

Developing Resilient Mindsets in Students for Natural Disasters by Engaging them in the Development of Pocket Maps and Guides

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Abstract

In recent years, more large-scale natural disasters have been happening across Japan, including the Kumamoto and Hokkaido earthquakes. In those times, it is often found later that many non-Japanese residents and visitors did not have the appropriate information provided or know the basics of survival in these extreme incidences. With the assistance of local governments, the researchers have begun a program in which students are made responsible to make these emergency information materials to be provided to foreign visitors and residents. Students worked in groups to create one-page, foldable maps that can be distributed to visitors to the city throughout the period of the Rugby World Cup (RWC). Groups were first instructed to go out to scout locations of emergency sites and supplies around the downtown area to get other necessary emergency evacuation site and supplies information, and then decide what is the most important details to be included in the limited space of their pocket maps. The final pocket maps and guide pamphlets made by the student groups will be submitted to city hall officials for approval this summer, and then distributed freely to visitors of the RWC starting this fall. This research has still not yet concluded, so the details of the review and selection process of city hall officials, as well as feedback from visitors using the maps will be surveyed from now on.

Keywords: *language education, natural disasters, resilient learning, earthquakes, tsunami*

Introduction

In recent years, there is a growing increase of floods, heavy rain and earthquakes all over Japan. Especially when earthquakes make tsunami which have in previous occurrences killed thousands of people. As the Japanese faced these natural disasters, it is essential to think about how to survive in future instances. Many students themselves have experienced these natural disasters before, as most recently as the Kumamoto earthquakes that are still suffering with recovery efforts, and thus understand just how truly dangerous disasters may be.

When this study began, it was announced that one of the locations for the Rugby World Cup would be in Oita prefecture, which lead to this college to focus on resilient mind education. There will be a previously unimaginable amount of people, including foreigners, visiting our prefecture at that time, and in the worst case scenario if some kind of natural disaster happens, it is essential for its residents to be able to help or support foreigners in particular (who may not be familiar with these natural disasters) to stay calm and lead the evacuation areas. Furthermore, with the 2020 Tokyo Olympic and Paralympic Games will be held, these preparations are not limited to just rural areas involved in the RWC.

There are a lot of existing disaster maps in each prefecture already, but after contacting the city office and asking how much the disaster map is ready for practical use, the answer was “It is capable of helping; however, it is a little bit vague. If possible, could students focused on resilient mind education incorporate more practical details and improve the existing maps?” This request lead to the start of this research activity.

The main idea was to let students collaborate with each other in groups during English classes to debate, suggest and create actual improvements to these seemingly outdated and potentially impractical materials. It would also be seen as an ideal opportunity to develop a student-centred activity which incorporates their specialized fields of education in various engineering fields while improving and using their English abilities as well.

Many research articles have been published in relation to resilience education and communication. Pfefferbaum et al (2012) mentions: “Education and training recommendations, which also advanced an integrated approach, were addressed to leaders, responders, medical providers, mental health professionals, schools, and the general public. Training and education were seen as key to promoting the identification, development, and dissemination of (1) existing best-practice educational materials in the areas of disaster mental health; (2) materials for all hazards and public health emergencies; (3) information addressing the needs of individuals with pre-existing mental health problems; and (4) guidance on bereavement support.” This supports the necessity for students in particular to learn and put into practice their education in relation to emergencies and reinforces its uniqueness as an opportune learning experience.

However, in recent publications on resilience education by Japanese ministries, specialized lesson times have not been set aside for these materials, and are often used in generalized times, such as homerooms. In most cases, there are no specialists on the subject among the teachers responsible for educating on the matter, and its incorporation across Japan is bleak at best. It can be said that only by the repeated occurrences of these tragic natural disasters can people be truly educated on the importance of this matter. Shinoda & Kawada (2007) had mentioned in their work that since the Hanshin-Awaji Great Disaster, residents are losing their sense of importance and preparation for these potential events.

With the upcoming RWC and Tokyo 2020 Games, it is hoped that no natural disasters would occur during these events, but in the case that they do and help is needed, students would be educated, ready, and prepared to help themselves, other residents and even visitors from other countries to their town to stay safe and alive. By emphasizing the importance of communicative competence in these times of need, it was thought that incorporating English language education would be a unique and practical experience for the students.

Materials for teachers

Given that the researchers involved in this project were not specialists in the field of resilience education, it was first necessary to become educated in the specifics of the topic before being able to educate on it to our students.

The first step in preparing ourselves was to visit the Great Hanshin-Awaji Earthquake Disaster Reduction and Human Renovation Institute in Kobe City. Despite most Japanese likely having experienced many earthquakes in their lives, one on a scale comparable to that in 1995 is not very common. With the support and permission of the institute, materials were also brought back to use and provide further realistic detail to the students at hand.

Following this fundamental base step, the researchers participated in an opinion exchange between those who actually survived the disaster (both Japanese and foreign residents). This unique experience, named Popoki's Peace Project, brought forward what people would think of and react initially when a natural disaster hits, and not reflect solely on objective hindsight.

Furthermore, a unique disaster risk communication game, called "Crossroad: Kobe" had been created and test played by those involved. By incorporating the crossroad game in group discussions at the college in question, students would be able to discuss with each other in details about what is truly essential at the current stage of preparation in Oita prefecture. The results of these discussions lead to each group deciding on a specific type of disaster preparation aspect to focus on and describe in detail on their specified group maps.

Materials for students

Oita Kosen students have experienced recently the Kumamoto and Oita earthquakes, which was one of if not the biggest natural disasters in Kyushu experienced in recent years. However, their recollections of these incidences, let alone information on previous similar disasters like in Kobe and even Eastern Japan a few years

ago, they admit to having been educated on what to do in times of emergency, yet also to not remember most of it or having been able to put any of it into practice.

Due to this, the researchers decided to invite specialists from Oita City Hall to give lectures to our students on disaster prevention and preparedness. The content of these lectures included details about the expected foreign and domestic audiences expected to come to Oita during the RWC by a specialist in the tourism board. The information provided also discussed how most visitors from abroad are of a higher income range and will spend usually between two to three weeks in the area, not just watching the matches, but also visiting local and rural sightseeing spots in between these main events. Another city hall specialist on disaster prevention educated the students on the scale and severity of previous natural disasters, such as Hanshin-Awaji and Eastern Japan by going into detail about the size and severity of the tsunamis and showing actual footage of the aftermath. This had shown the greatest impact on the students.

Finally, a tourism specialist went into detail on what Oita residents should focus on in promoting their rural cultures, including actual existing PR maps that are distributed to visitors to educate them on local specialties. During the lecture, it was made known that the number of foreign residents is one of the highest in Japan, and that students have a multitude of opportunities to meet and communicate with non-Japanese people right in the comfort of their own home prefecture and city.

One of the researchers being a foreign resident of Japan went into detail on what they learned on disaster preparedness in their time spent here. Even if there are plenty of foreign residents already living around town, having a foreigner close to them share their experiences was a very unique learning experience for the students. Coming from a country with very little natural disasters, the commonality of earthquakes, floods, and tsunamis was also not something to quickly get used to, but given the severity (most recently) of the Kumamoto earthquake, being prepared at any moment for a potentially worst case scenario is engrained into the brain as a response. What most Japanese students brush off as just another tremor can be felt as a serious event to those unfamiliar.

To further reinforce these situations hitting home with the students, another researcher described their experiences as a Japanese visitor abroad, in where sometimes non-English speaking countries it can be difficult to simply find the appropriate bathroom, let alone ask locals for advice or help in times of need. Seeing as most students have not been overseas, let alone outside of their own hometowns or Oita prefecture at all, the concept of Japanese not working as a communication tool is foreign to them. It is thus important to share these kinds of experiences with them so that they can be at least mentally prepared and maybe even foresee upcoming trials and tribulations that may arise given the situations detailed by the project. What they would do with non-Japanese fluent visitors in times of disaster and need is a valid reality that students need to consider with great concern, as it is very likely for another tremendous natural disaster to occur at any moment in time.



Figure 1 Oita City’s multilingual disaster guide

The final goals for the student groups are to create a specialized map to be distributed, so Oita City hall was generous enough to provide students with a copy of the existing multilingual disaster guide (shown in Figure 1). Reinforcing that there are various languages foreign residents of Oita use, students were reassured that their existing knowledge of English would be enough to help contribute positively to the improvement of this project.

Methods (4th year students)

For the purposes of this study, fourth year students (equivalent to first year university) were the target grade for resilience education. First, students experienced the Crossroads game in class, which was based on the 1995 Hanshin-Awaji earthquake. It is a card game in which actual situations from that time are brought up once again and students must decide the best course of action. For example, one card states “You are a city hall worker in charge of distributing rations. There are 3000 people in your evacuation site but only 2000 rations in stock. Do you distribute them?” Students, in groups of about five, would then pick a YES or NO card, and further discuss and debate why they chose that card.

They are also reminded that there is no correct answer, a minority answer wins them more points, and regardless of the answers of their peers, to understand their opinion and where their sources of concern are coming from. Most students have trouble stating their own opinions to begin with, as Japanese tend to stick with the silent majority, so it is also a good experience in getting students to actually think outside the box and voice rarely expressed opinions for the sake of obtaining points and winning the game at the end of class.



Figure 2 Image of the Crossroad game being played

Points are tallied in a very unique way – minority opinionated cards obtain one point for each player, and in the rare opportunity that there is only one person against all the other team members, that individual gets 3 points.

Fundamentally it is to get the students to think of which answers will be less common, and thus get them more points, which leads them to thinking outside of social norms and also potentially against their usual trains of thought. Although the activity was done in an English classroom, the detailed discussions on why each person chose which card was initially permitted to be done in the native tongue of Japanese.

Once the students became familiar with explaining their positions in detail in Japanese, students were then required to do the same in English from then on, especially for fifth grade students.

Students initially displayed great struggles in expressing themselves in detail in English, but given that there are exchange students in each grade in the college observed, students gradually became more comfortable in talking about why they chose their ways of thinking. Students that previously would refrain from speaking in class became vocal and took the activity very seriously. When asked why caused the change of heart, the students simply replied, “Because I want to win.” The gamification of education showed off its fullest potential.

This Crossroads game is also a potential good example as an entry-level activity in debate education, which will be further observed in upcoming research efforts.

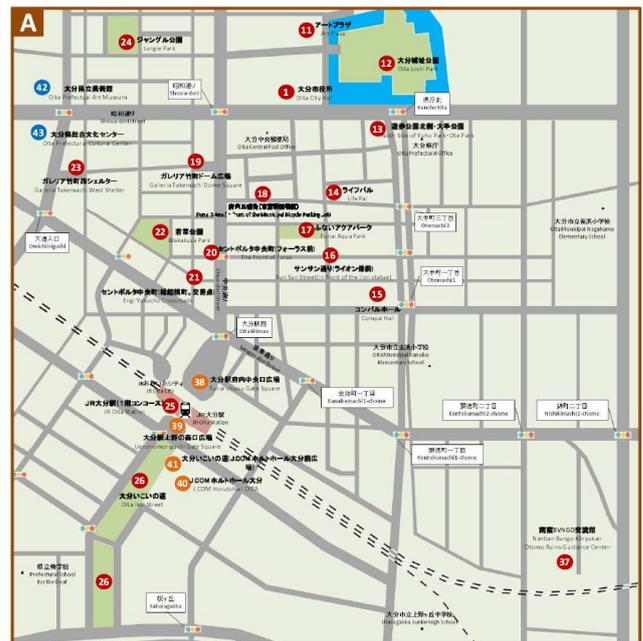


Figure 3 Oita City’s currently used sightseeing map

Group Activity – Original Maps

After the City Hall worker lectures and experiencing the Crossroads game, students began to work in groups on the project at hand. With the upcoming RWC and previous knowledge and experience of natural disasters and what comes with them, student groups were responsible for creating their own emergency maps in groups of around six to seven students.

Given that local governments have made their own official materials that are already in circulation (as seen in Figure 3), students were tasked with creating their own original, specified map based on their group discussions and fields of interest.

Students would first discuss what kinds of specialized maps would be necessary, such as evacuation sites, or emergency supply purchasing locations and so on. Some examples brought forward by the student groups were baby supply maps, Japanese-English emergency phrase 'yubisashi' maps (sample seen in Figure 4), magnitude scale maps, hospital maps, halal friendly maps, and so on.



Figure 4 Image of a 'yubisashi'-styled layout

Given that local governments have made their own official materials that are already in circulation (as seen in Figure 3), students were tasked with creating their own original, specified map based on their group discussions and fields of interest. Currently the creation of maps is still being made but will be complete within a few weeks and those details described further in upcoming continued research on this topic.

The students were given complete creative freedom on their maps – including the size, colours and designs. Many students also asked if a computer-based design and not hand drawn would be acceptable, and some groups even went as far as suggesting including QR codes in which further details which would not fit on the limited map space would be accessible by using a smartphone.

Other considerations groups suggested were kid-friendly maps that would be easy to read and find in real life, which in turn lead the instructors to leave the creative process to the students as their passion and motivation to create these maps did not seem fair to be limited by marks and regulations that could render the final product bland.

Most students opted for a 'yubisashi' style map based on specified situations. By simply pointing at illustrations and simplified words, communication is able to be achieved regardless of each participant knowing each other's language well enough to verbally communicate.

Yubisashi books are quite popular in Japan, and by incorporating their functions in a single-paged map, it is expected to increase the practicality and potential of getting across all the necessary information of the maps.

Group Activities for lower grade students

Thanks to the positive potential seen in this assignment and wanting to create a continuous environment for making resilience education a fundamental topic to be covered at the college, second grade students (high school level) were also tasked with making similar maps.

Students would undergo the same steps, but their maps were not based on resilient factors, as they have not yet learned much about the topic in their specialized fields of engineering yet as well. The lower grade students were thus directing into making specialized maps on a topic of their choice, such as sightseeing maps, souvenir shop maps, and a great variety of others in which the focus was more on being able to get their suggestions across in their group designed maps in English successfully or not.

The orientation sessions and preparation were similar to those of the fourth year students, but the students were encouraged more to share their own personal experience and suggestions on shops and other hidden treasures that only locals would know of in their map creation. One group went as far as making the theme of their map specifically for good places to go on a walk and have breakfast at. Other unique ideas included a free play space map, traditional foods map, and a cycling path map. The deadline for these to be submitted and then passed on to City Hall for approval and potential distribution is mid-August and the final results and reflection will be detailed in further research on this unique study.

Communication Skills

The fact that students have increased their communicative competence at least with each other is undeniable through this task. However it is a source of concern as to whether it is due to the Crossroads game experience leading them to turn over a new leaf, or if the simple knowledge of it being an evaluated assignment and students wanting to get good marks and make better maps than their peers (potentially seen as rivals at this point). Regardless of the source, at this time the communicative skills of the students have increased drastically compared to previous years in which group discussion activities had occurred but still did not lead to such heated and passionate discussions as seen through the groupwork necessary for this assignment to succeed.

It was also seen that, as previously mentioned, students that did not previously often make their voices heard began to fight for their rights, and students would more often than not ask for more time in class to discuss the matters at hand as opposed to working on it outside of class time because they were feeling pressured by the submission timeline. Although it may be seen as a negative aspect, it should be considered a positive as students rarely show such passion towards English.

Regardless of how much time is provided in class however, the deadlines and evaluations have been set, and the students are currently doing their best in and out of class time to make materials that they are already excited about being distributed to foreign visitors to our city. Just knowing that something they worked on so hard in their groups would be seen as a gift or souvenir to visitors makes them that more determined to succeed.

Evaluation

The evaluation methods are still a source of concern for the researchers involved in this study. Given that the maps assignment is already included in the syllabi as ten percent of their final marks, it is hard to fairly evaluate the final product without taking into consideration the time and efforts spent in class discussing and preparing for the creation of their maps. Peer evaluation is one option, in which students would rate their group members with the person who contributed the most getting a ten from their peers, and the average being balanced to a final mark out of ten. Some students who could not participate on some occasions due to unforeseen circumstances would still be recommended on a six or seven, to ensure a passing mark regardless of their efforts.

Although there are clear advantages and disadvantages to this evaluation method, teachers can take the peer feedback as a fair source of evaluation among group members to cover for times outside of class in which teachers cannot facilitate nor supervise the map production efforts, which are more likely to be done outside of class hours without any outside influence.

Another option would be to observe the reaction of the visitors using the maps. The numbers of maps distributed, feedback given by visitors who used the maps, and the necessity of the information provided on the maps can also be evaluated by those using them. Obviously to incorporate such information would need more time and feedback to create a fair evaluation, and marks for the assignment would have to be delayed until their finals.

Conclusions

Although the time and effort necessary to execute this kind of unique project is large, and upon reflection took significantly longer than originally projected and expected, with the start of the RWC looming in just a few months, the time line is significantly shorter than recommended. What would ideally be done over the span of an entire school year, students are expected to complete their original maps before the summer vacation in mid-August after being originally informed of the task in early April, at the beginning of the academic year.

Ideally, a detailed schedule spanning an entire school year made in advance with the approval and instruction of City Hall employees to meet their needs would be necessary. Furthermore, in respect to the deepening and necessity of regularized resilience education for Kosen students, these activities should not just be limited to two specific grades or levels and be incorporated in some way among all faculties and years of their education.

Regretfully, it seems unlikely to give a completely true and honest evaluation of each group's efforts on a scale of one to ten in the end. One potential option to ensure a fair evaluation would be to include peer evaluation and group satisfaction perceptions of their submitted maps.

All in all, the potential of this activity to not only allow students not comfortable in communicating in person to overcome their limitations and collaborate successfully in group discussion and project planning are already visible to the researcher teachers of the students at hand.

It is also a very unique opportunity and way to have students think outside the box and consider what might be of value and importance to visitors that are not from Japan and might not necessarily know English as well. Through the development of their maps in groups, they will also learn about other cultures and perspectives, and further their potential to act as bridges between their hometowns and people from all over the world.

Furthermore, by linking such global communicative activities with resilience education (a matter that hits close to home for most of the students involved), it creates a new field of education that will be in need of much further research and refinement in years to come.

Those involved in this project, in particular the researchers, will continue to observe and reflect on the future activities and improvements based on these efforts.

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