

Natural Disaster Awareness in Japan and California: A Comparative Study

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Abstract

In recent years, the world has experienced an increasing number of natural disasters and in severity of damage. Not only do natural disasters heavily influence our livelihood, but global warming is also the main cause of the earth's climate change. In order to explore Japanese and American college students' views on natural disaster, we conducted a survey asking the following questions: What are students' views on natural disasters and disaster preparation? How does the media contribute to students' awareness of natural disasters? From our results, 60% of American students and 40% of Japanese students believe they are not prepared for natural disasters. However, Japanese students, by far, have more knowledge compared to American students in regards to evacuation sites. Both groups think that media outlets are accurate, with the exception of news from social networks. More than 70% of Japanese students answered that the government is doing their best in regards to global warming while more than 70% of American students said their government was not as dedicated. Japanese students are giving their best efforts by recycling and using buses and bicycles while American students replied that they all recycle.

Introduction

Natural disasters greatly affect the world because of the impact of global warming and they have increased in number and severity of damage in recent years. Also, the frequency of major natural disasters in Japan (storms, floods, earthquakes, etc.) and California (forest fires, wild fires, floods, etc.) had grown. Then we wondered how much knowledge Japanese and American students have in regards to natural disaster countermeasures. Are they prepared

enough for natural disasters? We also wanted to understand how the media influences their way of natural disaster preparation.

1. Significance of the Study

The reason why we chose this research study is because we experienced natural disaster countermeasures and preparation while studying abroad in Japan that we never experienced in the United States. For example, Jennifer participated in a natural disaster preparation course as part of her two-week orientation at her Japanese university. Nataly had the opportunity to learn from the local firefighters in Japan in what to do in the case of an emergency. During that time, we noticed a large difference on natural disaster education between Japan and America. We thought we would like to analyze the differences between Japan and California's natural disaster preparation and education because of that. Also, we thought about the differences in what Japan and America's media would report. We conducted a survey to learn what Japanese and American students thought about being prepared for natural disasters and how the media can contribute to natural disaster awareness.

2. Research Questions

- 1) What are students' views on natural disasters and disaster preparation?
- 2) How does the media contribute to students' awareness of natural disasters?

3. Literature Review

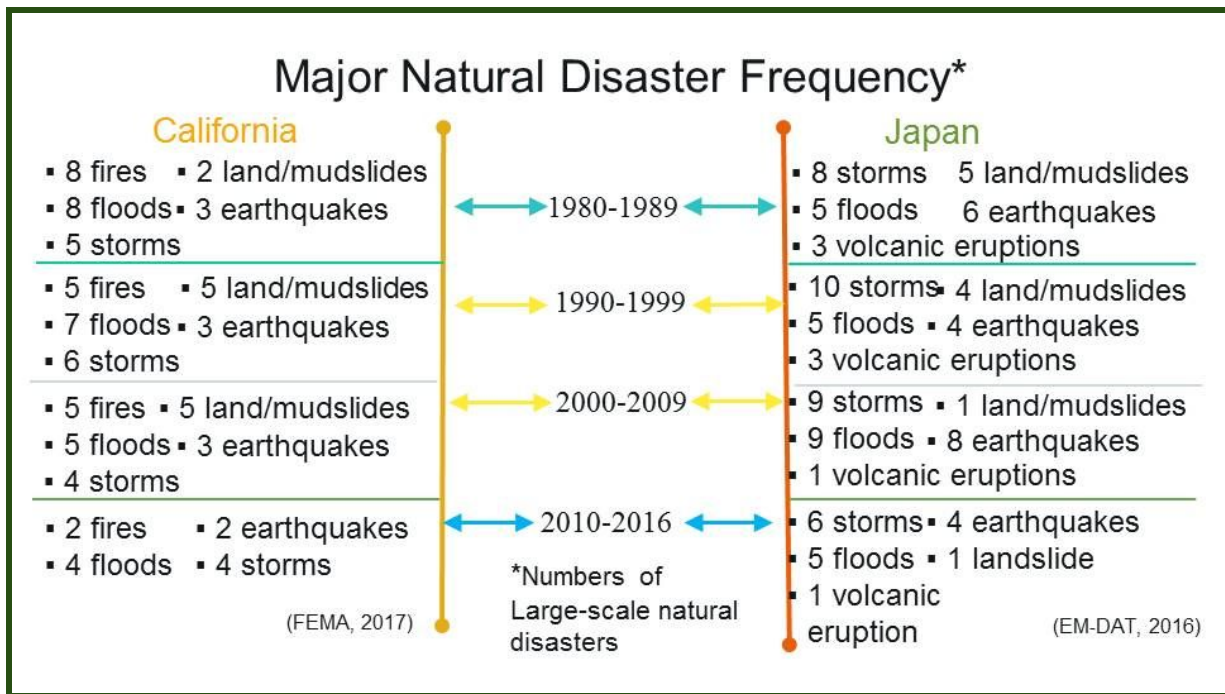
3.1 Natural Disaster Categories

While there are six types of natural disasters, the most general ones can be divided into three categories: geophysical, hydrological, and climatological (Below, Wirtz, and Guha-Sapir, 2009). Geophysical disasters are phenomena that occur from solid earth with the main types being earthquakes and volcanic eruptions. Hydrological disasters occur when there is a major change in water circulation in the watershed caused by wind rise in the water or flooding. Floods are a major type of hydrological disasters. Climatological disasters are caused by major fluctuations in climate change; the main types are drought, forest fires, etc.

3.2 Major Natural Disaster and Their Frequency

In Japan, the most frequent natural disasters are storms, floods, earthquakes, landslides, and volcanic eruptions (EM-DAT, 2016); in California's case, forest fires, wildfires, floods, storms, landslides, mudslides and earthquakes' rankings differ (FEMA, 2017). We collected data on the frequency of large-scale natural disasters that occurred and separated them by decade. When comparing the 1980's to the present (chart 1), it can be understood that the frequency in America has become lower while in Japan, the number has somewhat grown.

Chart 1: Frequency of Major Natural Disasters



3.3 Natural Disaster Preparation and Education

In America, 95% of schools do have safety plans. For example, teachers teach students how to respond to natural disasters (American Academy of Pediatrics, 2008). However, because schools' main focus is standardized testing, teachers can hardly take the time to do so (Wisner, 2006). As a countermeasure, teachers have considered incorporating safety preparation lessons into after school activities.

In Japan's case, the government encourages disaster education from as early as the third grade in elementary school (Ishizuka, 2015). Schools can introduce specific content such as evacuation drills, community exploration, building safety inspection, and so on. In addition, the

aforementioned content can be used as guidelines in the National Curriculum Standards.

Furthermore, teachers can integrate disaster and geographic education to show the relationship between natural disasters and the environment to the students.

3.4 Preparation Guide

For our research, we looked over California's and Japan's natural disaster preparation guidebooks. In California's case, we looked at the guidebooks from Monterey, San Francisco, and Los Angeles. The similarity we found were that they all contained maps, application forms, information sources for smooth planning in the case of a natural disaster (co.monterey.ca.us, 2017; usgs, 2005; ESP FOCUS 2015). The differences we found include: Monterey's guidebook is only printed in English and 20% of the whole document is written about natural disaster preparation; San Francisco's guidebook can be read in 5 languages but it primarily focuses on earthquake preparation; Los Angeles's guidebook is only provided online but the site is colorful and easy to navigate.

In Japan's case, we looked through the guidebooks of Tokyo, Ishikawa and Nagoya. The similarities we found were that they had detailed information for being prepared in any situation that could occur during a natural disaster, they are able to be read in various languages, and they are available in both online and print forms (Nagoya International Center, 2017; Tokyo Metropolitan Government, 2015; IFIE, 2008). The differences we found include: information on Tokyo's evacuation locations can only be found online and in Japanese; Ishikawa's guidebook mainly has the basic information on natural disaster preparation; and Nagoya's preparation guides are separated into pamphlets based on natural disaster type and disaster preparation.

3.5 Media's Role in Natural Disasters

Media has been an important tool in society. From printed news to social networks, it has been a source of information to keep up with the advancements of the world (FEMA, 1999). The most well known forms of media are television, radio and newspapers and each medium has their own strengths and weaknesses. Although television's strong point is that it offers visual reporting and it is able to provide information to many people quickly, its weak point is strict regulation on schedules and broadcasting time as well as communicating accurate information to raise viewers (Miles and Morse, 2006). In addition, the radio can convey information instantly, but there is a tendency that the report could be short.

Media has many positives in its role in natural disasters. For example, it gives people important and necessary reports to prepare for similar disasters that can occur in the future. It can also inspire people to volunteer and donations and encourage improvement of government response as well (Ali, 2013; FEMA, 1999). Some of the negatives media has in its role include not being able to provide accurate information, difficulties in obtaining correct information from the main source, distorted reports used to increase the number of viewers, and maintaining a neutral position in its reports.

There is a close relationship between the media and the government. Among 180 countries, the United States is ranked number 42 while Japan ranked number 72 in regards to their freedom of the press (rsf.org, 2017). Japan's problem is that while the media can request the government to provide information, the government has no obligation to provide said information until requested, making it difficult to obtain the correct information (Repeta and

Schultz, 2002; NHK, 2012). In the United States' case, although their freedom of the press is respected, American journalists' right to protect their information sources is not guaranteed, and recently, the new government of the United States criticizes the media's distribution of "wrong information"(rsf.org, 2017; Repeta and Schultz, 2002). This resulted in multiple media sources being blocked by the government.

3.6 Global Warming and Media

Global warming is a phenomenon that occurs when there is a rapid increase in the average surface temperature of the earth, which is mainly caused by human emissions of carbon dioxide (Riebeek, 2010). Due to the rise of global warming, problems such as rising sea levels, pressured coexistence in ecosystems for animal and plant life, amplified coastal erosion, and so on, have risen. This will get worse unless the governments of the world make an effort to work together to reduce global warming.

Media also influences global warming policy. Media has influenced public opinion on global warming in the United States. Conservative media reports believe that global warming does not exist (Hmielowski et al, 2013). On the other hand, liberal media outlets advocate the current state of global warming based on scientific evidence. In the case of Japan, international political issues are more often reported than global warming; even though media coverage on global warming has increased, news articles can be ignored unless they are on the front page (Sampei and Aoyagi-Usui, 2008).

3.7 Global Warming and Government

The world is making a great effort to counter global warming. These efforts resulted in creating the Kyoto Protocol and the Paris Agreement (United Nations, 2017). The Kyoto Protocol was a treaty created for the reduction of greenhouse gases in developing countries as a measure against global warming from 1992 to 2012. The Paris Agreement from 2016 promises in reducing greenhouse gas emissions among different countries by 2020.

4. Research Method

4.1. Participate

In this research 31 Japanese and 30 Americans participated for a total of 61 people. Within that there were 20 female and 11 male Japanese participants, and there were 24 female and 6 male Americans.

4.2. Research Method

The survey was completed online with Google Forms. We created forms in both Japanese and English.

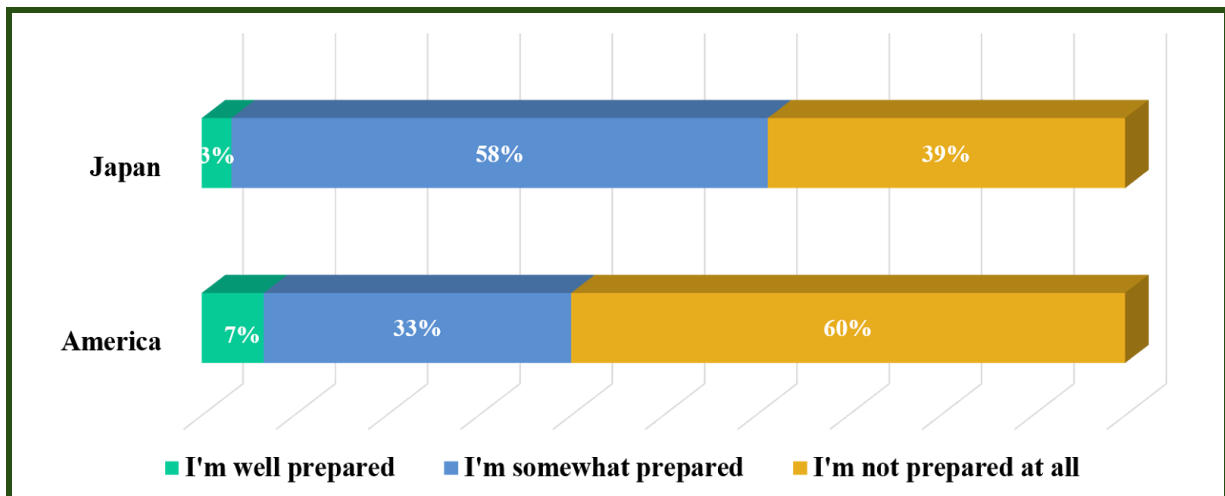
5. Results

5.1 What are students' views on natural disasters and disaster preparation?

When we asked “Have you ever been affected by any of the following disasters,” most of the Japanese students responded that they have experienced earthquakes and typhoons; however, about half of American students said they have not experienced any natural disaster.

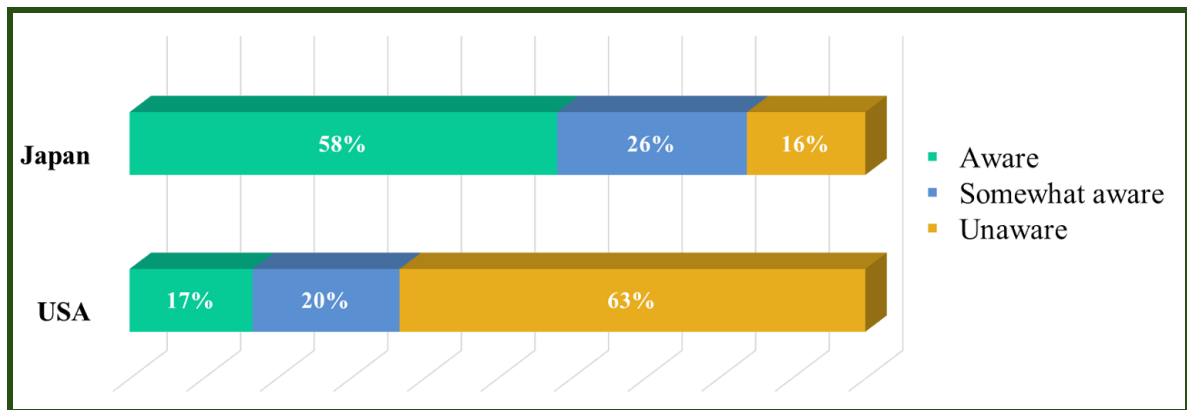
In response to the question “How prepared do you think you are for natural disasters,” Japanese students said they were more prepared than the American students. However, about 40% of Japanese students and 60% of Americans answered they were not prepared at all (Fig. 1).

Figure 1: How prepared do you think you are for natural disasters?



For our next question, we asked how aware were they of their nearest evacuation site. 84% of Japanese students were aware of where their nearest evacuation area was compared to the 37% of American students who were aware. (Fig. 2).

Figure 2: How aware are you of your nearest evacuation site?



When we asked the following question, “How did you learn about natural disasters in your school,” both groups of students answered that they learned from disaster prevention drills, posters and pamphlets.

In response to the last question, “How difficult it is to find information about disaster preparation from your university,” both Japanese and American students responded that it was difficult, especially American students.

5.1.1. Summary of Research Question 1's Results

Overall, it seems that American students are not ready for natural disasters compared to Japanese students. We believe it is because Americans do not encounter natural disasters as much as Japanese people. Japanese students know more about evacuation sites than American students, that may come from the training and education they learned in school. In addition, they both stated that it was difficult to find information on preparing for disasters from their university.

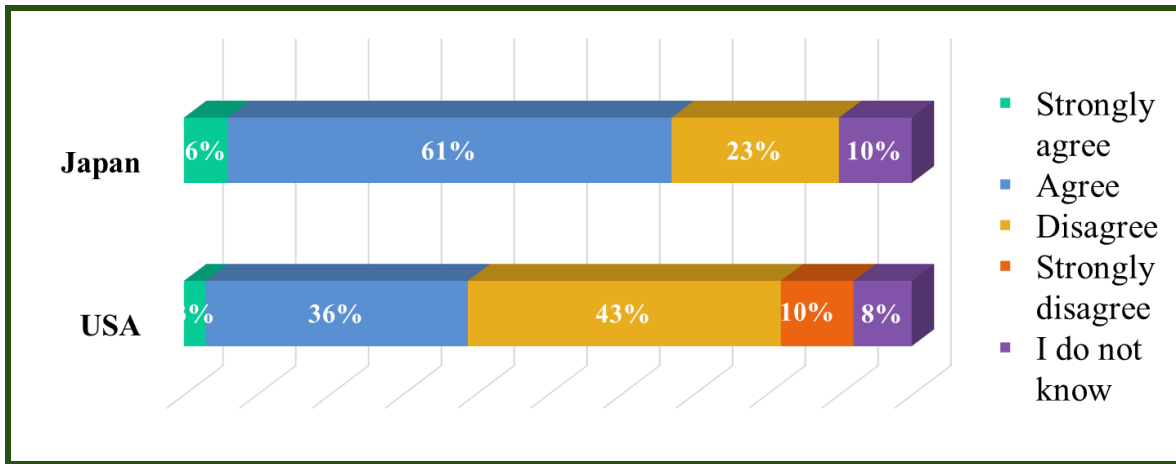
5.2 How does the media contribute to students' awareness of natural disasters?

For this research question, we asked where do students get their latest news about natural disasters. Japanese students answered that they use online news while American students get their information from social networks.

In response to the question, "Which resource do you think best prepares you for a natural disaster," while online news is used the most by both countries, Japanese students also use television and American students use text alerts.

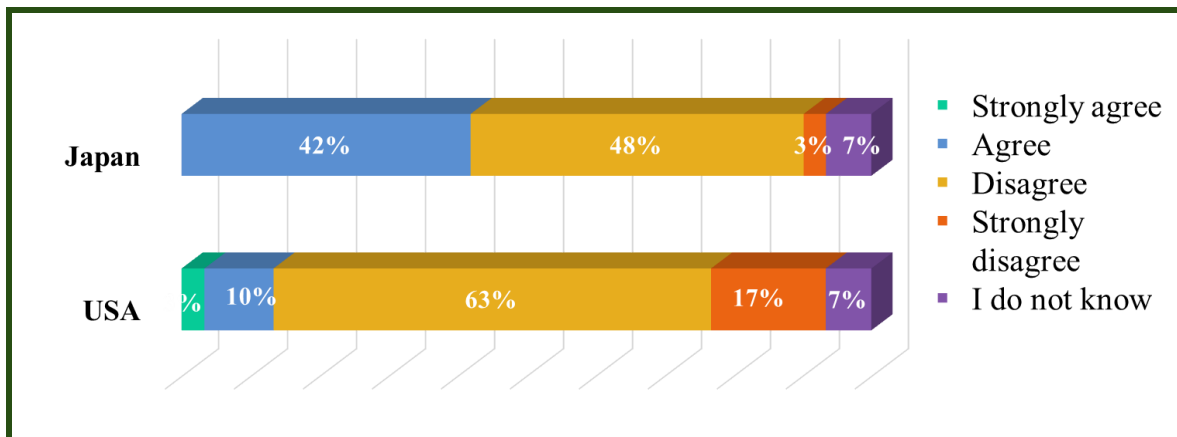
Next we asked if the students agreed to the following statement: "Media provides enough **information** about natural disasters." About 70% of Japanese students responded that they agreed that media is providing sufficient information, however, about 55% of Americans answered that they disagreed (Fig. 3).

Figure 3: Media provides enough **information** about natural disasters.



When we asked students if they agreed to the sentence, “There is a sufficient amount of information from the media to **prepare** for a natural disaster,” 50% of Japanese students replied that they agreed and 80% of American students replied that they disagreed (Fig 4).

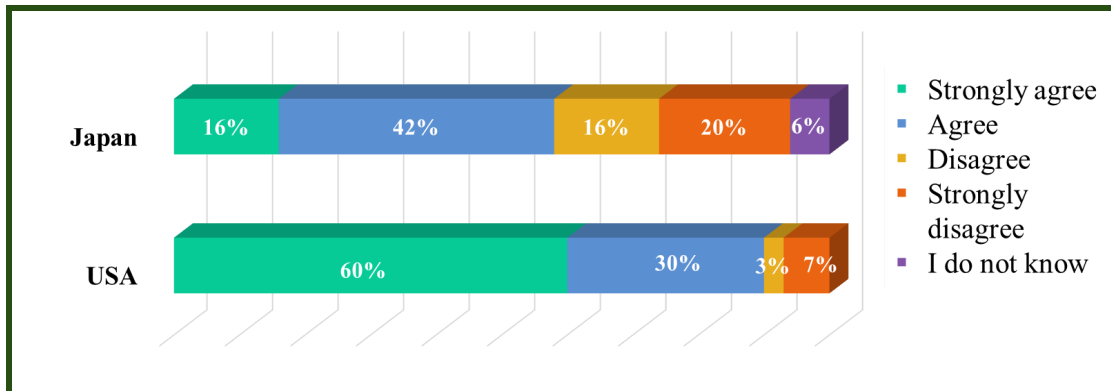
Figure 4: There is a sufficient amount of information from the media to **prepare** for a natural disaster.



When we asked “Which of the following do you believe provides accurate disaster news coverage,” Japanese students answered that all media, except e-mails and texts alerts, are reporting news accurately on natural disasters. American students believe that all media, except email, text alerts, and social networks, are reporting news accurately.

80% of American students and 60% Japanese students agreed when they were asked, "Do you think that natural disasters are strongly influenced by global warming?" (Fig.5).

Figure 5: Do you think that natural disasters are strongly influenced by global warming?

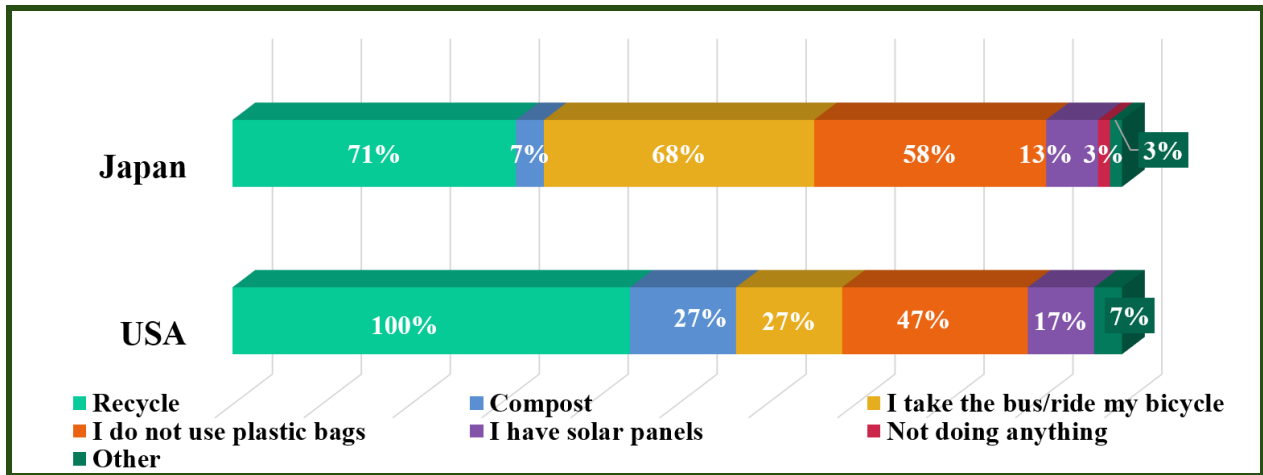


In the case of the question, “How often do these media outlets discuss global warming in your country,” Japanese students think that newspapers and television talk more about global warming. Except for text alerts, American students believe that a majority of the media outlets often discuss global warming.

In response to the question, “Do you agree that your government is doing their best to uphold the Paris Agreement,” American students think that their government is not making enough efforts while the Japanese students believe their government is doing their best.

For our question, we asked students what they were doing to alleviate the impact of global warming. Both Japanese and American students replied that they recycle and do not use plastic bags; about 70% of Japanese students also stated that they ride the bus or bicycle (Fig. 6).

Figure 6: What are you doing to reduce the impact of global warming?



5.2.1. Summary of Research Question 2’s Results

Although both American and Japanese students feel that most media outlets are accurate, Japanese students think that social networks are not accurate. While Japanese students feel that the media provides adequate information on natural disasters, both student groups agree that there is not enough information to prepare for them. Japanese students trust their media more

than American students trust theirs, but Japanese students feel that the media does not talk much about global warming enough. Though Japanese students trust their government when it comes to global warming, American students are skeptical of theirs; however, they both feel that their government can do more.

6. Conclusions

Both countries' students are aware of natural disasters, but Japanese students are more knowledgeable and experienced than American students. Information on preparation for natural disasters is not enough for both groups. In addition, American students want to learn more about being prepared for natural disasters. Students in both countries recognize how global warming affects natural disasters, but Japanese students feel that the information from their media is not sufficient. Although both groups are making an effort to counter global warming, they feel that it is necessary for the government to put in more effort.

7. Limitations from the Study

One of the challenges we met with from our research was that most of the respondents were female. Our results could not be generalized because of the lack of a male perspective. For our future study, we would like to learn why countries would limit information about global warming and how universities would provide information on natural disaster preparation.

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