

Students' Perspectives on Academic Mentorship Program for Undergraduate Medical Education

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ABSTRACT

Background: Virtual international exchange programs have been promoted; however, the effectiveness of the programs has not yet been examined well in the field of occupational therapy (OT) field. This study aimed to examine the effectiveness and feasibility of a virtual international exchange program for OT students.

Methods: Mix-method was applied in this study. Two universities from Japan and Indonesia created an exchange program to cultivate international perspectives and facilitate gaining OT professional knowledge and skills, as well as learning basic scientific study skills. Questionnaires on international minded and program evaluations, which were analyzed by descriptive analysis, were given to the participants before and after the program. Focus group interviews, which were analyzed with reflective thematic analysis, were conducted after the program.

Results: Ten students joined the program, six students answered the questionnaires, and eight students participated in the focus group interviews. Students were satisfied with the program overall, even though there were no significant changes in the total scores of the international minded between before and after the program. In the focus group interviews, the participants mentioned their motivations for participating in the program, program evaluation, international minded, and self-growing awareness. The participants expressed that they gained OT professional knowledge and academic skills from the program.

Conclusion: As a feasible virtual program, well-organized programs considering the students' academic learning skills and interests could provide opportunities for individual development, acquiring professional knowledge, and incite self-growing. In addition, the result might show the effectiveness of virtual programs to cultivate international perspective and professional knowledge.

Keywords: occupational therapy education, virtual program, international exchange

PRACTICE POINTS

- In OT education, a virtual exchange program could be effective and feasible for participants to improve their academic skills and professional knowledge, and to get international experience.
- When establishing the program, a well-managed schedule arrangement is essential, and attention to cultural differences should be paid, which may influence the processes due to being conducted in domestic conditions.

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INTRODUCTION

The objective of the international exchange program is to gain not only academic knowledge but also experience in different cultural contexts. The educational institution has been facing challenges since the COVID-19 pandemic, and multiple research projects on virtual class learning and collaborative work have been reported¹⁻³ to promote collaboration activities among universities and educate international human resources. Although before the pandemic, online international knowledge exchanges in healthcare have been reported,⁴ this virtual program is different from the in-person educational style programs. Hence, this virtual international academic and cultural program needs to consider how students experience interactive communication, and its academic and cultural aspects.

In the medical education field, there are several reports of online programs, such as virtually visiting medical institutions in other countries during travel restrictions due to the pandemic.⁵⁻⁷ There are some reports of international exchange programs in which students from two or more universities participate in activities together for several weeks.⁸⁻¹⁰ These studies reported that well-organized and structural virtual programs could contribute to fostering globally competent medical professional students and give the opportunity for international experience to students from various backgrounds. However, those programs' evaluations in the reports were based on the students' feedback after joining the program to report and describe how participating students felt those experiences. On the other hand, those reports did not mention how students changed their attitudes before and after joining that program. In addition, there have been no reports related to occupational therapy (OT) education.

We had the opportunity to create an online exchange program for OT students in 2021 together with a university in Thailand. That program progressed successfully and showed effectiveness in cultivating an international perspective on learning and developing intercultural communication to some extent.¹¹ Nevertheless, the data from the evaluation of the program came from the questionnaires

to students after the program and students' achievements in the program, so we were not able to determine how this type of program influenced the students' academic growth and international mindedness. Therefore, we need to examine the feasibility of an effective virtual exchange learning program based on students' self-recognition, motivation, and international mind, comparing the pre- and post-program results.

The change in participating students' attitudes toward international perspectives and professional knowledge before and after joining the program needs to be discussed to investigate the effectiveness of the virtual exchange program. In addition, even after the relaxation of the travel restrictions due to the pandemic, online interactive exchange programs could be improved as a new form of international exchange programs which use information technology. The option of a virtual international program could have benefits, such as providing a collaborative, diverse online community as a source of social and professional support, networking and opportunities for international learning experiences for students.¹² Therefore, investigating the feasibility and effectiveness of those types of programs should be considered from the point of influence on students' attitude and their feedback to establish an ongoing program in the OT field.

International exchange programs in education have been regarded as important to fostering an international mind for medical professional students.¹⁰ Virtual programs without travel could be useful choices for students of various backgrounds, even though that is not a replacement for physical mobility. To develop a feasible international exchange program, the investigation of its influence on students' learning and attitude would contribute to improving it. The aim of this study is to examine the usefulness and effectiveness of international virtual exchange programs and suggest practical and implementable virtual programs to promote internationalization through information technology. The program's contents, the students' evaluations, and learning results will be discussed here. This report shall contribute to the development of virtual learning education in the medical field, including OT.

METHODS

This study was conducted as intervention research, which employed a convergent parallel mix-method design. This research was approved by the ethics committee of the authors' institution affiliate (No 22023), and the controlled before-after study was registered in the UMIN-Clinical Trials registry system (ID: UMIN000050884). All participants were informed of the research content, and consent was obtained from all individual participants in the study.

Participants

The research participants were recruited from the Tokyo Metropolitan University (TMU), five participants, and the University of Indonesia (UI), five (10 students in total from 1st & 2nd year) who were willing to join the exchange program in September of 2021. The program was conducted for five days, from September 20 to September 29, 2022.

Program Content and Organization

This program was separate from the regular curriculum, and the participants were not given a credit. The purpose of the program was to cultivate an international point of view in terms of understanding different values (learning communication skills and cooperation skills, developing an international perspective), to understand the OT professionals

through lectures and group discussions (gaining OT professional knowledge, being exposed to OT research, learning problem-solving skills and logical thinking skills), and to learn basic scientific study skills (learning the skills of searching the papers, understanding the papers' organization and structure, learning how to read research papers, and gaining presentation skills). The program was created on the basis of the ARCS model to support the participants actively joining.¹³ The ARCS model is a constructive model to promote the learners' motivation, which analyses the learning content based on four different aspects: A(attention), R(relevance), C(confidence), and S(satisfaction). Based on the instructional design, both the TMU and UI lecturers agreed with the program goals and asked questions about the students' preferences (What subject do you want to study? What type of activities do you want to participate in? What do you expect of this program?), and then the lecturers selected appropriate topics and arranged the program content accordingly to achieve the goals. All content was selected based on the students' academic progress level and interests. Table 1 shows the program content. In addition, before the program, the original website to share information and a communication platform for all participants were established, and a pre-session to get to know each other was conducted.

Table 1. Program Contents from 21 to 30 September 2022

Session	Date	Time	TEMA	Students' assignment
1	20 September 2022	3:00pm-4:30pm (UTC+0900, TMU) 1:00pm-2:30pm (UTC+0700, UI)	Orientation & Introduction Japanese and Indonesian OT History and the Present OT Education in School (by TMU & UI lecturers)	
2	21 September 2022	3:00pm-4:30pm (UTC+0900, TMU) 1:00pm-2:30pm (UTC+0700, UI)	Medical and Welfare System, and OT in Japan and Indonesia (by TMU & UI lecturers)	Introduction of our country, OT, our school (TMU & UI students, presentation 10 min)
3	21 September 2022	4:40pm-6:10pm (UTC+0900, TMU) 2:40pm-4:10pm (UTC+0700, UI)	OT in the Mental Health Field (by a TMU lecturer)	
4	26 September 2022	3:00pm-4:30pm (UTC+0900, TMU) 1:00pm-2:30pm (UTC+0700, UI)	OT in the Pediatric Field (by a TMU lecturer)	Summary of an academic paper on sensory integration (UI students, 10 min presentation) and discussion

Session	Date	Time	TEMA	Students' assignment
5	29 September 2022	3:00pm–4:30pm (UTC+0900, TMU) 1:00pm–2:30pm (UTC+0700, UI)	Life Support Devices and Assistive Technology in the Japanese OT field (by TMU lecturer)	Summary of academic paper on community care for older adults (TMU students, 10 min presentation) and discussion
6	30 September 2022	3:00pm–4:30pm (UTC+0900, TMU) 1:00pm–2:30pm (UTC+0700, UI)	OT in Indonesia and Japan in the Future (TMU Master students' presentation) Discussion, summary and closing	Summary of an academic paper on the cultural influence of OT (TMU& UI students, 10 min presentation) and discussion

Data Collection

Questionnaire Survey

The questionnaires were prepared to examine the international orientation and online learning effectiveness. In addition to age, sex, and school year, before joining the program (within three days), the International Attitude Questionnaire and the Program Expectations Questionnaire were used to research participants. After joining the program (within three days), the International Attitude Questionnaire and the Student Evaluation Questionnaire were given to the participants.

International Attitude Questionnaire

The international Attitude Questionnaire (15 items, 6 Likert, a 90 point-scale) was made based on an International Posture (IP) questionnaire by Yashima.^{14,15} The IP was originally developed for the study of the learning motivation of a foreign language learner, and it evaluates the attitudes toward an international society.^{16,17} Yashima¹⁵ published the English and Japanese versions of the IP, which consists of 28 categories and five factors, on a 6-point Likert scale (score 1 (negative) to score 6 (positive)).¹⁴ The five factors are intercultural approach-avoidance tendency, interests in international vocations, ethnocentrism (reaction to different customs/values/behaviors), interest in foreign affairs, and having things to communicate about (willingness to communicate to the world). In this study, appropriate questions were selected, and some words were modified according to the situation (e.g. “south-north divide and environmental issues” changed to “international issues”); needs; in addition, an original question on interests in foreign cultures was added. These questions could

reflect the student’s perspective on international exchange and working internationally in the OT field in the future. IP was examined for validity and reliability,^{14,15} and researchers got permission to use IP with the referring paper.

Program Expectations Questionnaire

The Program Expectations Questionnaire was made based on a questionnaire developed by Masuda & Sakaguchi,¹⁸ which was a survey of university students' expectations toward classes according to the program goals.¹⁹ Questions include asking about scientific learning skills, academic experience, and group interaction; in addition, they include questions asking about the effectiveness of created program contents based on the ARCS model. This was about program expectations, and all questions were the same as a part of the Student Evaluation Questionnaire as follows below. This expectations questionnaire was used to examine the change in students' evaluation.

Student Evaluation Questionnaire

The Student Evaluations Questionnaire was made based on the Student Evaluations of the Educational Quality Questionnaire (SEEQ). SEEQ is a questionnaire developed about 30 years ago,²⁰ and it is considered one of the most widely used in the world and universally accepted instruments of research with good enough validity and reliability.^{20,21} In this study, items(from dimensions of learning value, organization, group interaction, assignments, workload/difficulty) related to programs were selected, and the items from the Program Expectations Questionnaire were included to examine the degree of achievement.

Focus Group Interview

After the program, students who agreed to join the interview section were invited to participate. The interviews were conducted at each university via a video conference tool (Zoom Video Communications, Inc, USA) (within one month after the program), which lasted for about 60 min in English or Japanese students preferred language. All students have already got used to using video conference application and they were assured to speak freely. The interview facilitators were two lecturers from each institution who did not directly conduct the program. One facilitator handled one group in each institution. The questions were as follows.⁶

Tell me how you felt while participating in the program.

How have you changed after participation in this program?

What kind of difficulties did you experience during the program?

How did this program affect your major capabilities?

What types and methods of education do you think would be more effective?

How do you think about online programs and in-person programs?

Do you want to study or work abroad?

Can you tell us what subjects you want to learn and how this program can be improved?

The Participants were encouraged to give their comments freely and to listen to others. The interview data was recorded with the participants' consent, and all audio data was transcribed as verbatim text data after deleting personal identification information.

Data Analysis

The general characteristics of the participants were represented by frequency. Questionnaire results were represented by a descriptive analysis. Interview data were analyzed by a reflexive thematic analysis (RTA).^{22,23} RTA is considered a reflection of the researcher's interpretation. Researchers repeatedly read the transcribed data to understand the meaning of the participants' thoughts and reflections about the program, and then extracted codes from

meaningful phrases and sentences containing key concepts. They grouped similar codes, and then generated categories and themes according to the meanings. Two researchers who had experience with qualitative research did the analysis. The other two researchers verified the data.

RESULTS AND DISCUSSION

In this study, the usefulness and effectiveness of virtual international exchange programs were examined, and the study suggests feasible virtual programs which could promote internationalization. The study employed a convergent parallel mix-method design, which used before and after questionnaires to measure the students' international orientation and program evaluations, and focus group interviews after the program. We discuss the feasibility of the virtual exchange program on some different points: program organization, students' international attitude, interactive communication and academic learning skills/style, and we suggest some improvements to the virtual program.

Participants Characteristics

Five TMU students and five UI students answered the questionnaires; however, four students missed one of the questionnaires—before or after the program; therefore, six students' data was analyzed and compared with the questionnaire scores of the before and after the program. Eight participants (three TMU and five UI students) joined the focus group interviews. Demographic data is shown in Table 2.

Table 2. Demographic Data

Questionnaire survey	Value (n = 6)	Focus group interview	Value (n = 8)
Age (years), mean ± SD	19.8 ± 1.21	Age (years), mean ± SD	19.7 ± 1.22
Sex		Sex	
Male	0	Male	0
Female	6	Female	8
Level		Level	
First-year	1	First-year	2
Second year	5	Second year	6

Questionnaire Survey

The results of the International Attitude Questionnaire are shown in Table 3. The total score of the participants was relatively high for a 90-point full-score questionnaire. However, there was no significant change in the total score between before and after the program. In each component, before the program, the participants showed much interest in or a positive attitude toward an intercultural experience based on the scores of the intercultural approach (-avoidance) tendency, interest in international vocations, ethnocentrism (reaction to different customs/ values/ behaviors). After the program, these attitudes were maintained based on the score of the intercultural approach (-avoidance) tendency, ethnocentrism (reaction to different customs/ values/ behaviors). However, the decreased score after the program in the interest in international vocations, interest in foreign affairs, having things to communicate (willingness to communicate to the world) components was shown.

The results of the Program Expectations Questionnaire before the program and the Student Evaluations Questionnaire after the program are shown in Table 4. Overall, almost all scores were high evaluation scores. The scores of scientific learning skills and academic knowledge and motivation increased after the program; on the other hand, the score of group interaction decreased. Based on the score of the learning value and assignments, students gained a high learning value from the program contents. In the program organization, participants gave a high score to the program materials and lecturers; however, they wanted more internet and information and communication technology (ICT) support. In addition, the participants gave a high score to the program satisfaction, and wanted to join a similar program in the future.

Focus Group Interviews

The result of analyzing the data by the RTA is shown in Table 5. There are four themes: reason/motivation for participation in the program, program contents/evaluation, international attitude, and self-growing awareness.

The theme of reason/motivation for participation in the program shows that the reasons for participating were interests in the abroad and the online style of the program, such as *"I want to interact with people abroad"* and *"Online style is easy to embrace."* The theme of program contents/evaluation includes four sub-themes: feeling/attitude, academic achievements, educational methods, and challenges during the program. The participants expressed the following: *"I was glad to join the program, and this was a great opportunity," "I have achieved self-set goals," "I was disappointed a bit because of fewer interactive opportunities with the partner university students compared to what I expected"* as feeling/attitude. The participants also mentioned their achievements in acquiring academic learning skills and gaining OT professional knowledge in the sub-theme of academic achievements. For the educational methods, the preferred style was different depending on the students, and they expressed those merits and disadvantages as well. For example, *"Active learning and interactive group work is ideal in an exchange program," "In-person program would be more effective, and I want to visit on-site settings abroad," "Online is good to save time and cost, and make one feel free to join."* On the other hand, they felt it was challenging to join the program because of keeping a balance between the regular semester schedule, limited communication ways online, and English proficiency.

The theme of international attitude includes the participants' interactive experiences and working/ studying abroad. The participants have experienced communication with people abroad and understood other cultures. In addition, some students have hoped to study or work abroad in the future, while others preferred working domestically. Furthermore, through the program, the participants were aware of self-growing. The theme of self-growing awareness had three sub-themes: academic learning skills, increase in self-confidence and change of self-recognition. The participants felt self-growing in the academic learning skills, for example, *"Experience of preparing presentations would be useful for future learning"* and *"Regardless the level of proficiency in English, the English presentation assignments made*

me grow.” Moreover, the students increased their self-confidence, which they expressed by saying, “Completing assignments gave me self-confidence.” In addition, self-recognition and their own global perspective were changed through the program as they experienced getting to know each country’s background and culture. For instance, “I thought

that the oversee country was different from my country, but actually, I can learn things from other countries, even though there are some differences.” By getting to know the OT professionals in various areas of other countries, some recognized the new perspective of OT. “I learned OT deeply in not only the pediatric areas or treatment methods.”

Table 3. Results of the International Attitude Questionnaire

Questions	6 Linkert scale	Before program Mean ± SD	After program Mean ± SD
Intercultural approach (-avoidance) tendency	Strong disagree (1) ~ Strong agree (6)	5.5 ± 1.02	5.6 ± 0.66
I want to make friends with international students studying or people from abroad in Japan/Indonesia.			
I would talk to an international student or people from abroad if there was one at school.			
I would not mind sharing an apartment or room with an international student.			
I want to participate in a volunteer activity to help people from abroad living in the surrounding community.			
I would help a person from abroad who is in trouble communicating in a restaurant or at a station.			
Interest in international vocations		5.6 ± 0.76	5.3 ± 1.01
I want to work in a foreign country.			
I'm interested in an international career.			
Ethnocentrism (Reaction to different customs/ values/ behaviors)		5.5 ± 0.76	5.7 ± 0.47
I think that working together with people having different cultures and values is enjoyable.			
Interest in foreign affairs		4.6 ± 1.50	4.4 ± 1.67
I have often read and watched news about foreign countries.			
I often talk about situations and events in foreign countries with my family and/or friends.			
I have a strong interest in international affairs.			
Having things to communicate (Willingness to communicate to the world)		4.6 ± 1.42	4.2 ± 1.62
I have thoughts that I want to share with people from other parts of the world.			
I have opinions about international issues and events.			
I have a lot of things to talk about with friends in foreign countries.			
Interests in foreign culture		5.0 ± 1.53	5.0 ± 1.53
I am interested in the culture of foreign countries, such as music, fashion, and movies.			
International Attitude total score (90-point scale)		76.5 ± 19.93	75.2 ± 12.93

Table 4. Results of Expectation Questionnaire & Student Evaluation Questionnaire

Program Expectation Questionnaire (Before program)	Student Evaluation Questionnaire (After program)	5 Linkert scale	Before program Mean ± SD	After program Mean ± SD
Learning Value				
I feel I find the program intellectually challenging and stimulating.	I have found the program intellectually challenging and stimulating.		4.5 ± 0.50	4.5 ± 0.50
---	I have learned something that I consider valuable.		---	4.7 ± 0.47
I feel that my interest in the subject increase as a consequence of this program.	My interest in the subject has increased as a consequence of this program.		4.5 ± 0.50	4.2 ± 0.90
---	I have learned and understood the subject materials of this program.		---	4.0 ± 1.00
Program organization				
---	The lectures by lecturers were very clear.	Strongly disagree (1) ~ Strongly agree (5)	---	4.7 ± 0.47
---	The program materials were well prepared and carefully explained.		---	4.8 ± 0.37
I feel I learn an interesting subject thoroughly on my own pace through the program.	I learned interesting subjects thoroughly on my own pace through the program.		4.3 ± 0.47	4.5 ± 0.50
---	The support by the lecturers was sufficient during the program.		---	4.5 ± 0.76
---	The internet environment, and the support for devices and applications were sufficient during the program.		---	3.8 ± 1.21
Scientific learning skills				
I feel I can learn the collecting and searching information skills.	I learned collecting and searching information skills.		3.8 ± 0.69	4.5 ± 0.50
I feel I can learn the presentation and discussion skills.	I learned the presentation and discussion skills.		4.0 ± 0.58	4.3 ± 0.37
I feel that preparation for the presentation assignment seems to be a good training for me.	Preparation for presentation assignment was good training for me.		4.2 ± 0.69	4.8±0.37
Academic knowledge and motivation				
I feel I can gain knowledge about the OT field further.	I gained knowledge about the OT field sufficiently.		4.0 ± 0.00	4.5 ± 0.50
I feel I get interest in academic learning.	I got interest in academic learning.		4.2 ± 0.69	4.3 ± 0.75
I feel that my knowledge about the academics may change.	My knowledge about the academics has changed.		4.3 ± 0.47	4.0 ± 0.82

Program Expectation Questionnaire (Before program)	Student Evaluation Questionnaire (After program)	5 Linkert scale	Before program Mean ± SD	After program Mean ± SD
Group Interaction				
I feel I can understand my friends' thoughts in Japan/Indonesia.	I understood my friends' thoughts in Japan/Indonesia.		4.5 ± 0.50	4.0 ± 1.00
I feel I can communicate with the OT students and OT lecturers from Japan/Indonesia.	I communicated with the OT students and OT lecturers from Japan.		4.5 ± 0.50	4.2 ± 1.07
I feel that we can learn from each other.	I learned from interacting with others.		4.5±0.50	4.2±1.07
I feel I cultivate an international perspective through the student exchange programs.	I cultivated an international perspective through the student exchange programs.		4.7±0.47	4.5±0.50
---	The atmosphere was good to share my ideas and thoughts in group discussions.		---	4.2±0.90
Assignments				
---	The required read papers were valuable.		---	4.5±0.76
---	The required assignments contributed to the appreciation and understanding of the OT in the domestic and international environments.		---	4.7±0.47
Workload/Difficulty				
---	How was the program's difficulty?		---	3.0±0.82
---	How was the assignments' workload?	Too easy (1) ~ Too difficult (5) Too light (1)	---	3.5±0.50
---	How was the program's pace?	~ Too heavy (5) Too slow (1) ~ Too fast (5)	---	2.3±0.75
I feel that the level of program content is suitable to me.	Overall, from Q23–25, the level of the program content was suitable for me.		4.3±0.47	4.5±0.76
Satisfaction/attitude				
---	Do you want to join a similar program if available the next time?		---	4.8±0.37
---	The dates and time schedule were reasonably good.	Strongly disagree (1) ~ Strongly agree (5)	---	4.2±0.90
---	I joined the program actively		---	4.3±0.47
I expect this program.	The program met my expectations		4.3±1.49	4.0±1.15

Based on the interviews, on the whole, the participants were satisfied with the program content and the opportunity to interact with lecturers and

students from abroad, even though some expressed poor confidence in their English proficiency and difficulties dealing with the overload of assignments.

In addition, the TMU students wanted to have more opportunities for interactive communication with the partner students academically and socially, and lectures from Indonesia. On the other hand, the UI students wanted to join an in-person program at their next opportunity, and the lecture program styles related to OT interventions were preferred, even though they employed active learning such as group work and presentations.

In this program, the educational goals were to cultivate an international point of view in terms of understanding different values, to understand OT professionals through lectures and group discussions, and to learn basic scientific study skills. In addition, the program was created based on the instructional model; therefore, the content was stimulating and able to increase students' motivation. The results showed that the participating

Table 5. Reflective Thematic Analysis of Students' Experience and Reflection

Themes	Sub-themes	Categories
Reasons/Motivation for program participation	Interest in abroad	Hope to study abroad Interaction with people abroad Opportunity to try using English
	Program contents	Online style is easy to join Interest in other countries' OT
Program contents/evaluation	Feeling/Attitude	Satisfaction/disappointment with the program content Enjoyable/Valuable experience
	Academic achievements	Improvement in communication, presentation, and research skills Gaining OT professional knowledge
	Educational methods	Preferable instructional approach (lecture, group activity, presentation etc.) Communication style and its advantages and disadvantages (face-to-face, online) Preferable content topics (medical system, OT intervention, social culture)
International attitude	Challenges during the program	Interactive communication with partner university students Time management and balance with the regular semester schedule Heavy assignment load English proficiency
	Interactive experience	Communication with people abroad Understanding other country/culture
	Working/Studying abroad	Hope to work/study abroad in the future Prefer to work domestically
	Self-growing awareness	Academic learning skills
Self-growing awareness	Increase in self-confidence	Developing self-confidence Motivation of learning From the completion of joining the program From developing academic knowledge and skills
	Changes in self-recognition	Change in global perspective Change in OT identity

students had high expectations of the program contents before the program and were satisfied with them after the program. On the other hand, it was revealed from interview data that keeping the balance between the regular semester schedule and the program was challenging for some students. One of the advantages of online programs is that students can simultaneously get the experience of international exchange and develop their knowledge based on both domestic and international knowledge,⁹ however, this advantage could lead to heavy workloads. In addition, time zone differences could make time management difficult.²⁴ Therefore, careful planning and preparation of the schedule and time management are key to the success of online international exchange programs.

On the other hand, the students' international attitudes had no significant influence from the results of the questionnaires before and after the program, even though the scores of the questionnaires were high, which meant that the students had positive international mindedness. However, from the interview data, they expressed that the program affected their international perspective. The participating students were willing to join the program, so they were thought to have a high potential to show some international orientation even before the program's experience; therefore, the score was high and did not show a change. Furthermore, the questionnaire, which examined international attitudes, was more focused on international affairs with a broad context beyond the OT professional area, the learning process and contexts, so the change in attitudes might not be reflected in the score. Based on the qualitative data, students changed their attitude toward other countries and cultures, even though that change may not have immediately led to concrete actions of international interaction. The change in the international perspective may be affected by multiple experiences of similar programs and exert influence long after the program.⁶ Therefore, it could be suggested that the program that promotes internationalization would be a short program that provides multiple opportunities or a long program, that lasts several months to years. Regular online sessions lasting a long time may be useful in

cultivating students' international-mindedness, and such a program style may reflect the influence of exchange programs and prove effective.

In the interactive program, communicating with each other in an online environment could be one of the challenges. Therefore, not only video conference meetings but also other communication tools should be introduced to promote interactive communication. Even in virtual environments, students experienced communication with people abroad through this program and had the opportunity to understand other cultures through group discussions during the program. However, the group interaction with partner university students was not achieved for some students based on their expectations. The improvement of intercultural competency was especially limited in the online environment.²⁵ Furthermore, the definition of cultural competency varies depending on the country.²⁶ Online programs are conducted in domestic environments, even though they give the opportunity to communicate with people from other countries in different cultural contexts. Their location may influence their perspective more easily than in sharing the same space, which is visiting and participating in a program in one country together. Therefore, the students' expected interactive communication may be different depending on the students' background. The TMU students preferred the social exchange with the UI students more, and the UI students seemed to prefer the academic lectures in this program. Hence, not only the communication tools but also the participants' cultural background may be considered when designing interactive communication to be effective. It was reported that in professional education research, such as the health medical professional area, the cultural exchange program or introduction each other session was introduced in the first session of the program.^{9,10} In our program content, the ice-breaking time was set, but it might have been a short time to get to know each other and not enough promotion. Even though the off-class communication was facilitated by social networking services, online platform service and other digital application tools, deep communication might not have been promoted as some students expected

due to the duration of the program being relatively short.^{10,11} Additionally, effective communication and coordination between the program organizers, instructors, and participants are also crucial in online international exchange programs.¹² The use of technology and digital platforms can facilitate communication and collaboration, but it is important to ensure that everyone is familiar with the tools and processes used by all participants to promote a positive and productive learning environment.²⁷

Even in the virtual environment, students were able to engage in academic learning and gain professional knowledge and skills. In addition, it was revealed that improvements in academic learning skills lead to students' self-confidence and learning motivation. The program was created according to the students' academic learning level, and lectures and most assignments were suited to the students' needs. This was one of the meaningful and important points of teaching students online. As for the program styles, the students accepted various learning styles, such as lectures and group work. Online distance learning is not a new style and has been successful,²⁸ therefore, the online content for the OT area program could also be developed with various educational styles. In addition, students wanted to experience on-site programs and see the OT clinical settings, even though online was an easy style to participate in. Virtual exchange education could play an influential role as a learning style; therefore, the virtual content could be developed using information technology to learn on-site clinical situations and adapt new ideas of OT from other cultural contexts. On the other hand, language barriers can be a challenge in promoting interactive communication in an online international exchange program as well. Students may face difficulties in expressing their thoughts and ideas in a language that is not their native language; at the same time, this challenge may give them more motivation to learn English.^{10,29}

Overall, a virtual exchange program could be effective and feasible for OT education and suggested that the participants could improve their academic skills and get international experience. It was said that establishing the community of learning and international interaction evoked self-reflection on

the learning process, growth, and development as current/future healthcare professionals.⁴ In our study, the participants expressed similar views based on the program. As an implication for developing a virtual international exchange program, the program content should be well organized and based on an instructional model which would take the students' academic levels and interests into consideration. In addition, the schedule arrangement and time management should be carefully considered, as well as the relevancy of the content to the participants' needs; otherwise, these factors could become an issue.⁴ In addition to academic learning skills and professional knowledge, online international exchange programs can also provide opportunities for students to help them develop important transferable skills, such as communication, collaboration, and cultural awareness. Moreover, online learning can be more accessible and flexible for students who face challenges attending on-site programs due to reasons such as financial constraints or personal responsibilities.¹² On the other hand, for the international context, the difference in intercultural competencies should be considered as well to promote interactive communication. The OT implementation is influenced by the background of the national medical system and cultural influences; therefore, to improve virtual OT education, program goal setting is important, and the contents which consider the national system and culture-related OT should be employed when establishing the programs. According to educational goals considering cultural influence, the appropriate type of activities and communication tools would be practically generated,⁴ and then it can provide a unique opportunity for students to develop their intercultural competence and gain exposure to different healthcare systems and practices.³⁰ This report would improve occupational therapy education in the online international program area because the virtual exchange program practice to foster global competence in the medical area was still a small number.^{6,8,10} Virtual exchange programs could be feasible to broaden their perspectives and increase their ability to provide culturally sensitive care to diverse patient populations. In addition, virtual exchange programs can effectively facilitate

global collaboration among OT practitioners, leading to knowledge sharing and innovation in the field.

There were limitations to this study as the number of data was small, and the questionnaires to measure international attitudes and learning expectations had a scare ceiling effect. Moreover, we only examined the short-term influence. For future research, long-term influence and program feedback, which would consider the students' background to research the effectiveness of virtual international programs, should be conducted.

CONCLUSIONS

Virtual international exchange programs have been developed widely for the last several years; however, the effectiveness of the programs from students' reflection before and after the program has not yet been examined well enough, and sustainable programs as a new educational style have not been suggested. This study was conducted to examine the feasibility of virtual international exchange programs through students' evaluations and suggest an effective virtual program to promote internationalization in healthcare, including OT. This study also demonstrated the feasibility and potential benefits of virtual international exchange programs for OT education. From the result of this study, students were able to gain OT professional knowledge and cultivate academic learning skills in a virtual program through virtual environments. The program has to be well organized and consider the students' academic learning skills and their interests to create a successful program. Only that type of program would incite the international minded and self-growing. When establishing the program, a well-managed schedule arrangement is essential, and attention to cultural differences should be paid, which may influence the processes due to being conducted in domestic conditions. With consideration of cultural competency and setting the opportunities to know each other participants as peers, establishing a community to communicate and collaborate with other countries and cultures in an online environment contributes to cultivating students' academic learning skills and gaining OT professional knowledge of different cultural contexts.

RECOMMENDATIONS

A well-managed schedule arrangement and preparation are essential, and attention to cultural differences should be paid to develop an effective virtual international program. The virtual program has unique conditions being conducted in domestic conditions, even though it is an international exchange program. The use of technology and digital platforms can facilitate communication and collaboration with ensuring that everyone is familiar with the tools and processes used. Learning the cultural background of each country would promote meaningful programs for participants with interactive communication. In addition, long-lasting programs with regular online sessions and multilateral exchange programs and the influence of those will be revealed in future research.

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COMPETING INTEREST

The authors declare that there are no competing interests related to the study.

AUTHORS' CONTRIBUTION

Natsuka Suyama – developing research proposal, collecting data, data analysis, and publication manuscript.

Kaoru Inoue – developing research proposal, collecting data, data analysis, and writing manuscript.

Muhammad Hidayat Sahid – developing research proposal, collecting data, and writing manuscript.

Chihiro Sasaki – collecting data and data analysis.

Rieko Shioji – developing research proposal and publication manuscript.

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