

The application "Disaster Reduction School" to support disaster preparedness for foreigners in Japan

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1. Introduction

In Japan, where disasters are frequent, foreigners are called disaster vulnerable. In such a situation, through the disaster prevention events of foreigners participating in Gifu and the literature survey, it is found that in order to improve the awareness and knowledge of disaster prevention of foreigners, Japan has formulated many disaster prevention countermeasures for foreigners and provided disaster prevention support to them. But, based on the hearing survey, it can be seen that the Japanese government has made great efforts to disaster prevention for foreigners, and it is also known that although foreigners are concerned about disasters, they hardly take practical measures for disasters.

Therefore, this research to discuss the foreigners' disaster preparedness based on comparing the data of foreigners using app "Disaster Reduction School" with the questionnaire, and examined app as the entrance to disaster prevention education, that can support foreigners' disaster preparedness.

2. What the app "Disaster Reduction School"

The application "Disaster Reduction School" is a disaster reduction application developed by Professor Takagi of Gifu University and others. The app is composed of several questions that will guide people to use the checklist for "self-help" and "mutual-help" in the face of disasters, and then recognize their problems. The number of questions is based on the level selected. This level is divided into Basic courses (20 questions) and Intermediate courses (30 questions).

3. Result and Discussion

A questionnaire was conducted on Chinese. The purpose of the questionnaire is to grasp the situation disaster prevention awareness and knowledge of Chinese.

The research analyzed the data collected from the questionnaire survey and app "Disaster Reduction School".

3.1 The results of the first using app "Disaster Reduction School"

The collected data from the Chinese / Andalas University students(Indonesia) / Japanese by using the 20 questions from the Basic Course of app. As shown in Figure1.

(1) ANOVA on scores of people in different countries

The result of first using app for Chinese, Andalas University students and Japanese are analyzed by variance on the 4 parts of the app respectively. P-values for ANOVA are shown in the Table 1.

According to the P-values of the above analysis of variance, it can be seen that there are significant differences

as well as similarities in the disaster preparedness of people in the three countries.

Table 1 P-value of ANOVA for the scores in each category on the app by Chinese, Japanese and Andalas University

Category	Chinese/ Japanese	Chinese/AU students
For earthquake(Q1~Q6)	0.23	0.01
After disaster(Q7~Q10)	<0.01	<0.01
For heavy rain(Q11~Q16)	0.03	0.02
Neighboring(Q17~Q20)	0.10	<0.01

(2) Comparing the data of app with Questionnaire

The relationship between foreigners' awareness of disaster prevention and disaster preparedness will be discussed by comparing the data from first using app "Disaster Reduction School" with questionnaire survey. Not all comparative results are presented in the summary of this study. (The results of the first using app are the data of the Chinese in Figure1)

In the questionnaire survey, regarding "Worried Things", foreigners are very disturbed by "No water / No electric and gas", "Securing Food and Daily Necessities" and "House collapse damage", as shown in Figure3. But according to the results of app, the proportion of "Yes" in these questions (Q2~Q4, Q7~Q9) did not exceed 50%. And the implementation rate of foreigners' disaster preparedness for their own safety in Q2(Earthquake resistance of own homes), Q8(Food preparation for disaster) and Q9(Lighting and heating prepared for disaster) of app is very low.

3.2 The results of the Chinese's second using app

The second using app "Disaster Reduction School" was implemented for Chinese.

(1) Comparing the data from the first and second using "Disaster Reduction School"

After using the app for the first time, foreigners were asked to fill in a question number that they would like to have answered "Little and No" and later improve it to "Yes". As shown Figure 4. Based on data, foreigners most want to improve "Little and No" to "Yes" in Q8, in which they wanted to be more prepared for food at least for a week in the condition where there is no gas and electrical power after the disaster. Then, it is seen that the percentage of "Yes" to Q8 about food preparation for disaster increased by about 40% in the second implementation. Secondly, foreigners want to improve "Little and No" to "Yes" in Q4, and it also is seen that the percentage of "Yes" to Q4 about "Ensure safety while sleeping" increased by about 30% in the second implementation.

(2) ANOVA on the data from the first and second app

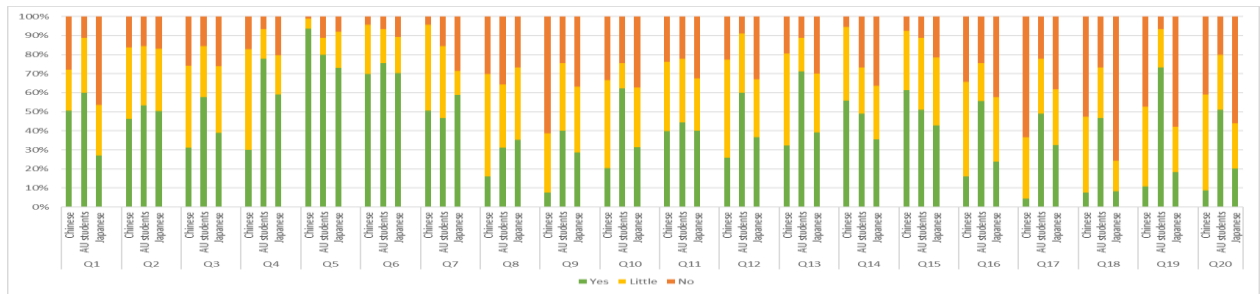


Figure 1 Results of first using app in three countries

Analysis of variance was performed on the individual scores of the 4 parts of app, P-values for ANOVA are shown in the Table 2. The P-value of the partial questions was less than 0.01, and there were significant differences between the first and the second using in some items of app.

Table 2 P-value of ANOVA for the scores in each category on the app by first and second

Category	Second/First
For earthquake(Q1~Q6)	0.047
After disaster(Q7~Q10)	<0.01
For heavy rain(Q11~Q16)	0.99
Neighboring(Q17~Q20)	<0.01

(3) Scatter plot

According to the scatter plot, as shown in Figure5, it can be found that more than half of the people scored above the 45-degree straight line. In particular, those who scored between 30 and 60 points in the first of using app improved their scores to 50 to 70 points in the second, and each person improved by about 20 points. Therefore, according to the individual's first and second scores, it can be considered that the disaster preparedness of more than half of the 47 people was promoted.

4. Conclusion

The comparison between the data of the first using app "Disaster Reduction School" and the questionnaire survey shows the real disaster preparedness situation of the Chinese, that is, there is a gap between disaster preparedness and high disaster prevention awareness. But the results of the second using app "Disaster Reduction School" show that the Chinese have made changes in disaster preparedness, taking action on some disaster preparedness that can be easily done. At the same time, after analyzing the data of people in three countries using app, it is known that people in different countries have their own advantages and disadvantages in disaster preparedness, which can lead to thinking and discussion on disaster prevention education in the future. These results suggested that foreigners can not only "self-help" through the checklist of app "Disaster Reduction School", but also are expected to become an "important force" for disaster. And in the future they will no longer be the disaster vulnerable, but will help others by using app "Disaster Reduction School" to achieve "mutual-help".

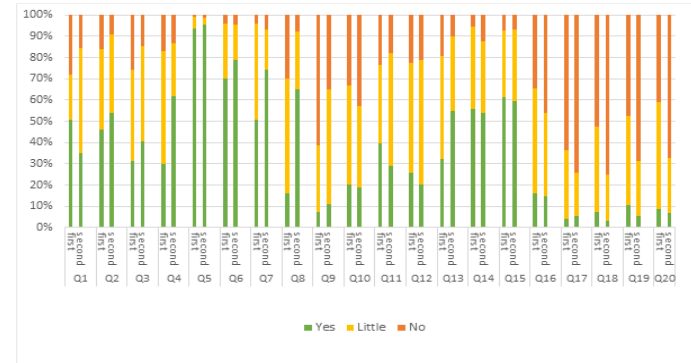


Figure 2 Results of the first and second app

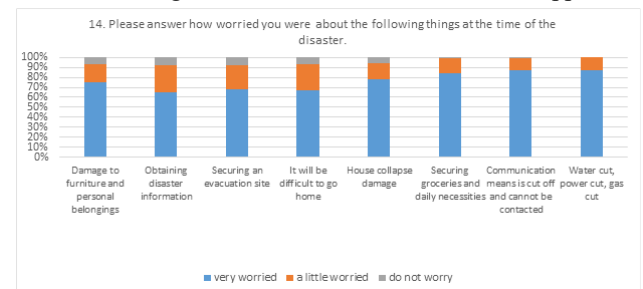


Figure 3 Questionnaire about "worried things"

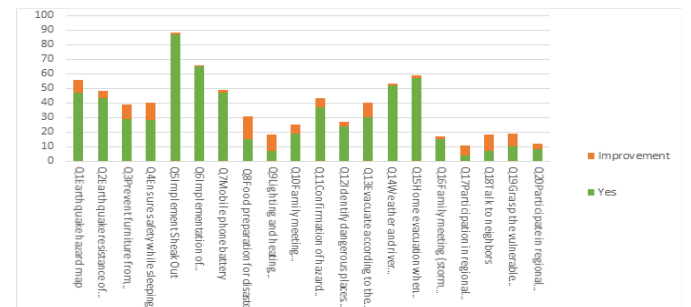


Figure 4 Result of wanting to improve "little and no" to "yes"

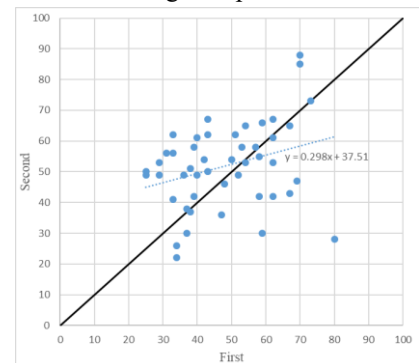


Figure 5 Scatter plot of individual scores for the first and second(Chinese)