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Assessment of Study Abroad Programs as Co-Curricular Program: A Case Study of Measuring Global Competency with the MGUDS-S

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Abstract

Global competency was measured for a university-wide study abroad program using the MGUDS-S Japanese version questionnaire. The survey was administered to 756 participants in the summer study abroad program in 2023. The survey was conducted both pre-test and post-test. First, the validity and reliability of the questionnaire were confirmed with factor analysis and reliability coefficients. Next, a paired t-test and effect sizes were measured. Although the growth in scores was not large, statistically significant differences were found. the MGUDS-S Japanese version questionnaire can be used to measure global competency in study abroad programs.

Keywords: Co-Curricular, Global Competency, MGUDS-S, Study Abroad Program

1 Introduction

In 2014, the Shibaura Institute of Technology (SIT) was chosen by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) for the "Top Global University Project." This project is a grant program that aims to enhance the international competitiveness of Japanese higher education. As part of this project, SIT promotes study abroad programs as co-curricular program. However, participants in this program dropped significantly in 2020 due to the COVID-19 pandemic, SIT sent 1,165 students in 2022[1].

The purpose of SIT's study abroad program is to expose all students to diverse populations with different languages, knowledge, cultural backgrounds, and genders, promoting mutual understanding and long-term relationships, and providing learning experiences that foster global competencies. However, SIT was required to measure the effectiveness of its study abroad programs. It can certainly measure an increase in the number of participant students. In the co-curricular, SIT is involved with faculty and staff leading the program. The SIT's faculty can assess their expertise in the field of engineering. However, they were not experts in international education. Although the program is a short-term study abroad program lasting less than one month, many students and faculty participate, and a large amount of money is invested; it was a challenge to assess the learning outcomes of global competency with respect to the purpose of SIT's study abroad program.

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2 Assessment Programs and Research Questions

SIT developed the Japanese version of the MGUDS-S (Miville-Guzman Universality-Diversity Scale-Short Form) to evaluate study abroad programs and conducted a pilot survey in 2019; the full survey was scheduled to be conducted in 2020. However, we measured the effectiveness of the online study abroad program due to the COVID-19 pandemic. Research activity at SIT before and during the COVID-19 pandemic were reported in 2020 and 2021 IIAI-AAI, respectively [2] [3]. There are also reports on research projects funded by internal research grants[4]. In May 2023, the COVID-19 were moved to "category 5 infection"; SIT resumed the study abroad program with real travel.

This study reports on this full survey conducted during the summer of 2023. This survey was conducted for two of the summer study abroad programs: Short-Term English Training Programs(STEPs) and Global Project Based Learnings(g PBLs).

STETPs and gPBLs are short-term study abroad programs designed for engineering students. STETPs are conducted during the summer or spring breaks for a period of two to four weeks, focusing primarily on improving English skills while also providing opportunities to experience different cultures through activities such as cultural exchanges with local students, visits to laboratories and factories, and ethnic experiences. Through this program, students can cultivate diverse values while being exposed to different cultures, and the credits earned can be counted as transfer credits. gPBLs is another effective short-term study abroad program that lasts from one to three weeks, where 20 to 30 students of different nationalities are divided into groups of four to six to develop solutions based on a specific research theme or practical issues. This program consists of knowledge-based lectures, group work supported by Teaching Assistants (TAs), field research, development of original ideas, and final presentations. This allows students to enhance their problem-solving skills and learn creative approaches to actual research and issues.

As shown in Table 1, the period was from May 26 to September 26, and a total of 756 participants, 289 in STEPs and 467 in gPBLs, took part in the program. The program was then implemented through a web-based questionnaire survey of participants before and after the program. A total of 588 participants (77.8%) responded to the pre-survey and 542 (71.7%) to the post-survey. The response rate was lowest for the g PBLs post-survey at 66.0%. Nevertheless, more than two-thirds of the students responded.

Table 1-2 shows the year of enrollment for the 756 program participants. Comparing the two programs, STEPs has more participants enrolled in 2023 and 2022, while gPBLs has more participants enrolled in 2021 and before 2020. The affiliations of the two program participants are shown in Figures 1-1 and 1-2. From the two figures, gPBLs has 21.8% of its participants as graduate students.

The research questions for this study are twofold: 1. validity and reliability of the questionnaire; Are there difference of the MGUDS-S Japanese version of the questionnaire developed by SIT to assess study abroad programs in factor structure and reliability from the original questionnaire and other Japanese versions of the questionnaire?; 2. usefulness of the questionnaire; Can the MGUDS-S Japanese-language version of the questionnaire developed to assess study abroad programs be used to assess the study abroad programs for the summer term of 2023?

Table 1-1: Program Participants and Responses, Summer 2023 STETPs and gPBLs

Assessment Period: May 26, 2023 - September 24, 2023

	No. of Participants	Respondents / Response Rate			
		Pre-No.	/ %	Post-No.	/ %
Short-Term English Training Program: STETPs	289	216	74.7%	234	81.0%
Global PBLs: gPBLs	467	372	79.7%	308	66.0%
Total	756	588	77.8%	542	71.7%

＊Compiled from the list of participants provided by the International Affairs Division.

Table 1-2: Enrollment year of Program Participants, Summer 2023 STETPs and gPBLs

	2023	2022	2021	Before 2020	Total
STETPs	105	110	54	20	289
gPBLs	123	159	93	92	467
Total	228	269	147	112	756

＊Compiled from the list of participants provided by the International Affairs Division.

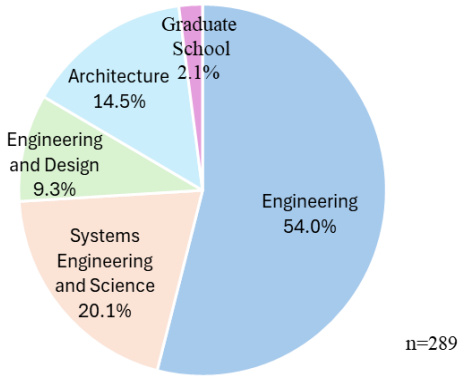

Figure 1-1: Undergraduate/Graduate School of STEPs

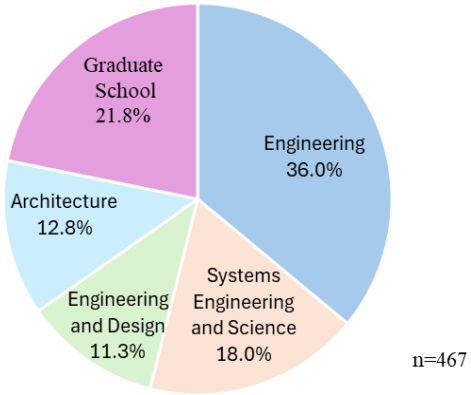

Figure 1-2: Undergraduate/Graduate School of gPBLs

3 Results

3.1 Validity and Reliability

The MGUDS-S Japanese version of the questionnaire developed by SIT has modified to assess study abroad programs with the permission of the author. The modified words and phrases are bolded in Table 2. The original "dances that feature music from other countries" in item 4 was modified to "dinner with foreign student(s)/colleague(s). In item 7, "listen to music of other cultures" was modified to "watch videos and TV programs of other countries." In addition, "race" in the original questionnaire was replaced with "culture."

In addition to the SIT, a Japanese version of the MGUDS-S questionnaire has been developed[5]. And the reliability of the three-factor structure and reliability coefficients has been verified. What about the reliability of the factor structure and reliability coefficients of the modified questionnaire for the assessment of study abroad programs?

Table 3 shows the results of the factor analysis of the pre-test. The same three-factor structure as in the original version was confirmed. The modifications in the SIT Japanese version did not affect the factor analysis results. Item 2, "Persons with disabilities can teach me things I could not learn elsewhere," which should have been the second factor, became the first factor. The first

Table 2: MGUDS-S Items for the Study Abroad Program Survey (Japanese version)

1	I would like to join an organization that emphasizes getting to know people from different countries.
2	Persons with disabilities can teach me things I could not learn elsewhere.
3	Getting to know someone of another **culture** is generally an uncomfortable experience for me.(R)
4	I would like to go to **dinner with foreign student(s)/colleague(s)**.
5	I can best understand someone after I get to know how he/she is both similar and different from me.
6	I am only at ease with people of my **culture**.(R)
7	I often **watch videos and TV programs of other countries.**
8	Knowing how a person differs from me greatly enhances our friendship.
9	It's really hard for me to feel close to a person from another **culture**.(R)
10	I am interested in learning about the many cultures that have existed in this world.
11	In getting to know someone, I like knowing both how he/she differs from me and is similar to me.
12	It is very important that a friend agrees with me on most issues.(R)
13	I attend events where I might get to know people from different **cultural** backgrounds.
14	Knowing about the different experiences of other people helps me understand my own problems better.
15	I often feel irritated by persons of a different **culture**.(R)

Note: Six-point scale (Strongly Agree, Agree, Agree a Little bit, Disagree a little bit, Disagree, Strongly Disagree)
(R) denotes reverse-scored item.

* Permission is granted for research and clinical use of the scale. Further permission must be obtained before any modification or revision of the scale can be made. The Japanese version is made by Sayoko Oda, Original version is Fuertes, J. et al. "Factor Structure and Short Form of the Miville-Guzman Universality-Diversity Scale."

Table 3: Factor Loadings of MGUDS-S for Pre-test, Summer 2023

	MGUDS-S Item	Factor1	Factor2	Factor3
1	I would like to join an organization that emphasizes getting to know people from different countries.	.821		
4	I would like to go to **dinner with foreign student(s)/colleague(s)**.	.644		
13	I attend events where I might get to know people from different **cultural** backgrounds.	.589		
7	I often **watch videos and TV programs of other countries.**	.570		
10	I am interested in learning about the many cultures that have existed in this world.	.493		
2	Persons with disabilities can teach me things I could not learn elsewhere.	.365	.276	
11	In getting to know someone, I like knowing both how he/she differs from me and is similar to me.		.753	
5	I can best understand someone after I get to know how he/she is both similar and different from me.		.727	
8	Knowing how a person differs from me greatly enhances our friendship.		.659	
14	Knowing about the different experiences of other people helps me understand my own problems better.		.426	
9	It's really hard for me to feel close to a person from another **culture**.			.869
15	I often feel irritated by persons of a different **culture**.			.745
6	I am only at ease with people of my **culture**.			.593
3	Getting to know someone of another **culture** is generally an uncomfortable experience for me.			.535
12	It is very important that a friend agrees with me on most issues.			.425

Note: Factor Extraction Method: Maximum Likelihood Method
Rotation method: Promax method with Kaiser's normalization
Words in bold are those arranged for the Japanese version of the Survey

Table 4: Reliability Coefficients for Subscales, Summer 2023

	N. of Items	Pre(n=588)		Post(n=542)	
		α	mean	α	mean
Diversity of Contact : DC	5	.76	22.98	.78	24.52
Relativistic Appreciation : RA	5	.80	24.19	.78	24.89
Comfort with Differences : CD	5	.79	15.53	.83	15.40

factor is a measure of the diversity of contact, and the second factor is a measure of relativistic appreciation. Item 2 was identified as a diversity of exchange behavior, perhaps because it was before the students went to study abroad.

Table 4 shows the reliability coefficients α for each subscale. The coefficients for the three pre-test and post-test subscales, Diversity of Contact: DC, Relativistic Appreciation: RA, and Comfort with Differences: CD, range from .76 to . 83, which is acceptable. Thus, the SIT Japanese version of the MGUDS-S can be scored in the same way as the original MGUDS-S.

3.2 Assessment using the MGUDS-S

Table 5 presents descriptive statistics of the MGUDS-S scores: the mean scores and standard deviations of the pre-test and post-test for each of the STEPs and gPBLs. The change in values between the pre and post is then calculated. The values of change are not large. The overall score for the STEPs with the largest change is 3.1. Most of the changes are positive, but the value of the gPBLs subscale Comfort with Differences (CD) is negative at -0.6 points.

Figures 2-1 and 2-2 show the MGUDS values on the pre-test and post-test for each of the STEPs and gPBLs, respectively. This figure shows the total score values. The post-test scores are 64.6 for the STEPs and 64.8 for the gPBLs. The difference of post-test values is not so large. However, STEPs has a lower pre-test score than gPBLs, 61.5. Because of this, STEPs has a larger change in value. Figure 2-2 shows the subscale values. First, the value of the Comfort with Differences (CD) subscale is around 15 points, these are lower than the values of the other subscales. The values of Diversity of Contact (DC) and Relativistic Appreciation (RA) are between 22 and 25 points. Second, the pre-test and post-test values of CD for gPBLs decrease from 15.2 to 14.8 points; the values of DC and RA, as well as the rest of CD, increase slightly. The question is whether these changes are statistically significant.

Tables 6-1 and 6-2 show the results of the corresponding t-tests and Cohen's d effect sizes for the MGUDS of STEPs and gPBLs, respectively. Students who responded to both the pre-test and the post-test, 199 for STEPs and 281 for gPBLs, were included in the study. First, the results of the t-test showed no statistically significant difference in CD for gPBLs. However, changes in the other MGUDS values were found to be statistically significant. Next, looking at the effect size in terms of the MGUDS total scores, the STEPs and gPBLs are 0.45 and 0.25, respectively; the STEPs are found to have a moderate effect and the gPBLs a small effect. There is a difference

Table 5: Descriptive Statistics of MGUDS-S, Summer 2023

	STEPs					gPBLs				
	Pre(n=216)		Post(n=234)		Change	Pre(n=372)		Post(n=308)		Change
	mean	SD	mean	SD		mean	SD	mean	SD	
Diversity of Contact：DC	22.4	3.97	24.2	3.66	1.8	23.3	3.73	24.8	3.70	1.4
Relativistic Appreciation：RA	23.6	3.75	24.4	3.41	0.8	24.5	3.08	25.2	3.39	0.7
Comfort with Differences：CD	15.5	4.00	16.1	5.36	0.5	15.5	4.85	14.9	5.33	-0.6
MGUDS-S Total Score	61.5	6.81	64.7	7.04	3.1	63.4	6.90	64.9	7.17	1.5

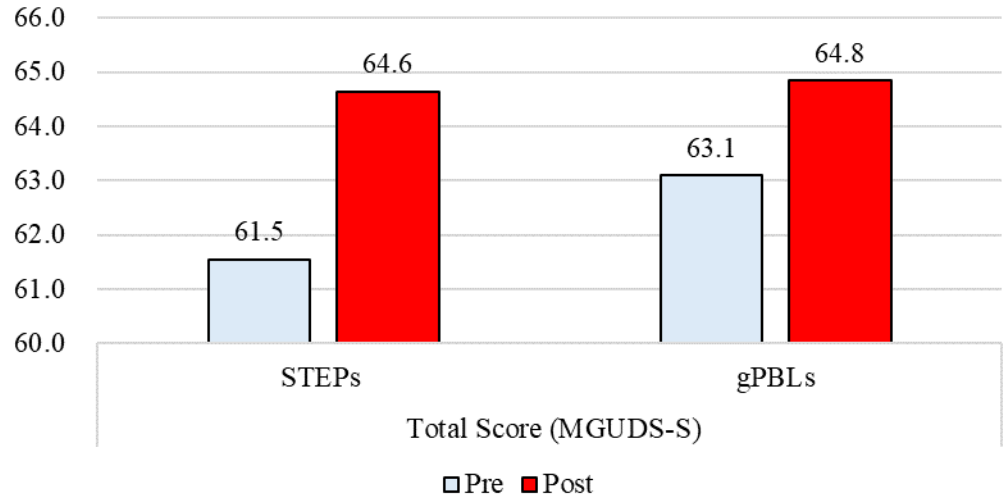

Figure 2-1: Change of Total Scores

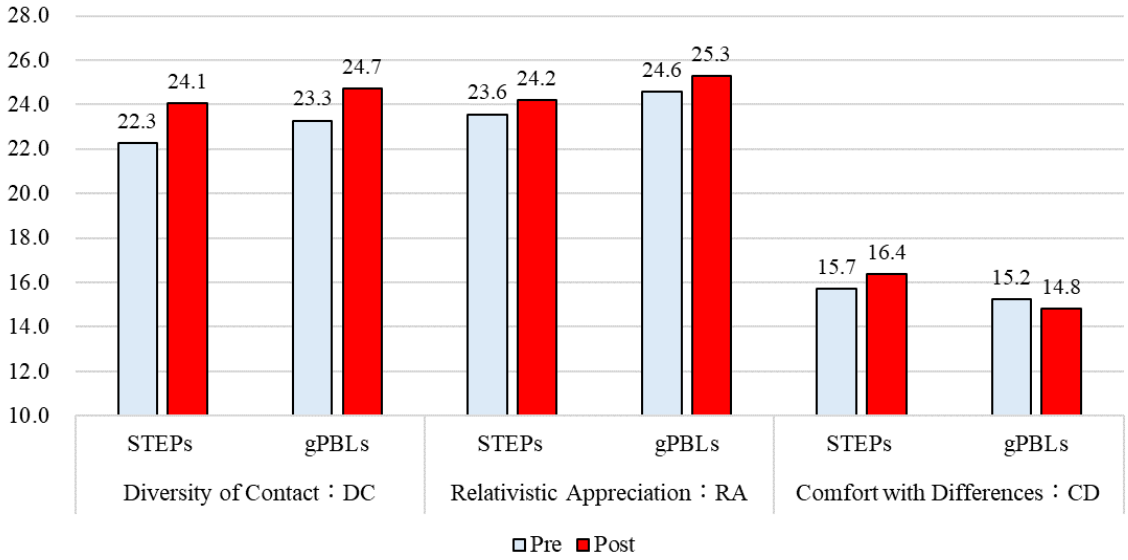

Figure 2-2: Change of Subscale Scores

between STEPs and gPBLs in the effect size of the subscales: STEPs has a moderate effect of 0.47 on DC. And there is a statistically significant difference between RA's 0.18 and CD's 0.14, but the effect is small. On the other hand, there is a small effect of 0.39 for DC for gPBLs and

0.23 for RA. The effect of RA is larger for gPBLs. However, the value of CD is negative and has no effect.

Table 6-1: Paired t-test and Effect Size of STETPs, Summer 2023

	Pre-test		Post-test		Change	*t-value*	*d*
	mean	SD	mean	SD			
Diversity of Contact：DC	22.26	3.98	24.07	3.67	1.81	7.81***	.47
Relativistic Appreciation：RA	23.56	3.80	24.21	3.43	.64	2.46*	.18
Comfort with Differences：CD	15.72	3.95	16.36	5.08	.64	2.13*	.14
MGUDS-S Total Score	61.54	6.93	64.64	6.95	3.10	6.96***	.45

n =199, *** *p* <0.001, * *p* <0.05

Table 6-2: Paired t-test and Effect Size of gPBLs, Summer 2023

	Pre-test		Post-test		Change	*t-value*	*d*
	mean	SD	mean	SD			
Diversity of Contact：DC	23.28	3.75	24.73	3.68	1.45	7.94***	.39
Relativistic Appreciation：RA	24.57	3.07	25.29	3.23	.73	4.16***	.23
Comfort with Differences：CD	15.24	4.75	14.81	5.33	-.43	-1.58	-.09
MGUDS-S Total Score	63.09	6.95	64.84	7.21	1.75	5.44***	.25

n =281, *** p <0.001

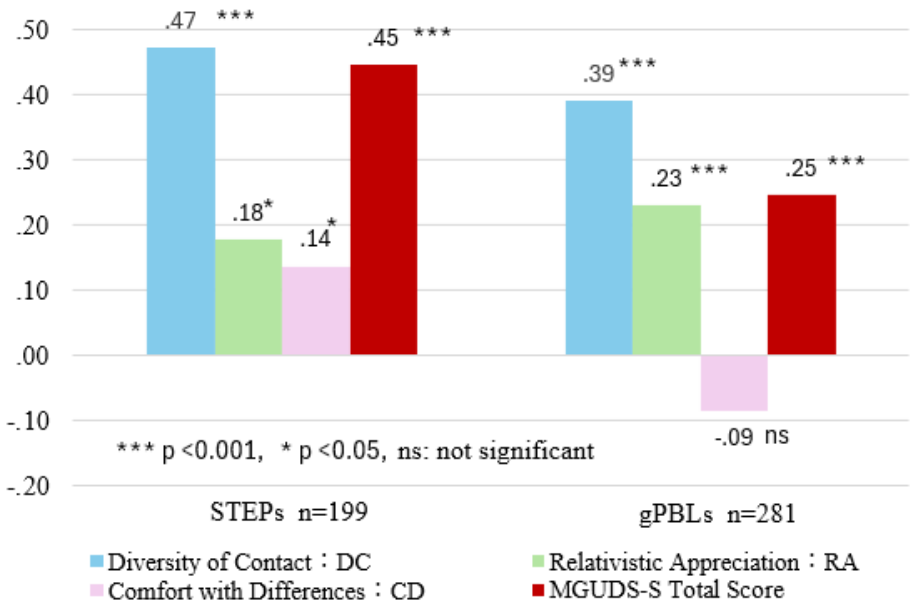

Figure 3: t-test and effect size (Cohen's d)

Figure 3 illustrates the results of the above t-tests and the relationship between the magnitude of the effect sizes in an easy-to-understand manner. The asterisk indicates that the value is statistically significant. And ns indicates that -0.9 is not a statistically significant value. The bars

indicate the magnitude of the effect size, with DC having the largest effect size for both STEPs and gPBLs at 0.47 and 0.39, respectively. The total scores for STEPs and gPBLs are 0.45 and 0.25, respectively, indicating a moderate effect for STEPs and a small effect for gPBLs.

4 Conclusions and Discussion

SIT developed the MGUDS-S Japanese version of the questionnaire to assess study abroad programs. It measures global competency as a co-curricular program. A pilot survey was conducted in 2019. However, due to the COVID-19 pandemic, implementation of the full survey was delayed to the study abroad program in the summer of 2023. This is a report on this full survey. The survey included 756 students who participated in two short-term study abroad programs during this period: the Short-Term English Training Programs (STEPs) and Global Project Based Learnings (g PBLs). Responded are 588 (77.8%) to the pre-test and 542 (71.7%) to the post-test.

The research questions for this study are twofold: 1. validity and reliability of the questionnaire; Are there difference of the MGUDS-S Japanese version of the questionnaire developed by SIT to assess study abroad programs in factor structure and reliability from the original questionnaire and other Japanese versions of the questionnaire?; 2. Usefulness of the questionnaire; Can the MGUDS-S Japanese-language version of the questionnaire developed to assess study abroad programs be used to assess the study abroad programs for the summer term of 2023?

First, SIT's MGUDS-S Japanese version questionnaire is modified to assess study abroad programs. Factor analysis and reliability coefficients revealed that there are enough validity and reliability. Next, the survey was conducted before and after studying abroad. The change of scores were small between pre-test and post-test. However, a statistically significant difference were found based on the paired t-test and effect size. Therefore, SIT's MGUDS-S Japanese version questionnaire is useful for assessment of study abroad programs.

The importance of fostering global competency as a part of undergraduate education is recognized in Japanese too. However, there is a need to visualize the learning outcomes for linking it to quality assurance and educational improvement. The MGUDS-S Japanese version questionnaire developed by SIT would makes this possible.

Acknowledgement

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