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# Effect of Short Visiting Program on Attitude of University Students to Longer International Exposure

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**Abstract**— The study shows how a short program abroad for graduate and undergraduate students influences the attitude of participants toward longer international programs. The authors compare the rate of application to longer international exchange programs abroad (a few months to 1 year of study at partner universities of Tokyo Tech) between the participants and non-participants of JAYSES). Among 163 applicants to JAYSES, the authors selected a test-subject group of 100 students with Japanese nationality, studying at university grades from B1 to M1 at the time of their application to the program, then divided into 2 groups of 45 participants and 55 non-participants. They examined the data of applicants to other programs and counted the number of former participants and non-participants of the JAYSES. The results show a significant difference between 2 groups on the rate of application and participation to other programs. The paper concludes that short programs can be one method to encourage students to seek longer international exposure.

**Keywords**—Multicultural communication, interdisciplinary studies, local industry, Official Development Assistance (ODA), technology transfer, social networking systems, Facebook, motivation, incentive, international students, study abroad

## I. BACKGROUND

### A. The number of international students at Tokyo Tech

Tokyo Institute of Technology (Tokyo Tech) is one of the leading universities of science and technology in Japan, and the number of international students is one of the highest among Japanese national universities (Fig. 1). 12% of 10,000 Tokyo Tech students are from abroad.

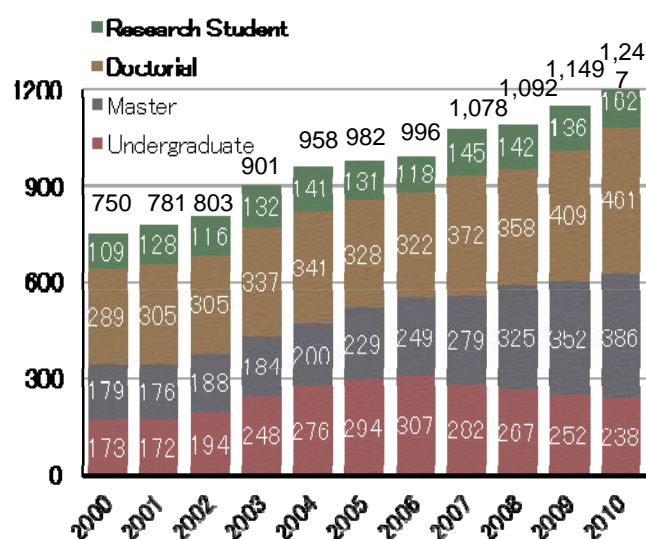


Fig. 1 Recent trends in the number of students from abroad at Tokyo Tech [1]

### B. Needs of internationalization of Japanese students

Despite the amount of international students on campus, the amount of international exposure of domestic (Japanese) students is quite low. As one aspect of the “internationalization of students”, is to increase their exposure to environments abroad [2], internationalization policies often aim to not only increase the number of in-coming students, but also the number of out-going ones. Tokyo Tech has 98 partner universities/research institutes in the world and 56 of them have student exchange agreements that include tuition waivers (As of Jan. 2012)[3]. The International Office of Tokyo

Tech constructed the program titled “Student exchange program between the partner universities with tuition waiver” (herein after referred to as the “Exchange Program”). Table I shows the number of Tokyo Tech students who studied abroad under this program. The total quota for agreements with tuition waiver is 116 students per year; therefore, only 38% of the quota is utilized, which is lower than expected.

TABLE I  
NUMBER OF OUT-GOING EXCHANGE STUDENTS

2006	2007	2008	2009	2010	Avg.
25	47	56	50	47	45

### C. JAYSES program for promoting internationalization

As one of the measures to increase the number of outgoing students, since 2007 Tokyo Tech has conducted a joint study program called “JAYSES (Japan–Asia Young Scientist and Engineer Study Visit)”[4] under cooperation with its partner universities in ASEAN countries.

The member universities of JAYSES are Chulalongkorn University, Kasetsart University, Sirindhorn International Institute of Technology or Thammasat University, King Mongkut’s Institute of Technology Ladkrabang, King Mongkut’s University of Technology Thonburi in Thailand, Institut Teknologi Bandung, Universitas Indonesia and Universitas Gadjah Mada in Indonesia, Hanoi University of Science and Technology and Ho Chi Minh City University of Technology in Vietnam, National University of Singapore in Singapore and University of the Philippines and De La Salle University in the Philippines.

After being selected as participants, Tokyo Tech students have “preliminary studies” including pre-study of the institutions they will visit, technical visits of the organizations in Japan related to the institutions they will visit, local language classes, training for making effective presentations and Q&A in English, case studies on safety and health and close communication with the participants from the partner universities by e-mail, Facebook and multi-party video conference.

15 to 17 Tokyo Tech students and 24 to 34 students from partner universities (some from the local universities in the country visited and others from neighbouring countries) conduct a 10-day program in 1 or 2 ASEAN countries and visit various institutions including research institutes, local companies, foreign companies, ODA (official development assistance) projects and universities followed by intensive group discussion and a final presentation at the site.

The program is open to students in any fields of science or engineering in order to broaden the viewpoints of the participants through interaction among different areas of expertise.

There is no registration fee for the participants but they should be responsible for the travel expenses to attend the program. Tokyo Tech participants have support for approximately half of the travel cost through the Tokyo Tech Fund (alumni association). Some participant universities support their participants by their universities’ funds or seek external funds for them.

The number of participants and the country of the university they belong to each year is shown in table II.

TABLE III  
SITE AND NUMBER OF JAYSES PARTICIPANTS BY COUNTRY OF UNIVERSITIES’ LOCATION (NOT BY NATIONALITY) (\*07-’11)

	Site	JP	TH	ID	SG	VT	PP	Total
2007	Thailand	15	24					39
2008	Thailand, Indonesia	17	12	27	0			56
2009	Thailand	17	22	12	0			51
2010	Vietnam	16	9	10	3	20	3	61
2011	Thailand	15	15	9	0	0	1	40
Total		80	82	58	3	20	4	247

JP=Japan, TH=Thailand, ID=Indonesia, SG=Singapore, VT=Vietnam, PP= Philippines

Black cell means no invitation in the year

### D. Measuring the impact of the program

The direct outcomes of the program are

- (1) Encouragement to Japanese students for further global exposure,
- (2) Promotion of students of leading universities in ASEAN countries to study at Tokyo Tech and

(3) Establishment of a human network among promising youth in Asia.

Naturally enough, there are some ASEAN participants who join the degree or non-degree programs of Tokyo Tech after participation to JAYSES (outcome (2)), and this trend can be another theme of study, but the authors focussed on the outcome (1) and conducted a follow-up survey since 2007 to measure the impact of the program for Tokyo Tech students.

## II. PURPOSE AND METHOD OF THE STUDY

### E. Purpose of the study

The purpose of the study is to examine how a short program such as the JAYSES program influences participants' attitude toward longer international programs such as the Exchange Program of Tokyo Tech.

### F. Measurement of the impact

It is quite obvious that the rate of application to the Exchange Program by former JAYSES participants could be higher than the average for Tokyo Tech students, however, this does not necessarily prove the effectiveness and impact of the program due to the potential criticism that "they were already highly motivated when they applied for the JAYSES program".

Therefore, the authors surveyed not only the former participants but also the "non-participants of JAYSES" who applied for the program but who could not pass the selection process or withdrew after being selected. If there is significant difference between the participants and non-participants, such difference may be explained as an effect of participation in the program, because both groups had the same motivation to international activities when they applied.

### G. Conditions for the test subject group

As for Tokyo Tech, JAYSES is open to any regular students including those from abroad. However, such students should be excluded in this study, as they can be recognized as already highly

motivated students, because they are already studying abroad. (JAYSES does not exclude such international students because, in addition to providing benefits for them, the presence of such non-Japanese Tokyo Tech students can give good impacts to Japanese participants in the preliminary study period and following up period). Therefore, the first condition for the "test subject group" should be Japanese nationality.

The authors set up the second condition for the test subject group as their grade (year of study) from B1 (the first year of undergraduate course) to M1 (the first year of master's course) because M2 students do not have enough time to study abroad after participating in JAYSES in August of their final year of master's course. (Table II)

TABLE II  
TEST SUBJECT GROUP

	TSG	Non-TSG	Total
Participant of JAYSES	45	35	80
Non-participant of JAYSES	55	28	83
Total	100	63	163

TSG: test subject group= B1 to M1 Japanese applicants to JAYSES

### H. Method

The authors examined the list of applicants to the Exchange Program (1 semester to 1 year) at the partner universities of Tokyo Tech around the world (2007-2011) and counted the number of participants and non-participants of JAYSES (2007-2011). Any participation in the Exchange Program before JAYSES should be excluded.

## III. RESULT

The result of survey is shown in table III.

TABLE III  
TSG'S APPLICATION TO THE STUDENT EXCHANGE PROGRAM

	TSG	Applicants to Exchange Program	Rate	Participants to Exchange Program*	Rate
Participant of JAYSES	45(n <sub>1</sub> )	14	0.311 (p <sub>1</sub> )	12	0.267 (p <sub>3</sub> )
Non-participant of JAYSES	55(n <sub>2</sub> )	6	0.109 (p <sub>2</sub> )	4	0.073 (p <sub>4</sub> )

\*Participants to the Exchange Program are those who passed the selection process of Exchange Program and did not withdraw.

### I. Null hypotheses

“The rate of the 2 groups cannot be evaluated as having significant difference.”

### J. Two-tailed test with 3% significant level on application rate

First, the authors try to test the difference of the “application rate” of the 2 groups.

$$z_a = \frac{p_1 - p_2}{\sqrt{p_a(1-p_a)(1/n_1 + 1/n_2)}} \quad [p_a = (n_1 p_1 + n_2 p_2) / (n_1 + n_2)]$$

If the (null) hypothesis is supported, “ $z_a$ ” should follow a normal distribution.

$$\begin{aligned} p_a &= (14+6)/(45+55)=0.2 \\ z_a &= \frac{0.311-0.109}{\sqrt{0.2(1-0.2)(1/45+1/55)}} = 2.51 \\ \text{Outlier} &\geq \text{NORM.S.INV}(1-3/200) = 2.18 \\ z_a &= 2.51 > 2.18 \end{aligned}$$

The (null) hypothesis is rejected.

Therefore, the difference of the rate of application to the Exchange Program after participation in JAYSES between the 2 Test Subject Groups is significant on a 3% level.

### K. Two-tailed test with 3% significant level on participation rate

Second, the authors try to test the difference of the “participation rate” of the 2 groups.

$$z_p = \frac{p_3 - p_4}{\sqrt{p_p(1-p_p)(1/n_1 + 1/n_2)}} \quad [p_p = (n_1 p_3 + n_2 p_4) / (n_1 + n_2)]$$

If the (null) hypothesis is supported, “ $z_p$ ” should follow a normal distribution.

$$\begin{aligned} p_p &= (12+4)/(45+55)=0.16 \\ z_p &= \frac{0.267-0.0727}{\sqrt{0.16(1-0.16)(1/45+1/55)}} = 2.63 \\ \text{Outlier} &\geq \text{NORM.S.INV}(1-3/200) = 2.18 \\ z_p &= 2.63 > 2.18 \end{aligned}$$

The (null) hypothesis is rejected.

Therefore, the difference of the rate of participation to the Exchange Program after participation in JAYSES between the 2 Test Subject Groups is significant on a 3% level.

## IV. CONCLUSION

The results of two-tailed test with 3% significant level on application and participation rates to the Exchange Program by the 2 groups of the participants and the non-participants of JAYSES show that the participants’ application and participation rates to the Exchange program are higher than those of non-participants. Considering that the different condition of the 2 groups is participation to JAYSES or not, and assuming that both groups have similar motivation to international activities when they applied to JAYSES, the authors conclude that short programs such as JAYSES can be one method to encourage students to seek longer international exposure such as in an Exchange Program.

## V. POSSIBLE FURTHER STUDIES

Following up the conclusion of this study, the authors are planning for further studies as follows:

- Expansion of a similar survey to the students of partner universities in ASEAN countries
- Change of attitude of JAYSES participants before and after participation to the program
- Analysis of non-participants by the difference of reasons for non-participation (withdrawal or not being selected)

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