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Promoting Higher Education Abroad Program in Science and Engineering to Indonesian High Schools: Methods, Challenges and Recommendations

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ABSTRACTS

This paper examines the promotional activities of higher education abroad program of Tokyo Institute of Technology (Tokyo Tech), Japan, namely Global Scientists and Engineers Program (GSEP), that was carried out in Indonesia. The objective is to document the lessons learned in the form of promotional methods, to identify the challenges, and to summarize some recommendations. GSEP is an international Bachelor of Engineering degree program in Tokyo Tech majoring in Transdisciplinary Science and Engineering that is launched in 2015. This program is fully taught in English, thus it expects to attract more international students, such as from Asian countries, to pursue higher education in Tokyo Tech. For this reason, the promotional activities in Indonesia was done in August 2016 by presentation in front of thirteen high schools in Jakarta and nearby. For improvement of future promotion effort, participants were requested to express their evaluation regarding content and delivery of the material presentation by fulfilling questionnaire survey. The results reveal several interesting facts about Indonesian high school students, such as their willingness to study abroad even without scholarship, and some important aspects on how to effectively promote higher education abroad program in science and engineering in Indonesia.

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1. INTRODUCTION

The Japanese government is endorsing the nation's higher education institutions to internationalize as a way to increase its research excellence and competitiveness in the world (Cross et al., 2017; Lawson, 2012; *Ministry of Education Culture Sports Science and Technology (MEXT)*, n.d.; Shimomura, 2013). Besides recruiting more excellent faculties from foreign countries, increasing the number of international students is also considered very important to Japan's higher education internationalization strategy (Ninomiya et al., 2009). Numerous policies to attract more students from overseas have been implemented since 1983; such as establishing international exchange programs, strengthening human network, and cooperate with local and international agencies in providing services to students from overseas (Horie, 2002). As a result, Japan has recruited around 100,000 international students since 1980s, and still continues to attract another 300,000 high-qualified students in overseas by 2020 (Ninomiya et al., 2009).

Recruiting a large number of international students, however, causes a new problem since the students could be considered as a vulnerable population (Sherry et al., 2010). Yeh and Inose elaborated in their paper that international students are vulnerable because it may experience several challenges in their new life at foreign country, such as language barriers, shock culture, alienation, racial discrimination, lack of social support, and homesickness (Yeh & Inose, 2003). They are also vulnerable to financial exploitation and could be regarded as consumer as an educational institution could consider the internationalization program as a chance to sell products to "foreigners" (Altbach & Teichler, 2001).

In 2015, Tokyo Institute of Technology (Tokyo Tech), Japan, launched its first international program of Bachelor degree in engineering as one of its globalization strategies. The program is called Global Scientists and Engineers Program (GSEP) under the Department of Transdisciplinary Science and Engineering. GSEP began admitting the first students cohort in April 2016, and currently several efforts are still being conducted to recruit more high qualified high school graduates in overseas to join the program.

Indonesia is one of the main destination for promotional activities of GSEP as the country has already been sending many excellent students through the selection process in the Embassy of Japan in Jakarta. In fact, Indonesian student is currently the second largest international student body in Tokyo Tech after Chinese student. This large number, approximately 160 students by April 2017, may support to resolve some international students' problems such as loss of social support, homesickness and alienation. The large number of Indonesian students as well as a lecturer from the same country of origin may also provide both social support and social connectedness which are considered as important factors in ensuring international students succeed in their new environment (Sherry et al., 2010).

This paper examines the experience of promotional activities of GSEP in Indonesia that was carried out in August 2016 (Triawan et al., 2019) in order to document the methods, to identify the challenges, and to summarize some recommendations for future improvement of the activities. The promotion was done by delivering a guest lecture, which consist of presentation in classroom and questionnaire survey, in high ranking high schools in Jakarta and nearby by a lecturer of GSEP. In this case, the lecturer's country of origin is Indonesia so that the promotion is expected to be easier in terms of cultural understanding, including language of instruction.

In this paper, the component of promotional activities, such as timeline, partici-

pants, and content of presentation material will be described. Then, analysis based on the results of questionnaire survey as well as some evidence of impact of the promotional presentation will be discussed before coming into a conclusion and some recommendations. In addition, this paper can be regarded as the extended paper of Triawan et al., 2019.

2. PROCEDURE AND METHODOLOGY

The promotional activities were conducted in 13 high-ranking high schools located in Jakarta and its surrounding areas (see **Table 1**), from August 1st until August 13th, 2016. The principal of each school has been contacted prior to the promotion in order to conform with school's schedule and students' availability.

Based on students' availability, the high schools had different arrangement for student's participants. In some high schools, all third-year students were asked to attend the promotion activities, so that the participants were limited to the third-year students only. A high school even included some second-year students who were also interested to join besides all third-year students. However, most of the high school opened the activities for those who are interested in, instead of asked certain students to attend the activities. Students' participant from each school varied in number, from 30s until 100s, but less than 200 because of limitation of the classroom.

The promotion agenda consists of classroom oral presentation and questionnaire survey regarding the participants' impression on study abroad especially in Japan. The presentation was delivered within 30 minutes followed by 10-15 minutes of question and answer (Q&A) session. The questionnaire survey was then carried out within 15-20 minutes. Situation during the presentation are depicted in **Figure 1**. In one presentation session, high interest of students was observed by excess of participants within available seats of a classroom as shown by **Figure 1**.

Table 1. List of senior high schools where the promotion was held (Adopted from Triawan *et al.*, 2019)

Name of High school	City
SMANU MH Thamrin	Jakarta
SMAK 3 Penabur	Jakarta
SMA Negeri 8 Jakarta	Jakarta
SMA Negeri 1 Bekasi	Bekasi
SMA Negeri 1 Bogor	Bogor
SMA Negeri 3 Bogor	Bogor
Pribadi Bilingual Boarding School	Bandung
SMA Negeri 3 Bandung	Bandung
SMAK Penabur Gading Serpong	Tangerang
SMA Kharisma Bangsa	Tangerang
MAN Insan Cendekia Serpong	Tangerang
SMA Negeri 2 Tangerang Selatan	Tangerang
SMA Negeri Cahaya Madani Boarding School	Tangerang

Figure 1. The situation of guest lecture in the class during promotional presentation

The presentation content comprised 7 (seven) points; introduction to Tokyo Tech, overview of GSEP, admission process, scholarship, accommodation facilities, curriculum of GSEP, and online information regarding GSEP. Introduction to Tokyo Tech also covered a brief description about Japan and Tokyo area for those who are not familiar with Japan. In addition, portion of international students both in undergraduate and graduate programs were also highlighted in order to provide a brief picture how Tokyo Tech has experience in handling a number of international students so far. Another emphasis within the presentation was that no proficiency of Japanese language needed to enrol in the program. Most of the bachelor program in Japan requires Japanese language proficiency since all subject within the program is taught in Japanese language. Hence, the presentation emphasized that no proficiency of the Japanese language is required to enrol Tokyo Tech's GSEP.

In the program overview, 3 (three) points were highlighted; affiliation of GSEP students, transdisciplinary program which covers broad and flexible field due to unlimited to any specific science and engineering field, and degree earned by GSEP students

after completion of course requirement in the program.

In the presentation of GSEP curriculum, it was explained that many of the core courses are conducted through project-based learning and hands-on formats covering various fields of science and engineering. The students are able to take other elective courses based on their own interests and goals. It offers students opportunity to design their own coursework with close consultation with faculty members. It was also explained that GSEP students on their 4th (fourth) year study would be asked to choose a laboratory among research laboratories of the department's faculty according to their intended field of specialization. They would undertake a research project in the laboratory of their chosen professor and that would serve as their thesis. The presentation on curriculum was followed by information on admission's process and schedule. The participants of the presentation were explained on the step-by-step of the admission to the program.

As the key factor in study abroad by students from developing countries, scholarship and financial support were also explained during the presentation of the program. There are 3 (three) scholarships opportunity for students of the program; Japanese government's (Ministry of Education, Culture, Sports, Science and Technology, MEXT, in Japanese referred to as Monbukagakusho) scholarship, Japan Student Services Organization (JASSO) Scholarship, and other opportunity of financial support such as scholarships from private companies, and tuition fee waivers. Each scholarship is briefly explained in the number of recipients, monthly stipend, and qualification and condition. Besides scholarships, accommodation was also briefly explained especially on the availability of student's dormitory.

List of faculty and research laboratory under the program were also presented in order to provide a description on how broad and various disciplines the GSEP students could choose and covered by the program. In the last part of the presentation, online information of the program including its social media page were also provided for more detailed and interactive information.

Finally, in order to improve promotion efforts of the program in the future, participants were requested to express their evaluation regarding content and delivery of the material presentation by fulfilling questionnaire survey. The questionnaire consists of multiple-choice questions. From each high school, twenty response sheets were randomly selected and analyzed. The results of the analysis are presented in the following section.

3. RESULTS AND DISCUSSION

3.1. Questionnaire survey results

The participants were asked their willingness to study abroad. From 260 responses, most of the participants expressed their willingness to study abroad. Surprisingly, as shown in **Figure 2**, some of the participants even are still willing to study abroad even without any scholarship. Only a little participant is not willing to study abroad.

The next question observed whether participants' still want to study abroad although they are accepted in the Indonesian top universities. From 257 responses, as shown in **Figure 3**, being accepted in the Indonesian top universities does not seem to significantly change participants' decision to study abroad. Most of the participants answered that they still consider studying abroad although they are accepted in the Indonesian top universities.

The next question is an open-ended question instead of multiple-choice question. It confirmed those who answered "yes"

to still consider studying abroad regarding to which country they want to go. Only 5 (five) of most selected countries are shown in **Figure 4** while the other less selected countries are grouped into "Other countries". The participants were allowed to choose maximum 3 countries. From 213 responses, it shows that more than half of those who answered "yes" wanted to go to Japan although they are accepted in the Indonesian top universities.

The following question followed up those who answered "Japan" as the country they want to go to study abroad. It is also an open-ended question unlike the other multiple-choice question. They were asked to which university they prefer to study in Japan. Only 3 (three) of most selected universities are shown in **Figure 5** while the other less selected universities are grouped into "Other universities". The participants were allowed to choose more than 1 university. From 126 responses, about half of those who answered "Japan" preferred Tokyo Tech as the preferred university in Japan. Having 'Tokyo Tech' becoming the first option is not surprising because the participants might have been influenced by the presentation, in which Tokyo Tech is the main topic. However, finding the fact that 'The University of Tokyo' and 'Kyoto University' were still selected by more than half of the respondents was noteworthy.

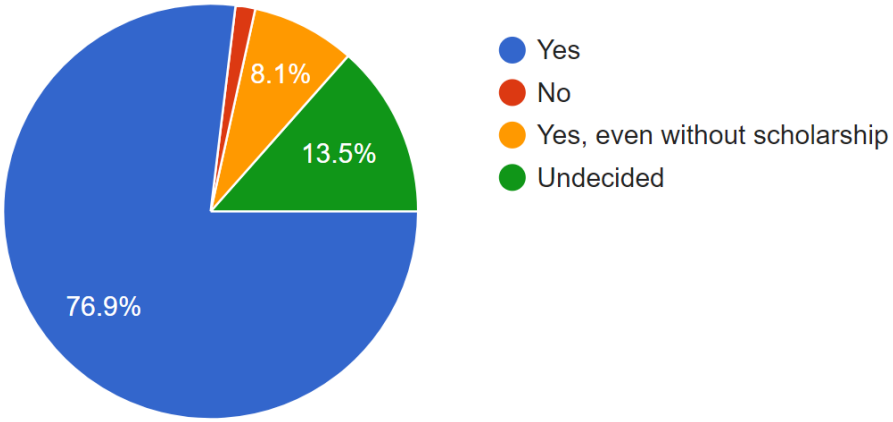

Figure 2. Participants' answer to the question "Are you willing to study abroad?"

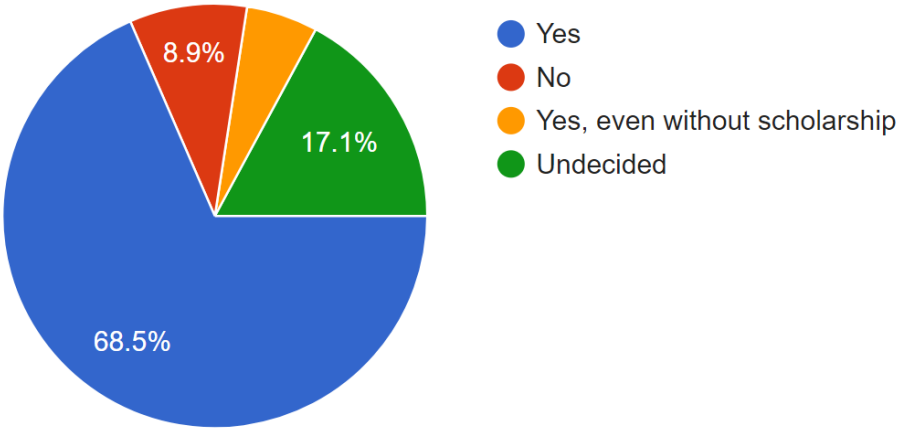

Figure 3. Participants' answer to the question "If you are accepted in Indonesian top universities (i.e. Bandung Institute of Technology, University of Indonesia, and Gadjah Mada University), would you still consider studying abroad?"

It implies that both universities had already gained popularity among Indonesian students. The presentation about Tokyo Tech and GSEP did not really change their interest toward these universities. This reveals the real challenge for other universities in Japan when making promotion in Indonesia.

Other universities outside Japan were also mentioned by the participants. They are National University of Singapore (NUS) and Nanyang Technological University (NTU) in Singapore, Universitas Indonesia and Institut Teknologi Bandung (ITB) in Indonesia, Korea Advanced Institute of Science and Technology (KAIST) and Seoul University in Korea, University of Queensland and Monash University in Australia, Technical University of Munich and Aachen University in Germany, Harvard University, Massachusetts Institute of Technology (MIT), and Stanford University in the United States of America, University of Cambridge, University of Oxford, Imperial College London in the United Kingdom.

Following the question on preferable universities outside Japan, the participants were requested to provided information by a multiple-choice question on how they know about their aforementioned universities. As the result shown in **Figure 6**, most of the participants obtained the information regarding the universities from the internet. It implies the importance of providing sufficient information about the promoted program in the internet, by which interactivity and communicativeness are of concern.

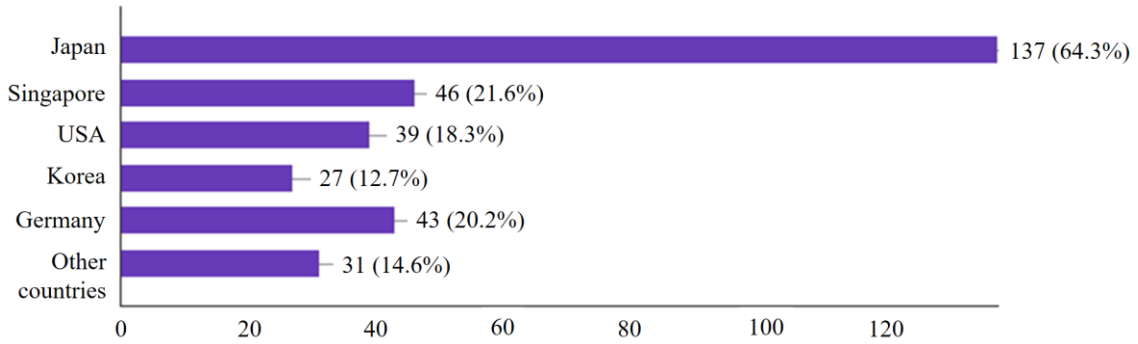

Figure 4. Participants' answer to the question "To which country do you wish to go for studying abroad even after accepted in the Indonesian top universities?"

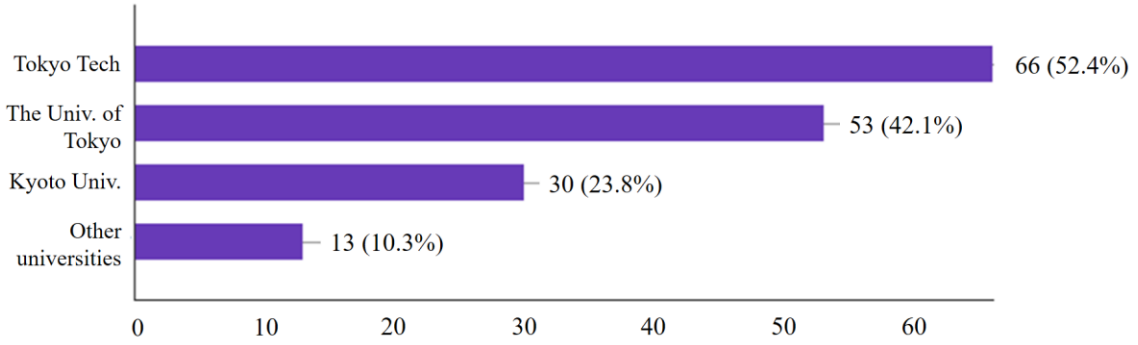

Figure 5. Participants' answer to the question "What is your preferred university in Japan?"

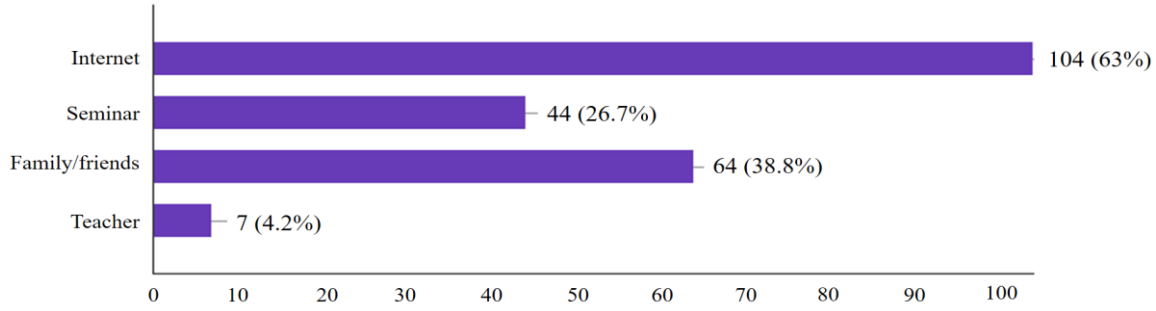

Figure 6. Participant's answer to the question "How did you know about the universities you listed above?"

In regard with GSEP, it may be considered to request for fulfilling questionnaire survey to all applicants of GSEP regarding how, from which channel of information the applicant know about GSEP. It may improve the way of GSEP information is spread out as pointed out by (Biddinika et al., 2016) in their study about biomass energy information on Indonesian websites. The other important source of information is family or friends since more participants obtained information on the universities from their family or friends rather than from an education seminar. In addition, several universities from Korea, United Kingdom, and Australia have been providing their pamphlets in some of the schools every year. The result also shows an important fact that only a few teachers of the participants provide information regarding the universities. Another promotion event to high school teacher should be considered in order to improve teacher's function to convey information on study abroad.

From the questionnaire survey, it is also revealed about the important factors that influencing students' decision on selecting studying at any university abroad. The participants were requested to provide 5 (five) of the most important factors which influence their decision to study at any university abroad. As shown in **Figure 7**, quality of education and scholarship opportunity was selected by most of the participants. The quality of education factor was only slightly leading by 11 (eleven) participants compared with scholarship opportunity. Both were predominant factors compared with future career support, provision for daily living costs, and distance from Indonesia. Although not the predominant factor influencing students' decision of studying abroad, support by universities abroad on future career can be considered as an important factor. These factors are suggested to be included and emphasized into the future presentation material for the promotion of GSEP. In addition, the participants also pointed out some other important factors such as permission from parents and present of relatives in abroad. Regarding the participants' interest in applying GSEP in the following year, almost half of the 258 participants' responses still showed "undecided" and "not interested" as provided in **Figure 8**. It is still not clear whether "undecided" and "not interested" answers were due to the time frame of the question – next year – or due to the vapidity (less interesting) of GSEP program. Another additional question should have been asked following this question in order to provide evident answer to these two answers. It is suggested to provide such a question in the future questionnaire survey following promotional presentations in the near future.

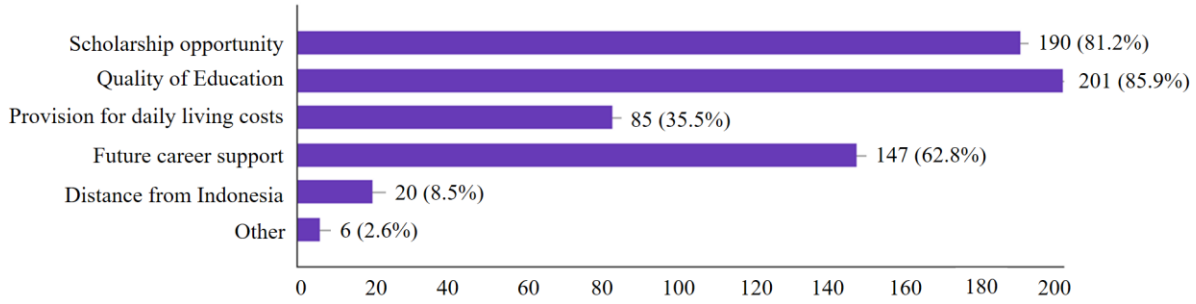

Figure 7. Students' important factors influencing decision to study abroad

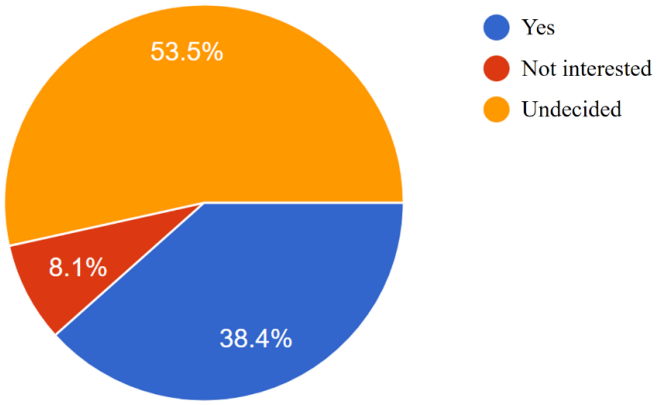

Figure 8. Participants' answer to the question "Are you interested in applying for next year's GSEP?" (Adopted from Triawan *et al.*, 2019)

Regarding the participants' opinion on the usefulness of promotional explanation on GSEP, most of the participants considered it as useful as shown in **Figure 9**. In term of timing and participant selection among students, the promotional presentation was said to be good for the third-year students since they were just about to start their third-year study on the beginning of August according to academic calendar in Indonesia. The promotional presentation somehow encouraged the students to study hard and more serious for their graduation and study abroad.

During the Q&A sessions, it was observed that the transdisciplinary major/course seems to be difficult to be understood. Most of the students know only specific single-disciplinary majors/course while the transdisciplinary major/course is quite new for them. It was also found that most of the students were not sure which job they really want and whether they are able to obtain it. It was also informed by some teachers that several famous universities from Korea, UK, and Australia regularly invite Indonesian teachers to visit their campus beside providing some pamphlets in the high schools every year in order to provide more detailed information on the bachelor program of the universities. It was also considered as a promotional effort in order to invite more applicant for their bachelor programs. Some of high schools also visited Korean universities for a study tour, and the teachers asked if their school could also obtain similar invitation to visit Tokyo Tech.

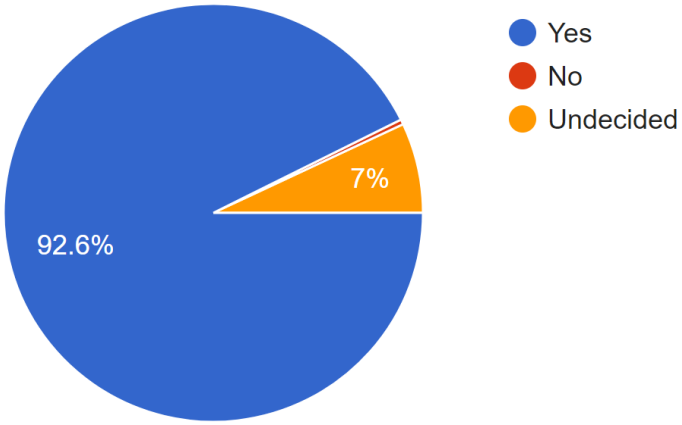

Figure 9. Participants' answers on the usefulness of guest lecture (Adopted from Triawan *et al.*, 2019)

3.2. Evidence of impact

Results shown in **Figure 2** and **Figure 3** may lead to the presumption that the presentation influenced participants' preference in study abroad. There are a large number of disparities between those who were willing to study abroad and those who were not, and were not decided. It is also shown in **Figure 4** and **Figure 5** regarding the selection of Japan as a destination country to study abroad and Tokyo Tech as the preferred university in Japan. A relatively large number of disparities are also observed between those who selected Japan and Tokyo Tech. Those Figures may also lead to the presumption that the presentation has strongly influenced participants' preference in selecting Japan and Tokyo Tech. However, the participants were not necessarily interested with applying GSEP in the following year although they showed preference to Tokyo Tech.

In addition, it was revealed that the participants' interest toward any particular top university in Japan, in this case The University of Tokyo and Kyoto University, could not be diverted easily by the presentation. A different way of delivering the presentation, including the contents, might need to be introduced in order to achieve the promotional outcomes.

4. CONCLUSION AND RECOMMENDATION

Promotional activity of higher education abroad program in science and engineering at Indonesian high schools was examined in this paper. The results based on questionnaire survey indicate that students might have already preference regarding study abroad. At least the students had already preliminary information – no matter how little it is – regarding the countries other than Japan as shown in **Figure 4** and universities other than Tokyo Tech as shown in **Figure 5**, including other universities outside Japan. The questionnaire survey also reveals that although more than a half of participants preferred to Tokyo Tech, it did not imply that they were interested in applying GSEP in the following year. The reason for this answer needs to be elaborated more either they wanted to apply not in the following year or the other reasons. It is also surprising that the questionnaire survey found some participants were still willing to study abroad without scholarship since most of barrier to study abroad is availability of scholarship. Moreover, it was indicated that a presentation at school alone is not sufficient in making an effective promotion. Other promotional methods, such as presentation in the internet and inviting

teachers to visit the university, should be carefully considered. The results from this preliminary survey could be used to develop and improve the presentation material as well as questionnaire survey in next promotional activity.

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