

# Reducing Study Abroad Pre-Departure Anxiety through Smartphone and VR-Based Tasks

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## 1. Introduction and Background to the Study

This research project sought to investigate novel and more effective ways of helping students to prepare for studying abroad. As many who have gone overseas themselves or aided students in beginning a study abroad course might have experienced, this is an endeavor that can prove costly, complicated to plan, and rife with stress-inducing concerns and worries. But exactly what concerns do Japanese students have, and how are they preparing themselves for studying abroad? In addition, what are the best methods for trying to reduce some of this pre-departure anxiety?

Anxiety is the most commonly diagnosed mental health disorder across the USA and Europe (Wiederhold & Bouchard, 2014). If this mental disorder is so prevalent across the West, educators in Japan may safely assume its presence within many classrooms at the university level. Since this is a concept crucial to this study, it is important to define what anxiety is and to explore some of its effects. Anxiety is “the subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system” (Horwitz, et al., 1986, p. 125). This feeling can be especially pronounced when thinking ahead to difficult things on the horizon, such as moving to a new environment or beginning a course of study. This is evident in the definition by Kalisch, et al. (2005), that anxiety is “a psychological, physiological, and behavioral response to anticipation of an aversive event” (p. 874). Studying abroad seems to fit well into this concept of “aversive events” that can fill us with worry and contain many unknowns. And with the long period of time from contemplation of a study abroad course to finally heading to the new country, there are plenty of chances for these worries and anxious feelings to grow and impact the mental health of students.

Although the health risks associated with anxiety are complex and sometimes unclear, other mental health issues such as depression can significantly impact mortality, and have been equated to smoking in terms of overall impact on well-being (Mykletun, et al., 2009). The relationship between depression and anxiety has been well-established, as researchers such as Lovibond and Lovibond (1995) have demonstrated through the use of instruments like the Beck Anxiety Inventory and Beck Depression Inventory that the two often display a positive correlation with each other. In addition, stress (a common effect of major life changes such as a long-term stay overseas) can cause “chronic arousal and impaired function” of mental and emotional regulation (Lovibond & Lovibond, 1995, p. 335), further complicating the process of preparing to study abroad.

Beyond health alone, pre-departure anxiety has been shown to have a negative impact on the chances for success within a study abroad program, and without some kind of help in overcoming these difficulties, students

are unlikely to get the most of their time overseas (Riley & Shackelford, 2009). Although many study abroad preparation programs focus on language training, it is important to explore what other sources of anxiety these students are facing. In a previous study (Brunotte & Hastings, 2019), Chris Hastings (Department of British and American Studies, Aichi Prefectural University) and I proposed that some of this anxiety could be stemming from the unknowns of the study abroad environment. What will the campus look like? How will I get from my study abroad house to school? Where will I go shopping or see a movie? In this prior study, our team explored how navigational and environmentally-related worries such as these may be targeted with smartphone-based virtual reality and freely-available applications such as Google Maps and Google Street View. The encouraging results of this previous study and the positive comments we received from participants regarding the use of virtual reality and their personal anxiety reduction demonstrated that further research was worth exploring.

This current study aimed to move beyond this previous work, to more fully explore the nature of Japanese students' pre-departure anxiety, the causes of these concerns, how students were preparing to study abroad, and whether smartphone and VR-based activities could effectively combat these anxiety-inducing issues. Many of the activities and methodology of this study were based on this prior work (Brunotte & Hastings, 2019), but the goal was to improve upon the initial approach and gain deeper insight into how the students felt about this type of program and about studying abroad in general.

## **2. Research Questions**

- R1: What is the nature of Japanese university students' study abroad anxiety before departure?
- R2: How useful will students find smartphone and VR-based pre-departure tasks?
- R3: How much will students' anxiety related to study abroad be reduced through these tasks?

### 3. Methods

#### 3.1 Research Schedule

This research program was conducted during the Fall 2018 semester at Aichi Prefectural University, Nagakute Campus. Participants were arranged into research session groups based on similar countries of study and by experimental group. An attempt was made to balance the two larger groupings (Control, Experimental) by gender, area of study, and language proficiency scores. Group members for individual sessions (ranging from one to eight participants) often varied from session to session due to students' schedules, as times were arranged to match participants' free times. Each participant met for six individual sessions of one hour each and were compensated with 900 yen per session based on the APU guidelines for student workers. Funding for this compensation was provided by the APU President's Grant.

#### 3.2 Participants

40 research participants were recruited from among the Aichi Prefectural University student population. Recruitment was done through posters placed around the APU Nagakute Campus, and participants were chosen from a pool of over 50 applicants based on students' availability and courses of study. Students not selected for the program were placed on a waiting list. During the program one participant quit, and was replaced with a student from the waiting list group.

Of the 40 total participants, 33 (83%) were 1<sup>st</sup>-year students, and the remaining 7 (17%) were in their 2<sup>nd</sup> year of study. The participants skewed heavily female (as is common for foreign studies programs in Japan), with 29 (73%) female and 11 (27%) male. Participants were all majoring in a foreign language, with specific courses of study seen in Table 1 below.

*Table 1: Participant courses of study*

Course of Study	Number of Participants
British and American Studies	22 (55%)
French	9 (23%)
Spanish	6 (15%)
German	2 (5%)
Chinese	1 (2%)

Participants were also asked to answer survey questions related to their experience traveling and living overseas. These questions were presented in both English and Japanese. Responses for these items can be seen in Table 2 below.

*Table 2: Participant overseas travel and study abroad experience*

	Yes	No
Have you ever travelled overseas? (海外に行ったことがありますか?)	23 (58%)	17 (42%)
Have you travelled overseas to study abroad? (留学で海外に行ったことがありますか?)	11 (27%)	29 (73%)
Have you lived overseas? (海外に住んだことがありますか?)	5 (12%)	35 (88%)

Although a majority of participants (58%) had experience traveling overseas, only around a quarter (27%) had been involved in a study abroad program at some point, with a majority of those (8 out of 11) having spent one month or less in such a program. An even smaller overall proportion (12%) had lived overseas, but a large majority of those (4 out of 5) had spent more than one year in the foreign country. This variety in study abroad and foreign travel experience was helpful during student focus groups conducted in these research sessions, as those with overseas experience were able to speak about those memories with others without such experience and offer guidance.

### 3.3 Research Groups

For the purposes of this study, the 40 participants were divided into two

groups of 20, with half being placed into the experimental group (which used virtual reality-based activities) referred to as “Group B”, and the other half into the control group (which used only smartphone-based activities) referred to as “Group A”. The rationale for creating these two groups was to investigate whether virtual reality holds actual merits for the purposes of study abroad preparation. However, it was not assumed that the outcome would be an either/or scenario—it was hypothesized that both types of preparation programs (using only smartphones versus having a VR component) could be useful or appropriate in different settings. Dividing participants in this manner, though, would allow for the separation of feedback and comments related to these two approaches.

These two groups were divided in such a way to strive for a balance between target languages, gender, and language ability, although with the small participant number (n=40) some slight imbalances existed.

### **3.4 Data Collection**

A mixed methods approach to data collection was used over the course of this study. Quantitative data were collected in the form of survey responses, with the Foreign Language Classroom Anxiety Scale (Horwitz et al., 1986) used to assess the language anxiety of the participants and possible changes upon completion of this program. The FLCAS is a widely used instrument created to measure foreign language learning anxiety connected to communication, feedback from peers and instructors, and testing fears using a 5-point Likert scale. Permission for use of this instrument was obtained from Dr. Horwitz prior to this study’s implementation. An additional survey was used to obtain quantitative data related to students overseas experience and smartphone model use. These data, as well as the FLCAS responses, were obtained using electronic surveys via the participants’ smartphones.

Qualitative data were thought to be of particular importance to this study, as the feelings and impressions of the students before and after the program would help explain the types of anxiety students faced and how effective the preparation activities were. These responses were obtained during one-on-one interview sessions conducted by myself and Mr. Hastings in the first

and last sessions, as well as from focus groups held after each of the activity sessions. These data were collected using audio recorders and were later transcribed using both contracted help as well as by Mr. Hastings and I. Due to the large amount of audio data collected, this transcription process is still in progress, but a representative sample of comments from each of the research sessions was obtained for the purposes of this paper.

### 3.5 Ethical Considerations and Privacy Protection

Before this study was implemented or recruitment of participants began, all materials and plans were submitted to the Aichi Prefectural University Ethics Review Board and permission was obtained for their implementation. The contents of this study were explained to participants both verbally and in writing, and signed consent forms were obtained from participants (and from guardians in the case of minors) before any activities began.

Participants' identities and data were protected throughout this program as well as after its completion. Each participant was assigned a number which was used during audio recordings, on any written notes or forms, and in all electronic surveys. All digital data from this study is housed in a secure disc drive, and all paper documents have been locked in a secure cabinet.

### 3.6 Research Sessions and Activities

The six research sessions the participants joined were divided as follows:

*Table 3: Study sessions schedule and contents*

Session 1	Opening interviews, Foreign Language Classroom Anxiety Scale implementation
Session 2	Campus Walk activity, Additional Information Survey implementation
Session 3	Campus Walk (continued), Points of Interest activity
Session 4	Homestay Neighborhood Walk activity
Session 5	Guide a Friend activity
Session 6	Closing interviews, Foreign Language Classroom Anxiety Scale implementation

### ***Session 1: Opening Interviews***

After signed consent forms had been collected and program explanation materials had been distributed and discussed with the participants in the first session, the Foreign Language Classroom Anxiety Scale survey was administered. Following this, individual interviews were conducted by myself and Mr. Hastings. The purpose of these one-on-one initial interviews was to gather data on participants' feelings toward study abroad, learn about their preparation for traveling abroad, and explore the sources of their possible anxiety related to language use and navigation in a new environment. The following questions were asked to participants in both English and Japanese (only English included here):

1. In general, how anxious are you about studying abroad?
2. What are some concerns you have about studying abroad?
3. How anxious are you about speaking the native language of the country you will be studying in?
4. How anxious are you about getting lost when you travel around the new campus or city?
5. How anxious are you about asking for and following directions in [*target language*]?
6. What are you doing to prepare for your study abroad?

### ***Session 2: Campus Walk***

The first activity session (Session 2) was designed to help participants start exploring the foreign campus environment of the study abroad location. The goal was to teach the students how to virtually navigate these campuses using the smartphone application Google Street View. Explanation materials featuring screen shots of the app and how to operate it were provided to students, and they were led through their first use of Street View using verbal explanations along with visual demonstrations using a smartphone connected to the classroom projector.

Google Street View features panoramic (360-degree) photos taken from street level around the world, including on many university campuses. These photos were collected by Google, as well as from users who have uploaded pictures. Available photos sometimes feature views from inside buildings

(e.g. university classrooms, gift shops, etc.), which were of particular help to this study. Using this application, participants entered their overseas university name into the search bar, selected a starting location from the map, and then began a virtual “walk” through the study abroad campus. Control group participants explored the campus using navigational arrows on the smartphone screen, and experimental group participants placed their smartphones into VR headsets, which allowed them to “walk” around using a button on the side of the headset. When using the app in this way, Google Street View smoothly transitions between different photo spheres, creating the illusion of walking through a location.

Upon task completion, participants were asked to speak in a focus-group format, with the researcher posing questions the session members would discuss among themselves. Guidance and clarifying statements were provided if needed. The follow focus group questions were used for Session 2:

1. What was your image of the place you visited before and after using Google Street View today? Why did you have that image? Did anything change?
2. What are your anxieties regarding studying abroad?
3. What did you think about today’s activities?

### ***Session 3: Campus Walk (continued), Points of Interest***

In Session 3, participants were asked to again try the Campus Walk activity. Session 2 required time to familiarize participants to the smartphone (Group A) or smartphone and VR (Group B) technology, so this session was a chance for them to further explore the study abroad campus and to reinforce the procedures of using Google Street View.

After finishing this second iteration of Campus Walk, participants were trained in the use of Google Maps on their smartphones using verbal, visual, and written explanations. The goals of this task were to teach the use of Google Maps to find points of interest around the study abroad campus, expanding the navigational environment beyond the university and allowing participants to find useful or interesting locations near the school. The written guide explained how to use the “Explore Nearby” function in the app and

search through location categories (e.g. supermarkets, cafes, movie theaters, etc.).

After this training, students were asked to choose a location near the foreign university that interested them and collect information (address, business hours, etc.) on that spot using Google Maps. Upon completion, participants were asked to explore the area near the location of interest using Google Street View (smartphone version for Control, VR version for Experimental groups). Once finished, the following focus group question was discussed:

1. What did you think about today's activities?

#### ***Session 4: Homestay Neighborhood Walk***

One overall goal of these activity sessions was to slowly expand the areas of virtual exploration from the campus, to the surrounding areas, and then finally to the neighborhoods near these foreign universities. The rationale was that students could gain practical navigational knowledge for some of the most important locations first (the campus where they will study, businesses for use in their daily lives, etc.), and then begin exploring the places where people in these foreign cities live and where they themselves may participate in a homestay.

In this activity, participants were asked to imagine doing a homestay in a neighborhood close to campus, and to find a house and address of a location to bring for use in this session beforehand. This address was entered into Google Street View, and participants explored both the exterior of this house as well as the surrounding neighborhood. Control group members did this through finger movement on their smartphone screens, while the Experimental group explored using the VR headsets. Participants were asked to imagine themselves walking on these streets as a person living in this neighborhood during a homestay.

During the Neighborhood Walk activity, participants were asked to write reflections on the following questions:

1. What did your new neighborhood and house look like?
2. How is it different to the neighborhood and house where you live now?
3. While walking around the new neighborhood and house, how did you

feel? Why?

4. After walking around your new neighborhood and house, what did you think about it?
5. In your new neighborhood, what kind of places do you want to find and where do you imagine you will often go? Why?

Following these activities, participants discussed the session in a focus group format using the following question:

1. What did you think about today's activities?

### ***Session 5: Guide a Friend***

The final activity session attempted to combine many of the features of previous sessions: use of Google Street View and Google Maps, use of the real environments on and surrounding the foreign campuses, and some of the guidance language and descriptions used in previous tasks. First, the participants were given verbal, visual and written guidance in how to look for directions using Google Maps and how to search for information regarding public transportation near the study abroad campus (e.g. local bus routes). The starting point for this activity was the target student's study abroad campus, and the destination was the homestay house address from Session 4.

For this task, students were placed in pairs or small groups. One or more students' goal was to guide another individual student from his/her study abroad campus to the homestay house using a combination of Google Street View and Google Maps. Participants negotiated before starting the task on what language would be used, whether English or the target country language. Participants were also coached in some guiding and questioning phrases in English that may help with the task. The person/people giving directions inputted the target student's study abroad campus into Google Maps, and then set the target student's homestay family address as the destination, looking up the resulting best route. The goal was to guide the target student from the campus to the nearest bus stop that would take them toward that destination neighborhood.

The participant listening to directions used Google Street View to virtually walk and follow the directions given by the other members, either using the smartphone version (Control group) or the VR version (Experimental group).

These teams were given a set time (10–15 minutes) to get as far as possible, using clarifying questions and negotiation for meaning to solve problems as they arose. Once the time elapsed, roles were switched and the task began again.

Upon completion, the following focus group question was discussed:

1. What did you think about today's activities?

### ***Session 6: Closing Interviews***

In the final session, students were thanked for their participation in the program, and once again answered the Foreign Language Classroom Anxiety Scale survey questions. After this, closing interviews were conducted by Chris Hastings and myself. The goal of these final interviews was to explore how students' feelings and levels of anxiety might have changed over the program, how students felt about studying abroad at this point, and what their impressions and opinions of the program activities might be. The following interview items were posed in English and Japanese:

1. In general, how anxious are you about studying abroad after completing this program?
2. After completing this program, what are some concerns you have about studying abroad?
3. How anxious are you about speaking the native language in the country you will be studying in after completing this program?
4. After completing this program, how anxious are you about getting lost when you travel around your new campus or city?
5. How anxious are you about asking for and following directions in English after completing this program?
6. What did you think about this program overall?

## **4. Results**

The results described in this section are preliminary and constitute a small but representative sample of the overall findings. Due to time constraints and the large amount of audio data to transcribe, useful examples from each experimental group and each activity session were chosen for analysis here.

Further papers will continue to explore this data and its larger implications.

#### 4.1 Foreign Language Classroom Anxiety Scale (FLCAS)

Exploring foreign language use and its related anxiety were one of this program’s research aims, as using and improving proficiency in a foreign language are often the central goals of studying abroad. Language use in this program differed slightly from planning, in that many students studying foreign languages that were not English elected to use English as the medium of program tasks. Many participants were in their first year of studying a new language, and often expressed a lack of confidence in using that language (e.g. Spanish, Chinese) during a session activity. Therefore, the languages of this program’s tasks were most often English or Japanese, used both during activities and within the focus group discussions and individual interviews.

The following are the results for both the Session 1 and Session 6 Foreign Language Classroom Anxiety Scale (FLCAS). The FLCAS uses a 5-point Likert scale, with a total range of 33 (lowest anxiety) to 165 (highest anxiety). Survey items ask about anxiety created by communication, testing, and feedback-related situations in the foreign language classroom. Averages for each group are written as a total FLCAS score, while results for each anxiety level are represented as numbers of participants in each category (n=20 for each group).

*Table 4: FLCAS scores and ranges from Session 1*

	<b>Group A (Control)</b> <i>n=20</i>	<b>Group B (Experimental)</b> <i>n=20</i>
Average total FLCAS score (33–165)	102.65	96
Low anxiety range (33–75)	2 (10%)	4 (20%)
Medium anxiety range (76–119)	15 (75%)	12 (60%)
High anxiety range (120–165)	3 (15%)	4 (20%)

Table 5: FLCAS scores and ranges from Session 6 &amp; Change from Session 1 to Session 6

	<b>Group A (Control)</b>	<b>Group A Change</b>	<b>Group B (Experimental)</b>	<b>Group B Change</b>
Average total FLCAS score (33–165)	98	−4.65	89.95	−6.05
Low anxiety range (33–75)	2 (10%)	0	4 (20%)	0
Medium anxiety range (76–119)	16 (80%)	+1 (+5%)	15 (75%)	+3 (+15%)
High anxiety range (120–165)	2 (10%)	−1 (−5%)	1 (5%)	−3 (−15%)

An overall reduction in foreign language-related anxiety seems to have occurred in both the Control and Experimental groups, and both Group A and B experienced a transition of several students from the high to medium anxiety range. However, reduction in foreign language learning-related anxiety, although a goal of this study, was not the primary target of the session activities (which more often featured navigation-related learning experiences). Caveats related to this data will be explored in the Discussion section.

#### 4.2 Session 1 Opening Interviews

The following responses were transcribed from selected audio recordings taken from the Session 1 initial interviews. These samples represent some of the common sentiments reflected in many of the interviews transcribed thus far. Questions were presented in both English and Japanese, with participants answering in their preferred language. Japanese responses have been recorded here without translation. Each bullet point represents a comment from a different participant.

##### ***Question 1: In general, how anxious are you about studying abroad?***

- High
- Maybe a little bit. A little bit. Because there is no Japanese, so I have to use English every time. And also, if I go to the UK, there's, it should be

a long time, so I may be miss Japan.

- I'm so nervous to go there.... Maybe so high.

***Question 2: What are some concerns you have about studying abroad?***

- Communicate with the people because I think my English skill is very low.... Maybe I can't tell my opinion clearly.
- I will be afraid if the class is easy or not.
- Food ... I know only Japanese food.
- If I go to China to study.... Air is so bad. Environment.

***Question 3: How anxious are you about speaking the native language in the country you will be studying in?***

- 8 or 9 [out of 10]. I want to say something, but I don't have idea to say ... only easy grammar.
- There's a unique accent or native speaks in the UK, so I'm worried.
- High ... I don't speak well Chinese so ... I can't understand Chinese teacher.

***Question 4: How anxious are you about getting lost when you travel around your new campus or city?***

- Middle. Because I have smartphone, so if I get lost I can search. But if my phone's died, I'm very worried.
- 低い... low ... I am interested in new place. So new university ... enjoy in there.

***Question 5: How anxious are you about asking for and following directions in the language of your study abroad country?***

- High. I can't listen to the direction once. So, I have to listen again and again. I think it make the people nervous.
- It must be anxious. Some. Because even in Japan I will be anxious about that. I'm shy.

***Question 6: What are you doing to prepare for your study abroad?***

- お金がありませんから、そんな高いコースで行けないから、バイトを頑張らないといけないと思って。
- I will learn about the UK's culture and also I have to study English more to use iCotoba. And I will get information about ... useful expression on the internet or a book.

- Now I go to English conversation class, not college, about once a week.

#### 4.3 Session 2 (Campus Walk) Focus Group

Following the first activity session in which participants explored their study abroad campuses using Google Street View (Campus Walk), they then participated in a focus group in which questions about the activity were posed, and participants spoke to each other using English, Japanese or a mix of the two. The following responses are a representative sample of the session recordings transcribed so far. For question 2, an example response from a smartphone-only (Group A) participant and a virtual reality (Group B) participant are both included.

***Questions 1: What was your image of the place you visited before and after using Google Street View today?***

- I chose University Catholic de Lyon. Lyon is rural, 田舎 but my university is very cute and beautiful. ガラス張り。
- The buildings were a little bit older I thought but it was really, I liked that they had a lot of nature around it and it sounded very quiet and nice.
- I think French of street is very big, and traffic is- many? Busy traffic.

***Questions 2: What did you think of today's activities?***

- The picture is very useful for me. When I was high school student, I went to Australia as a exchange student. And then, I got information from 先輩、 senior student, only talking. So I can't image how big and how many student are there. But the picture give me some information without language. (Group A participant)
- When I use usual maps, I think I can't feel real feeling. For example, how about the city, and how about university, their atmospheres, and how to look like. I think it a little bit different, compared to usual map, so I thought I can feel smooth, real university building, so that's why I thought it is great. (Group B participant)

#### 4.4 Session 3 (Campus Walk part 2, Points of Interest) Focus Group

The following are sample responses transcribed from a selection of Session 3 focus group recordings. These session activities included a second

time with the Campus Walk task, as well as the Google Maps-based task in which students searched for points of interest around the foreign campus, researched information on a select location, and explored the spot in Google Street View. An example Group A (smartphone only) and Group B (virtual reality) participants' responses have been included.

***Question: What did you think about today's activities?***

- When I use usual maps, I think I can't feel real feeling. For example, how about the city, and how about university, their atmospheres, and how to look like. I think it a little bit different, compared to usual map, so I thought I can feel smooth, real university building, so that's why I thought it is great. *(Group A participant)*
- This activity is so useful and enjoyable.... By using the VR I imagined where I will go in China and how to live around the university.... But there were many places I couldn't go. *(Group B participant)*

#### **4.5 Session 4 (Homestay Walk) Focus Group**

Session 4 allowed students to explore neighborhoods near their study abroad campuses using the Google Street View application. The following responses are a sample from a representative Group A (smartphone only) and Group B (virtual reality) participant.

***Question: What did you think about today's activities?***

- This activity is useful for me because the homestay location is important for me. Because the lifestyle is changed depends on the location. My house is similar to my real house so I found I can be relax when I go there. *(Group A participant)*
- I think it is more comfortable and a more quiet place than I thought. For example, American TV or American happening video—it looks so noisy.... But as this has it, it's so quiet and looks so comfortable place, so I changed my mind. *(Group B participant)*

#### **4.6 Session 5 (Guide a Friend) Focus Group**

The final session activity asked participants to practice following and giving directions in a foreign language, most commonly English (as many

foreign studies majors of non-English language did not yet feel confident in their target language). This activity used a combination of Google Maps (for the students providing directions) and Google Street View (for the students virtually walking along the foreign streets). A representative sample from a Group A (smartphone only) and Group B (virtual reality) participant are included.

***Question: What did you think about today's activities?***

- To tell the truth, I couldn't reduce my anxiety because the New Castle was a very complicated city. I found that the road name is complicated, and very difficult to get there. So, I couldn't reduce my anxiety. (*Group A participant*)
- I think this activity gave me good anxiety, because before I started to do this activity I felt like I can do whatever I want to do. But after this activity, I should research the way I want to go from somewhere. (*Group B participant*)

#### **4.7 Session 6 Closing Interviews**

In the final session, participants were individually interviewed, exploring their perceptions and opinions regarding the program, their current feelings toward studying abroad, their concerns and anxieties regarding living and studying overseas, and more. Due to the large volume of interview audio yet to be transcribed, the following is a representative sample of responses. Unlike the Session 1 interview responses, multiple comments from selected individual participants are provided below. The group (A=Control, B=Experimental), intended study abroad country, and change in Foreign Language Classroom Anxiety Scale (FLCAS) total scores (from Session 1 to Session 6) are included.

***Group A participant, United Kingdom, FLCAS -35***

- It was definitely a good opportunity to think about traveling abroad for me. Yes, the main purpose of reducing anxiety—I think it is a good opportunity to achieve that. And I could also learn the details of traveling abroad, so I'm very glad to join this program.
- I still have anxiety [about speaking] because I don't know if the person

really understands me.

***Group B participant, France, FLCAS -22***

- My anxiety reduced because by talking with Josh or other friends, I have a little confidence. I got a little confidence.
- *[The VR]* is good, as if I'm in France.
- *[When I go to France]* I don't want to use the Google Map or other application ... I want to talk to French people.

***Group A participant, Spain, FLCAS score unchanged***

- About *[getting]* lost, I do not feel that anxious because I could know how to use Google Maps or Google Street View through this program. And it actually worked when I did the program things so, I think it's going to work actually in real.
- For following the right directions, I still feel worried because in the task my partner and I couldn't go the place in time. So I felt following directions is actually pretty difficult still.

***Group B participant, China, FLCAS score unchanged***

- Anxiety has decreased because by using VR I know environment surrounding the university and atmosphere and I knew how the university is clean so it important for me.
- But in China I have few spots I can walk *[within the VR setting of Google Street View]*
- now I worried about the skill ... the skill Chinese ... and the most worry is language skill.

***Group A participant, Australia, FLCAS +17***

- I still worry about study abroad. I use phone to do the session, but I'm not good at using the application. So, I don't come to familiar with the country to go in Australia. So maybe I want to more conversation to you or to Josh. But only use phone, but also talking maybe.
- This program, we can use Japanese. But maybe I go to Australia, I cannot using Japanese. So maybe I don't know what I should say.

***Group B participant, Canada, FLCAS +12***

- Through this program I could many opportunities to speak English. And *[anxiety is]* a little low. But I feel couldn't speak English comfortably,

so I want to speak more comfortably.

- VR [*was useful*]. I feel like I walk the street near the campus. It is become real, I can get reality of the campus life.

## 5. Discussion

Although the data collected in this study are still being transcribed and analyzed, there are already some inferences and conclusions that can be drawn from what has been revealed so far. The reduction in foreign language-related anxiety seen overall from before and after the study is encouraging (see Table 5), but several caveats exist that make it difficult to put considerable weight on this finding. The number of students at the highest anxiety levels within the FLCAS scoring system was reduced from seven participants to three—a positive outcome. However, language practice was not the central thrust of this study, so it may be difficult to claim a causal relationship between this anxiety reduction and the methods used in this research. In the closing interviews several participants expressed a desire for even more language practice within out program, hinting that the language component was not as robust as they would like. Furthermore, statistical analysis must be run to explore this change from Session 1 to 6, and whether significant differences between the Control and Experimental groups exist.

Of far more usefulness here at the onset of this program's data analysis is what has been found from the qualitative (interview and focus group) responses. The first research question asked what issues and concerns might be causing anxiety for study abroad students before departure. Many students expressed high or medium levels of anxiety at the onset of the program, referring to issues related to overseas classes (difficulty of course work, understanding instructors, etc.), daily life (having enough money, differing cuisines, and environmental worries related to pollution, etc.), and overall foreign language ability. When asked about concerns related to navigation and asking for directions, participants reported a mix of anxiety levels. Some seemed confident in their ability to use technology (e.g. Google Maps), but seemed more worried about asking for and following directions using a

foreign language, especially regarding listening comprehension. When asked about preparation for studying abroad, most participants referred to language training (using the iCotoba language study center at APU, self-study of the target language, etc.) and part-time work for the purposes of saving money for these programs. Few if any participants mentioned studying the foreign campus/city environments or exploring the areas where they might live, hinting that the gap predicted in this area (navigational training/exposure prior to departure) exists.

Once the session activities were underway, the participants provided rich feedback related to their impressions of the tasks and their perceived usefulness. The Campus Walk activity seemed a good jumping off point, as many comments refer to their excitement at seeing the real campuses and imagining student life. The Experimental group participants noted a particular sense of “realness” with the VR component, both in this activity and in Sessions 3 through 5, describing a sense of presence in these foreign locations. This effect was one of the goals of this program, in that anxiety reduction is predicted when this sense of presence occurs and students can realistically visualize their overseas lives. The Points of Interest and Homestay Walk activities were designed to help pique the interest of participants in regard to local businesses, appealing sightseeing or entertainment spots, and the homes of people in those towns. The effectiveness of these activities is reflected in the comments from these session focus groups, with participants describing the tasks as helping them go beyond simple maps (especially with the Google Street View component added in), and of having their expectations about the overseas neighborhoods changed, with one student noting that the town looked far quieter and calmer than he/she imagined.

Session 5’s Guide a Friend activity experienced some problems that could be accounted for in future studies. The information gap nature of this task made it difficult for the guiding students to know where the traveling student was located at a given moment, and they therefore had to rely on negotiation and clarifying questions to try to continue the activity. Because Google Maps does not always allow for detailed visual information about each spot along a route, participants often had trouble identifying the location that the

traveling student was describing. These problems, though, are similar to what people encounter when guiding a friend over the phone through an unknown location. Future programs could improve this activity by having guiding participants place Google Maps into satellite mode, providing more visual clues about the landscapes along a route.

Finally, changes in anxiety from before and after this program are worth exploring, as this reduction in pre-departure worry was the central goal of this research. Judging by the example closing interviews that have been transcribed, some participants felt that their overall anxiety toward study abroad was reduced, and indicated that some of the familiarity with the overseas locations gained through this program helped bring this about. Many students from the Experimental group indicated that the VR component was particularly useful, noting the realism and the new-found familiarity that the sense of presence in these locations provided. Control group (smartphone-only) participants mentioned similar sentiments, however, claiming that Google Street View, even when manipulated on a flat screen, gave a sense of presence that regular 2-D maps don't provide. This is an indication that both styles of pre-departure programs, VR-based and smartphone-based, may be beneficial, and could be chosen based on appropriateness or availability of these technologies in certain settings.

Despite these reductions in anxiety from the sample Session 6 closing interviews, other comments from these same participants indicate that gaps in effectiveness may exist in this program design. Although several responses mentioned the positive gains experienced through the chances to talk to myself, Mr. Hastings, and the other participants, others noted that the language practice component largely missing from this program would have benefited them. Several participants mentioned language-related anxieties that still exist after this program's completion, and that they wished more language practice could have occurred. This may indicate that a truly effective pre-departure study abroad preparation program would include both the navigation-based tasks described here, as well as a robust language study component that could help reduce some of the communication-related anxiety reported by participants. The restraints on this type of all-

encompassing approach (time, money, etc.) may mean that such an intensive and far-reaching preparation program would be quite difficult to implement, however.

## 6. Future Directions

Much work remains on the transcription and analysis of the data gathered from this study. From now, the hope is that the additional information provided by these data will help paint an even more complete picture of the anxiety of Japanese students prior to studying abroad and their feelings on the effectiveness of the activities described here. It is hoped that other instructors who work with students preparing for these programs will replicate this research and continue its development. And as new and richer smartphone and virtual reality-based software and hardware continue to be developed, even more interesting and effective activities using these technologies may be designed that will further benefit students in Japan and around the world.

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