

***Photography: A Potential Tool for Self-actualization of International Students during Pandemic***

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**Abstract**

The outbreak of Covid-19 pandemic since 2020 has resulted in drastic changes on the campus life and limiting social activities. At Tokushima University, most of the regular exchange activities for international students have been abolished for the time being. As an alternative, a photography contest had been conducted during December 2020. This contest was open to all international students at Tokushima University as an opportunity to show moments of their life during the pandemic. An analysis was conducted on the photos, descriptive texts, and feedback forms after the contest. The photographic works were analyzed by photo element analysis. The description text was analyzed by a sentiment analysis tool. The photos, considered as artworks, conveyed motives and feelings reflecting internal selves which had been further clarified by descriptive text containing more informative details. Restrictions in work, travel, socializing caused some changes, but the negative impacts are going to be neutralized by internal self-adaptation. The results have shown that photography could be a potential tool for self-actualization of international students, and photo contest could be used as an effective approach to involve international students during the pandemic.

Keywords: Covid-19, International Student, Photography, Photo Contest, Sentiment Analysis

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## **Introduction**

Covid-19 pandemic has made a serious impact on the higher education sector in Japan (Murata, 2021), especially on international students' academic life (Tanno, 2020). The education activities are forced to undergo changes such as switching to online mode, restricting communication, and limiting social activities. At the higher academic institutions, all kinds of interactions including extracurricular activities and international exchange activities were cancelled. In this paper, we talk about Tokushima University – a national university located in Shikoku of Japan. Like other higher education institutions during the pandemic, regular activities for international students, including Japanese culture fieldtrips, summer schools, multicultural exchange events, Japanese culture events have been abolished for almost two years. After almost a year into the pandemic, by the end of 2020, a photo contest has been introduced to push up exchange activities for international students.

Photo contest has been used as a relatively simple but effective tool for cultural exchange and promotion. Some institutions in Japan, such as Nippon Photography Institute or Tokyo International Exchange Center have been using photo contests regularly to attract involvement of students, including international students in some cases in the past (Nippon Photography Institute, 2020). Since the Covid-19 outbreak started in 2020, photo contest, because of its nature, becomes even more popular kind of activity among educational institutions (Kagawa University, 2020).

The photo contest was held with the aim to encourage international students and foreign researchers to use photography to show what they have been experiencing during the Covid-19 pandemic and how they have been coping with the restrictions of daily life and campus life. The photos successfully selected were being displayed at an exhibition in December 2020. We already reported results of qualitative analysis of the text data using QDA Miner Lite (Provalis Research). In our previous report, the data have been coded under four major categories including restriction, enjoyment, self-confidence, motivation, then being analyzed accordingly (Tran, 2021).

In this report, we show the results of data analysis using different sentiment analysis approaches. These results further aim to clarify the sentiment of underlying messages by the international students who participated in the photo contest. This could help to understand the needs and to design more suitable international exchange activities for the future.

## **Method**

The data for analysis was collected from the following sources: (1) photographic works submitted by international student-participants; (2) accompanying title and descriptive text; (3) feedback forms of the participants. Figure 1 shows the sample of photo and accompanying text which has been given to the participants for preparation.

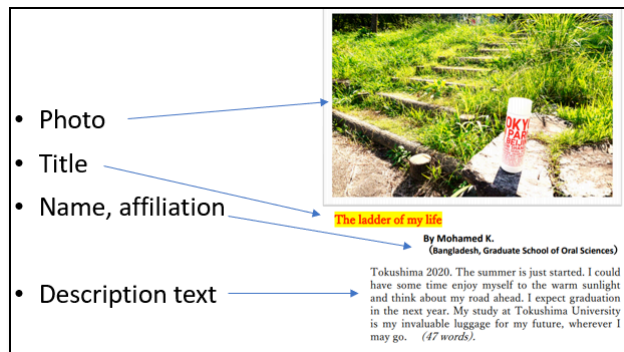


Figure 1: Sample of Data to Be Submitted

We conducted a visual photo element analysis of the photographic works according to common criteria as shown in Figure 2 (Dhan, n.d.; National Archives, n.d.).

<input type="checkbox"/> Portrait	<input type="checkbox"/> Panoramic	<input type="checkbox"/> Focus
<input type="checkbox"/> Landscape	<input type="checkbox"/> Posed	<input type="checkbox"/> People
<input type="checkbox"/> Aerial	<input type="checkbox"/> Candid	<input type="checkbox"/> Objects
<input type="checkbox"/> Action	<input type="checkbox"/> Documentary	<input type="checkbox"/> Activities
<input type="checkbox"/> Architectural	<input type="checkbox"/> Selfie	<input type="checkbox"/> B&W
<input type="checkbox"/> Event	<input type="checkbox"/> Other	<input type="checkbox"/> Color: warm/cool
<input type="checkbox"/> Family		<input type="checkbox"/> Day/ Night
		<input type="checkbox"/> Out/Indoor

Figure 2: Photo Element Analysis

Concurrently, we analyzed the text data collected from photo descriptions by using Sentiment Analyzer, a free web tool (Soper, n.d.-a). As the tool works only with English text, the Japanese text data were translated into English. After inputting the descriptive text, the tool automatically shows score which describes overall sentiment, tone, emotional feeling of input text. The score is displayed in a range from (-100) to (+100), whereas (-100) indicates very negative/serious sentiments, while (+100) shows very positive/enthusiastic sentiments. Word cloud was created using the combined English description text data of all photos (Soper, n.d.-b). Data from post-contest feedback forms from participants are being analyzed qualitatively.

## Results

### Characteristics of Participants

On November 2020, the total number of international students and researchers who are enrolled at TU was 192 persons from 23 countries and territories. However, there were only 11 participants, making a participation rate at 5.7% (11/192). The participants were from 9 countries (Bangladesh, Thai, Latvia, China, Vietnam, Korea, Mongolia, Philippines, India), which make the country participation rate of 47.8% (11/23). There were more female participants (8/11) than male (3/11).

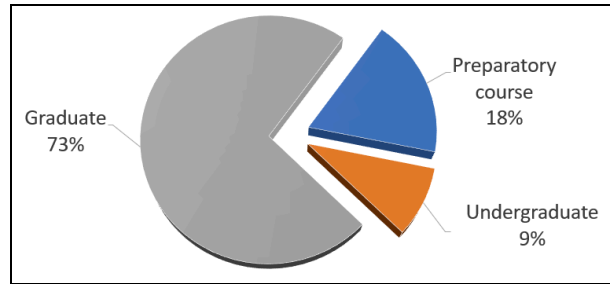


Figure 3: Enrollment Type of Participants

Figure 3 shows characteristics of participants by enrollment type, whereas 18% (2/11) were students in preparatory course, 9% (1/11) were undergraduate students, 72.7% (8/11) were graduate students. By the language of photo description submitted, 18% (2/11) of participants were submitted in Japanese by students from Korea and China, while 82% (9/11) were submitted in English.

### Photo Element Analysis

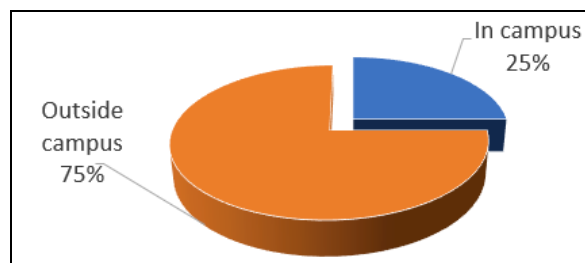


Figure 4: Place Where the Photo Is Taken

Figure 4 shows if the photos were taken inside the university campus. Unsurprisingly, only a fourth of photos were taken inside campus. This percentage may reflect that the participants may have been spending more time outside the campus during pandemic.

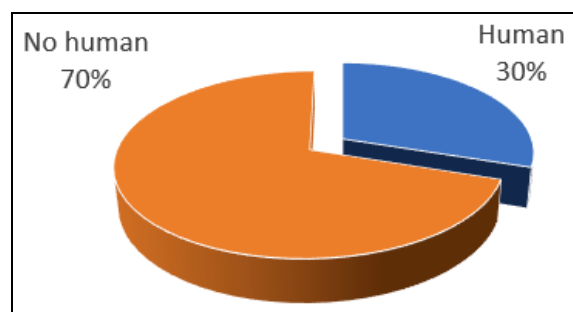


Figure 5: Human as a Subject of the Photo

Figure 5 shows percentage of the photos where human is at the focus. Less than a third of the photos were taken with human may reflect the sentiment that the participants may have been spending more time alone without human interaction and face-to-face contact with people. All the photos with human subjects were posed, including two portraits. No selfie was submitted.

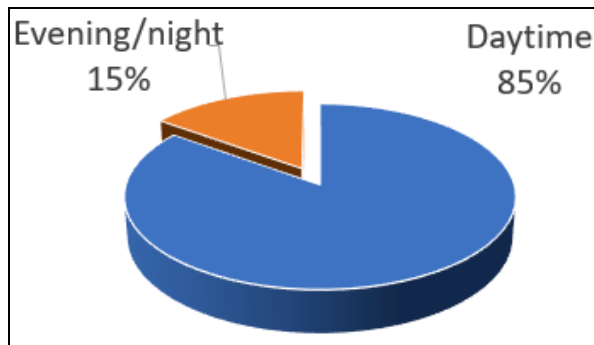


Figure 6: Time When the Photos Were Taken

Figure 6 shows the time when the photos were taken. Interestingly, 85% of photos were taken daytime. This percentage may reflect that the participants may have been spending more active time during the daytime.

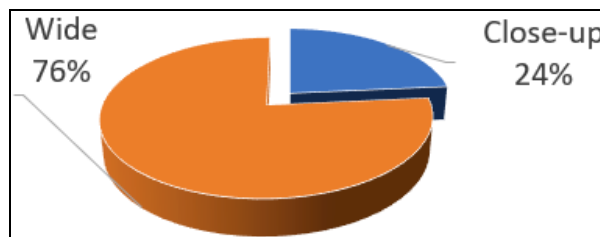


Figure 7: Angle of the Photos

Figure 7 describes the angle by which the photos were taken. Most of the photos were taken with wide angle while less than a fourth of the photos were taken close-up. This percentage may reflect that the participants may have been spending more active time outdoor or in wide spaces. Besides the characteristics described above, all the photos except one were submitted without any editing. Minimal montage was found in a photo without any sign of changing image quality. All participants reported beginners with no prior involvement with photography. Most of the photos were reported to be taken with smartphone.

### Sentiment Analysis of the Description Text

Table 1: Sentiment Analysis Results

	Total (N=19)	Male (6)	Female (13)
Very positive	11	2	8
Very negative	5	2	4
Quite positive	2	2	0
Quite negative	1	0	1

We ran the auto-code sentiment analysis using the descriptive text submitted by participants for the input. The application automatically gave sentiment scores which reflects the overall sentiment, tone, or emotional feeling of input texts. The scores given range from -100 to +100, where -100 indicates a very negative or serious tone and +100 indicates a very positive or enthusiastic tone. In this study, for interpretation of the results, we assigned scores +/- 80~100 as “very” positive/ negative and +/-50~<80 as “quite” positive/ negative. Out results are shown as Table 1.

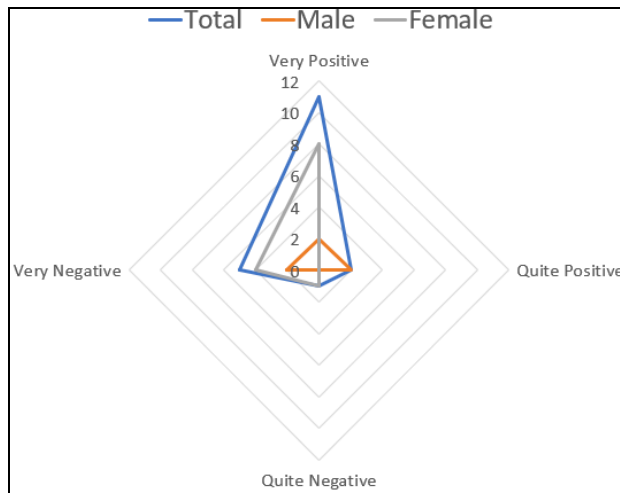


Figure 8: Sentiment Analysis Result

Figure 8 visualizes the sentiment scores, where the overall sentiment tends to incline to the very positive end and mainly accounted from female participants.

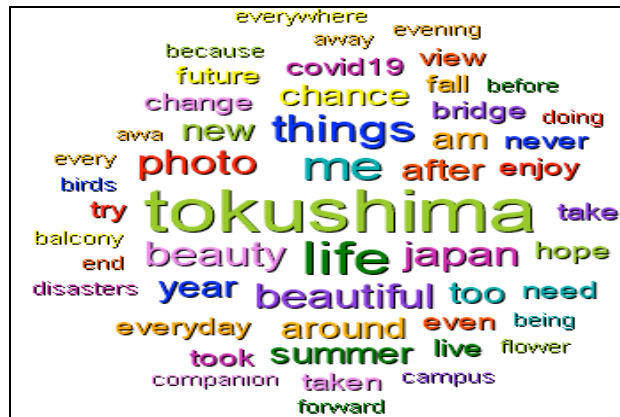


Figure 9: Word Cloud Generated from the Text Input

Figure 9 is a word cloud generated from the combined description text of all photos. Tokushima, as a current location of living and study in Japan, seems to be the most frequently cited words. To see if our results with word frequency and sentiment score was in line with our previous analysis, we analyzed the text against four categories including restriction, enjoyment, self-confidence, and motivation.

Majority of participants has conveyed that they are somehow restricted in travelling and sightseeing, restriction in exchange and meeting people, or even restriction in going out during lockdown. Some participants stated that they miss the Awa Odori, the most notable festival of Tokushima. Restrictions to the daily life or academic life due to the impacts of the Covid-19 have been specified through the description messages. However, most of the participants described about enjoyment of daily life, such as spending time relaxing with the landscapes, sunset, flower garden in the park, or leaves changing color in Autumn. Spending time with own, new hobbies could be nurtured and maintained. Some wrote that they even realized that there might be a good timing to slow down the pace, take rest and be ready for change. Some texts conveyed positive vision that the unfavored situation would end and the new light will come again. The scenes of Tokushima were described frequently, as during pandemic, there is more time to calm down and see Tokushima in a new light. Self-confidence was also a pattern of sentiment described in the text. The international

students come to Japan alone facing new things and learning new things from manga to traditional arts, from cooking to disaster prevention, from laboratory experiments to research methodology. Some text inferred fighting spirit as a tool to reflect their determination to solve the problem, while realizing difficulties and own weaknesses. During the pandemic, some realized about the need of knowledge and skill on disaster prevention, as finding oneself and relying on oneself is an important step to becoming independent, able to struggle alone is a part of self-development process. Motivation for studying a new thing without procrastination was well expressed in the text. Japanese language seems to be the biggest challenge as some text mentioned. It showed some awareness of keeping a high level of self-motivation for study. For the graduate students, spending long time doing experiment is a tedious work. Maintaining a high level of motivation is necessary for achieving research results. Some text specified how to see negative results as a future positive signal, and for keeping motivation for research, graduate students may look at the achievements of world leading scientists for inspiration.

Some similarity of the text was found among submitted texts of different participants, regardless of their background. In general, there is some life constraints during the pandemic, but international students could enjoy themselves, while building independence and self-confidence for new challenges, as well as keeping motivated for learning.

Regarding potential of photography as a tool for international students exchange during pandemic, reflection from the participants has shown that they have enjoyed the event and think that photography exercises, when conducted in the form of contest could work well during pandemic because of its simplicity. Busy with studies and experiments, some stated that they probably will not be able to participate in any time-taking event which needs long preparation. As hobbies and preferences varied widely by individual, all agreed that during pandemic, activities should be conducted online or with as less physical contact as possible. Participants agreed that via photography, they could be able to express themselves and to describe changes that the pandemic has resulted in. The photos conveyed motives and feelings reflecting internal selves which had been further clarified by descriptive text containing more informative details. Restrictions in work, travel, socializing caused some changes, but the impacts are going to be adapted afterwards.

## **Discussion**

Regarding the methodology analysis, in this study, we intended to use the sentiment analysis approach for analysis of the image and text data. Our original purpose is to analyze the raw image data for sentiment analysis without the need to analyze the description text. The basic task of an Image Sentiment Analysis is to predict the sentiment polarity of an input image in terms of two polarity level of positive and negative (Ortiz et al., 2019). Development and application of systems for image sentiment analysis is promising (Gajarla & Gupta, 2020). However, due to difficulty to find available applications for this purpose, we used the text sentiment analysis instead. Nevertheless, text sentiment analysis is still a difficult task because it involves human emotions. It has been reported that even if the sentiment analyzer were a perfect tool, as a human being you would likely only agree with its conclusions about 80% of the time (Soper, n.d.-a). The tool we used was a general-purpose sentiment analysis tool for text written in the English language. The application uses algorithms of linguistics and text mining to automatically determine the sentiment or affective nature of the text being analyzed. The overall sentiment score produced by this tool is for general-purpose use, then it may have disadvantages regarding accuracy and bias.

Regarding the impact of pandemic on academic life of international students, we have found similar findings with our previous analysis by four categories including restriction, enjoyment, self-confidence, and motivation (Tran, 2021). There has been some evidence that a portion of international students have had to discontinue study plan, change the study pattern, change the lifestyle pattern, or even may not have been able to return or to find a job. While Covid-19 seems to be a macro factor that strongly affect the sentiment, within the framework of this study, the evidence is still insufficient, so we leave it to a future investigation.

Regarding potential of photo contest which uses photography to involve international students, there have been many previous examples of conducting successful events. Before the outbreak of Covid-19 pandemic, many institutions have used photography contests as a form of exchange activities. For example, Tokyo International Exchange Center has been holding photo contest on regular basis, with a goal to deepen exchanges between international students, Japanese students, and staff. These contests have attracted high number of participants and visitors to the Exhibition, as well as many Likes via Facebook (JASSO, 2019). Similarly, Nippon Photography Institute organizes regular photo contests to attract potential students, giving scholarship to the winners (Nippon Photography Institute, 2020). Iwate International Student Exchange Promotion Council also holds regular photo exhibitions for international students enrolled in Iwate prefecture. The contests in Iwate aim at promoting images of Iwate prefecture (Iwate International Student Exchange Promotion Council, 2020). Even during the pandemic, students are being able to enjoyed photo contest during the pandemic (Kagawa University, 2020). Often, these contests are being supported partly by local organizations and companies. The results of our analysis also have shown that photography could be a potential tool for engaging international students and increased their resilience during pandemic. The international students who arrived during 2020 are lacking opportunities to be in touch with Japanese culture, local culture, exchange events among many other things. Besides photo contest, the participants suggested and expected that more events could be provided to them.

Limitations of this study is laying on the low participation rate and difficulty to make students of more senior years to be engaged. At 5% participation rate among international students, the results of this photo contest could not be representative for the whole international contingent and biased generalization. From the technical viewpoint, using more sophisticated tools for image sentiment analysis along with text analysis might be expected to produce better sentiment analysis results. It could be also more meaningful if we could collect more characteristics such as duration of stay in Japan, Japanese proficiency, nationality, scholarship status, age, gender etc. for correlation analysis.

## **Conclusion**

The outbreak of Covid-19 pandemic has made significant impacts to international students in Japan. Results of image elements analysis has indicated some signs of impacts such as social distance. Results of text sentiment analysis has shown very positive sentiment scores, which are consistent with our previous qualitative analysis conducted by four categories including restriction, enjoyment, self-confidence, and motivation. However, while Covid-19 seems to be a macro factor that strongly affect the sentiment, the evidence is still insufficient, so we leave it to a future investigation.



The results of this study have shown that photography and photo contest as a kind of activities could be an effective approach to involve international students during the pandemic situation when it is not possible to conduct the traditional face-to-face exchanges events. The outbreak of Covid-19 has resulted in drastic changes on the campus life. Students could express themselves via photograph. The photos conveyed motives and feelings reflecting internal selves which had been further clarified by descriptive text containing more informative details. Restrictions in work, travel, socializing caused some changes, but the negative impacts are going to be neutralized by internal self-adaptation. Photography could be a potential tool for self-actualization of international students. Photo contest could be used as an effective approach to involve international students during the pandemic.

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