner and instructor to be physically apart during the learning process and maintain communication in a variety of ways (Beldarrain, 2006). The significant contributors for the development of distance learning in Japan are National Institute of Multimedia Education (NIME) and Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) (Albrechtsen, Mariger, & Parker, 2001). At the beginning, several issues like administrative and faculty ignorance, culture of teacher-directed learning in face-to-face environment created conflict with the concept of distance learning which emphasized on the autonomy of the student and distant communication (Jung & Suzuki, 2006; Kubota & Fujikawa, 2007). However, distance learning practices have become popular as a result of the present pandemic outburst.

Online learning is an instruction-based learning between teacher-student or peer-to-peer that occur in different locations or at different times.In this study, we used online learning which are self-facing learning experiences using pre-recorded videos or recordings and pre-uploaded lecture materials such as PDF's, presentations that each leaner can go through the materials at their speed and review class materials according to their convenience. Because students have chance to study lessons at any time, they do not need to bother about joining the internet at a specific time. Learners can proceed their studies when it is convenient for them. Further supplementary materials help to improve their further understanding. The online learning is are more suitable for the students who are self-directed and have different kinds of experiences in education (Liyan & Hill, 2007).
The online learning environment largely differs between different institutions and few studies have already experimented with learning analytics of the students for checking their learning processes and self-regulation (Kubota & Fujikwa, 2007; Bart, Olney, Nichols, & Herodotou, 2020). Online courses are becoming the new normal mode of learning. Recently, its popularity has multiplied among higher education institutions due to the emergence of social networking

technologies. The wide range of advanced technologies support constructivist environments for motivating and meeting the needs of the 21st-century learners (Cetin-Dindar, 2016).

Like many NITs in Japan, Nagaoka National Institute of Technology (NNIT) has also implemented an online platform to provide the most effective online education experience to the students. However, there are limited studies reporting the scenario of online learning in NITs. In order to find the suitable and effective approach for online education in NNIT, our study is an attempt to firstly understand the learner's perspective about online learning and secondly to utilize their feedbacks for educational guidance for developing the appropriate online education approach. In particular, since online learning at present context creates a huge impact on the formation of lifelong positive attitudes toward the future of education, a careful discussion is thought to be needed. To the best of the researchers' knowledge, no earlier survey has been conducted at NITs to investigate the perspective of students for online learning. Thus, the aim of this study is to understand the students' readiness on online learning in NNIT through the understanding of their preference and psychological readiness. Therefore, research questions addressed in this study are:
(1) How have students perceived the online learning?
(2) What are the key factors affecting online learning?
(3) Is there any significant difference in the preference of face-to-face and online learning for students in the different grades?

MATERIALS AND METHODS

The data were collected from first-year students and fourth-year students attending a special English communication class emphasizing on the essential thinking skills. In this course, the students practiced their essential thinking skills for problem-based learning activities and develop the ability to communicate in English as global engineers. This course is basically designed under English for developing generic skills which is gaining momentum in many engineering institutes in Japan. The details of this course could be found in the study by Tsuchida et al. (2020). The data was collected by using survey questionnaire.The questionnaire was prepared by the group of English teachers and it was clearly indicated that the anonymity of the respondents was guaranteed.The students were informed that the aim of questionnaire was to understand their readiness for online learning. The questionnaire was prepared using Microsoft Forms and sent to students via Microsoft Teams. Questions were written in both English and Japanese language for the easy understanding. The questionnaire consisted of 27 questions with the Likert scale ratings. Apart from the questionnaire, an assignment was also given to the students for more detailed data collection. The assignment was about writing logical essay about their preference on traditional face-to-face classes or online classes.

Data Analysis

The data were obtained with the help of Microsoft forms result analysis system. The structure of the survey allowed for both quantitative and qualitative data for analysis. The data were analyzed using the SPSS statistical software. Descriptive data were calculated to get the value of mean and standard deviation. Also, inferential statistics was performed for analyzing the differences in the responses.

RESULTS AND DISCUSSIONS

The questionnaire findings indicated that most of the students were clear about their preference for the new mode of learning. In other words, they had clear views about the face-to-face and online learning.

1. Qualitative Results

1.1 Demographic Results

Of the 274 students attending English class at the time questionnaire was made available, 238 students completed the entire questionnaire, resulting in 86.86% response rate.The respondents were 71.16% of male and 28.83% of female consisting of 169 first-grade students and 60 fourth-grade students. The average age of the first-grade student was 15 years and that for the fourth-grade was 18 years. When the students were asked about the online learning, 67.6 % percentage of the students reported that they were overall satisfied whereas 16% of the students were dissatisfied. It should be noted that 13.9% and 2.5% were very satisfied and very dissatisfied, respectively.

1.2 Time : Hours Dedicated for Online learning

In terms of the internet use per day, it was found that 52% of the student were observed to spent 1-5 hours, while 47.5% and 0.4% of the students spent less than 2 hours and 6-10 hours, respectively. Similarly, 60.5% of student spent less than 2 hours searching for the information and rest of them 1-5 hours for it. Similar to this finding, the literature suggests that online learning is related to one's ability to manage time, experience, and the adoption of the learning environment (Vonderwell, 2004).

1.3 Statements about hardware and software

This study also revealed the preferred technological devices for online learning. Normally students (74.4%) used laptop/ desktop to submit their assignments. Most of the students (94.5%) generally used Teams for learning during their online learning. Very few of them 0.8%, 2.9% and 1.7% respondents used YouTube, Google Forms and other tools for learning in online learning. Almost quarter of the students preferred laptops or desktops over smartphones or tablets. The most preferred tool was Teams. For information security reason, Microsoft Teams was used for the entire lesson. As the surveyed students are quite young, this finding was similar to the previous researches, which suggest that the capability and confidence in the use of technological devices for young people are related to quick independent learning (Tang & Lim, 2013). Also, capabilities could be assessed through their competency in using these devices (Schreurs & Sammour, 2008). These findings further supports other researches that proposes ICT skills are an important factor in learner's preference and student's competencies and experiences in ICT skills are associated with their academic successes. (Menchaca & Bekele, 2008, Keramati & Kamrani, 2011; Harandi, 2015). These results also indicate the need for future researches on the easiness of using technologies for online learning.

2. Quantitative Results

The quantitative analysis of the responses from students was done for understanding the factors that affects the online learning. The questions were divided into factors such as stressors and nature of assignment. The similar questions were grouped under stressors such as the impact of pandemic on their studies, health issues, financial problems and motivation to study. Similarly, another set of questions were based on the nature of assignments.

Also, the independent and dependent variables to find the mean and standard deviation of each variables were analyzed. In this study, four scales were used to categorize the percentage of the mean score which are very high, high, medium and low since neutral point is biased (Raaijmakers, Hoof, Hart, Verbogt, & Vollebergh, 2000) as shown in Table 1.The mean score analysis showed the perception and behaviour of the respondent towards the online classes.

Table 1. Mean categories (Source: Cohen, 1988)

Group Code	**Group Code**	**Category**
1	1.00-2.33	Low
2	2.34-3.67	Medium
3	3.68-5.00	High
4	5.00-6.33	Very High

2.1 Stressors

The results of the stressors are shown in the Figure 1 and Table 2. It was observed that 47.1% of the respondents agreed to the effect of pandemic in their study and they are worried about it and 18.4% reported that COVID-19 did not impact their education. The percentage of mean score of the statement “Has COVID-19 impacted your education” was 3.97 indicating the high effect as stressor for online learning.The abrupt situation has created an atmosphere of uncertainty in the education system and the students expressed that they are trying to cope up with the new style of learning. For health issue, 56.7% students did not feel any stress/ health problems during online learning and rest of them i.e., 43.3% feel stress/ health problem during this time. The percentage of mean score of the statement “Do you feel any stress/ health problems during this time” was 2.83 showing the medium effect as a stressor on the online learning. Contrary to the results of research by Salari, et al.(2020), the health issues and related stress rate were comparatively less in our study. The possible reason for this observation could be leniency of government restrictions in Japan. It is important to highlight the fact that unlike other countries, the Government of Japan did not enforce lockdown, and state of emergency was maintained for few weeks which might have caused less effect on the health of students especially in the countryside where the study site was located.

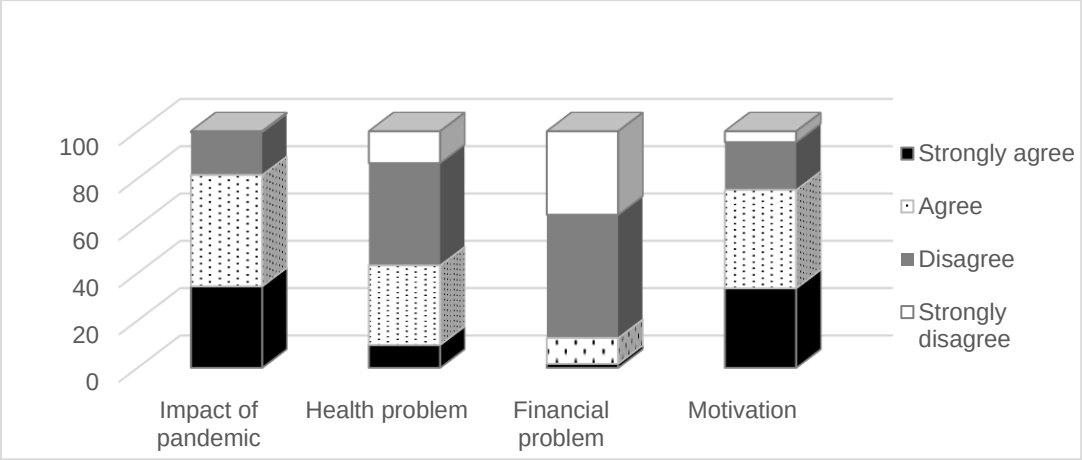

Figure 1. The effect of the stressors for online learning

Table 2. Mean score values of the stressors and nature of assignments

Question/statement	Mean	Std. dev
Stressors		
Has COVID-19 impacted your education?	3.97	1.06
Do you feel any stress/ health problems during this time?	2.83	1.29*
Did you find any financial problems during this time?	1.92	0.97
Would you like to join online classes in future?	3.79	1.23*
Nature of assignments		
Did you enjoy doing your assignment?	3.9	1.05
Did you understand the instructions of your assignments?	4.11	0.45
Was it easy to submit your assignments?	3.52	1.16
Were you worried about your study?	3.48	1.07
Do you think that the class was well organized?	4.39	0.75
Were the feedbacks helpful to you?	4.32	0.95

*Note : Higher std.dev values indicate that the data points are spread out over a larger range.

Similarly, 52% of students strongly disagreed that there was any financial problems throughout the study period. The percentage of mean score of the statement of “Did you find any financial problems during this time” was 1.92 showing the lowest stressor value. The results also demonstrated that this new mode of learning did not impair their motivation to learn and almost half of the respondents were interested to join the similar kind of classes in future.

2.2 Nature of Assignments

One of the major challenges of distance learning is the assignments. This was the first time for the regular students in NIT to attend online class which was even more challenging as it is an English communication class. In most of the educational institutions, it has been reported that English class is one of the most difficult subjects to teach to Japanese students (Takahashi 2019; Yoshihara, Kurata, & Yamauchi, 2020).

We attempted to check how well the students perceived the prepared educational materials and exercises for the class. The assignments were given in the form of worksheet and there was an interview task at the end of the semester to ensure that they used their English speaking and listening skills with International students. The results showed that 47% of the students enjoyed doing the assignments since the instructions were easy to understand. The clarity of assignment materials was specifically expressed by 52% of the students. The percentage of mean scores of the statement “Did you enjoy doing your assignment/ Did you understand the instructions of your assignments/ Was it easy to submit your assignments?” was within the range of 3.68 - 5.00 exhibiting positive impact on their assignments. The students’ responses underlined the importance of assignment clarity as a basic facilitator of independent study for online learning. Furthermore, after the submission of the assignments, they were evaluated and feedbacks were given. Most of the statements regarding the readiness on the assignments fall on the high category. The data of this survey also yielded the similar results presented by Siewert, et al. (2011), where 53% of students strongly agreed that the feedbacks were helpful for them to improve their performances. Most of the assignments were creative writings to encourage active learning. The results of this study is in line with the study by Huchting, et al.(2020) and highlights the importance of active learning which will help the students to stay interested with the course content and dismantles the status quo of classroom hierarchy. The overall results showed that most of the students agreed on the effectiveness of online learning.

3. Preference of Face-to face class and Online learning based on the Grades

After analyzing the essays submitted by the first-grade and fourth-grade students, it was observed that the fourth-grade students preferred online leaning and had a more positive opinion about the efficiency of the online education system showing higher average level of freedom in Table 3 . It was also found that the first-grade students who did not prefer online leaning found the system more inefficient and reported more negative opinions about it. The views provided by the first- grade students for disliking the online leaning was similar to the study conducted by Bayram, et al. (2019) which was basically related to the lack of interaction with teachers, communication with classmates and technical difficulties. In this context, it may be thought that giving preparatory lessons before the online courses are given to the students will have positive results for the students. Nonetheless, it was observed that students’ evaluations about online courses are positive regardless of their class level, and the results differ significantly between the groups.Considering the general average, it was found that the students who stated that the online leaning is more suitable decision have a significantly higher average.

To further understand the differences in the opinions from the students from both the grades, independent t-test was done and the result is shown in Table 3. It was observed that there was significant difference between first grade and fourth grade students based on the responses on face-to-face class [$df=8$, $t= 2.615$, $p<0.05$], while there was no significant difference between first grade and fourth grade students for their responses on online learning [$df=8$, $t= .387$, $p>0.05$]. Taking this result in account, both first and fourth grade students perceived the advantages of online learning with the above-mentioned factors.

Table 3. Preference of face-to-face class and online learning based on the grades

Learning style	Grade	N	Mean	Std. deviation	t	p
Face - to - face	first grade	5	54.8000	39.42334	2.615	0.031
	fourth grade	5	8.2000	5.76194		
Online	first grade	5	17.8000	9.09395	0.387	0.709
	fourth grade	5	15.6000	8.90505		

Overall analysis of both the questionnaire and essay indicated that the most preferred mode of learning in this pandemic situation for NNIT students could be a blended style of education i.e., both face-to-face and online learning. This view could be a result of their acceptance to current situation to ensure that their education is not disrupted in the future due to the pandemic or any other disturbances.

There were some limitations to this study. The results from this study are based on the self-reported survey data from the students. Firstly, there are possibilities of bias in their responses due to leniency of Japanese students providing inaccurate responses that are socially acceptable. Secondly, the survey was conducted for only one particular English class making it difficult to generalize the outcomes for other subjects. Thirdly, the size of the surveyed students and unequal gender size. Therefore, it is important to interpret the results with caution as it could not be generalizable to different contexts and settings.

CONCLUSION

The results of this study exhibit the positive attitude and overall satisfaction expressed by the students regard to the online learning in NNIT. With this study, it is thought that the readiness of the students will increase the efficiency of online learning environment and its applications.The effective and easy to understand assignment as well as instructions from teachers were the essential factors that affected their satisfaction level.The outcome of this study encourages the use of new technologies for higher education which could improve the teaching and learning environment in NITs. However, the outcomes of this study are case specific and was taken during the pandemic and could not be generalized to other scenarios e.g., post pandemic. Nevertheless, a blended style teaching method with improved ICT skills could be one of the approaches of instruction considering the inevitable post pandemic crisis.Further, more investigations are required for the evaluation of distance learning tools and opportunities.

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