

## Attempt to Typify Disaster Educational Programs – Case Study of the Disaster Management Education Challenge Plan

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### ABSTRACT:

This study analyzes the disaster educational programs that were implemented under the “Disaster Management Education Challenge Plan,” a disaster management education project supported by the Cabinet Office, Government of Japan. In this study, cluster analysis of the characteristics of the disaster educational programs led to categorization of the programs into four types. The results of this study are expected to encourage the general public to launch disaster management educational activities that incorporate practice cases from each of the four types of programs, and will likely spur the development of additional programs.

### KEYWORDS:

Disaster education, educational program, Disaster Management Education Challenge Plan, typification, cluster analysis

### 1. Introduction

In the past, Japan has experienced a number of natural disasters and its geographical characteristics make it vulnerable to earthquakes, storm, and flood damage as well as other natural disasters in the future. An urgent response to the recent rash of storm and flood damage and potentially massive earthquakes in the early 21<sup>st</sup> century is required. In order to alleviate the damage, it is important to develop not only damage prevention measures by reinforcing buildings but also to ensure that individuals and organizations, including citizens and disaster responders, receive disaster management education that cultivates knowledge about disaster response management and competency (Disaster Management Literacy)<sup>1</sup>. There are three entities involved in overcoming disasters: self-help efforts (individuals and their families), mutual assistance (local community), and public assistance (disaster responders). Each of the players have their own roles<sup>2</sup> and thus, they should adopt disaster management literacy through a common disaster management education. The Expert Research Group of the Committee for Promoting a Nationwide Movement for Disaster Reduction<sup>3</sup> was established at the Central Disaster Management Council in July 2005 with a focus on promoting disaster awareness among citizens and the disaster response skills of local communities as the basis for disaster damage alleviation. The Committee emphasizes the necessity of promoting disaster management education not only in schools but also across all levels of society. Unfortunately, prior to the establishment of the Committee there were no organized disaster educational programs, specifically with regards to the types of programs and the format in which they were taught. These limitations made it particularly difficult for ordinary citizens to launch disaster management education programs. In order to tackle the lack of standardized disaster educational programs, this study examined the Disaster Management Education Challenge Plan<sup>4</sup>, which was a nationwide disaster management educational project developed by like-minded experts on disaster management education under support of the Cabinet Office. The resulting analysis was used to classify the ongoing disaster educational programs into four distinct types.

The Disaster Management Education Challenge Plan aims to create common assets to expand the venue for

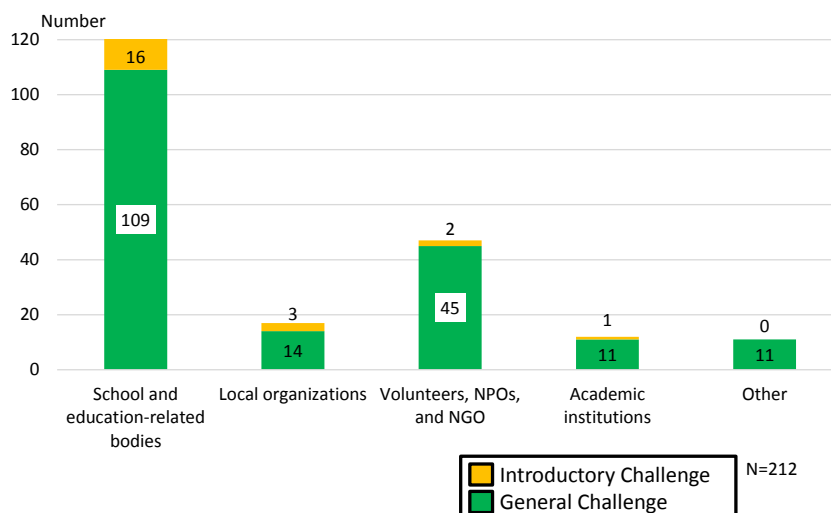


Figure 1 The distribution of programs according to the type of practicing body

disaster management education efforts and enhance their quality as they are implemented throughout the country. The Plan is seeking various disaster management education plans from organizations and individuals (educational organizations, Nonprofit Organizations (NPOs), and community groups) that share the wish to further reinforce disaster management education. For the first three years of the project from 2001 to 2003, plans were publicly sought according to the disaster educational program designed by the Disaster Management Education Challenge Plan Executive Committee and introduced for trials at pilot schools. From the year 2004 onwards, plans were sought yearly and selected plans were provided with support including expert advice on the educational programs and funding for implementation, as well as opportunities for people-to-people exchanges. In 2012, the Challenge Plan began seeking applications for an Introductory Challenge with simplified paperwork requirements relative to the General Challenge to attract a diverse application pool that represented a broad range of the society. The Disaster Management Education Challenge Plan Executive Committee selected practice cases from the plans that were entered for General Challenge on basis of their activity processes and achievements. Outstanding practice models received the Grand Prize for Disaster Management Education, the Outstanding Performance Prize for Disaster Management Education, and the Special Prize for Disaster Management Education. During the fiscal year 2011, the Special Grand Prize for Reconstruction Education was established to recognize organizations that were affected by the 2011 Great East Japan Earthquake and greatly contributed to local reconstruction efforts with their sustained work to implement the Disaster Management Education Challenge Plan for a year. These support and evaluation systems developed under the Disaster Management Education Challenge Plan have helped accumulate a number of high quality, advanced disaster educational programs as practice cases. Moreover, they have helped identify key elements for classifying disaster educational programs into various types.

## 2. Methods

This study created and analyzed a dataset of 212 disaster educational programs that were implemented under the Disaster Management Education Challenge Plan through the fiscal year 2013. The dataset was collected from the activity reports that were submitted by the bodies that implemented the programs. The variables that were analyzed included the report items and the attributes of the practicing bodies. The report items variables were: “type of disaster targeted (earthquake, flood),” “purpose of education (to raise disaster awareness, to learn techniques),” “target of education (elementary school students, local residents),” and “program formats (lecture, hands-on study).” The variables that reflected the attributes of the practicing bodies included: “area where the practicing bodies are located,” “types of practicing bodies (school, teachers and staff, local

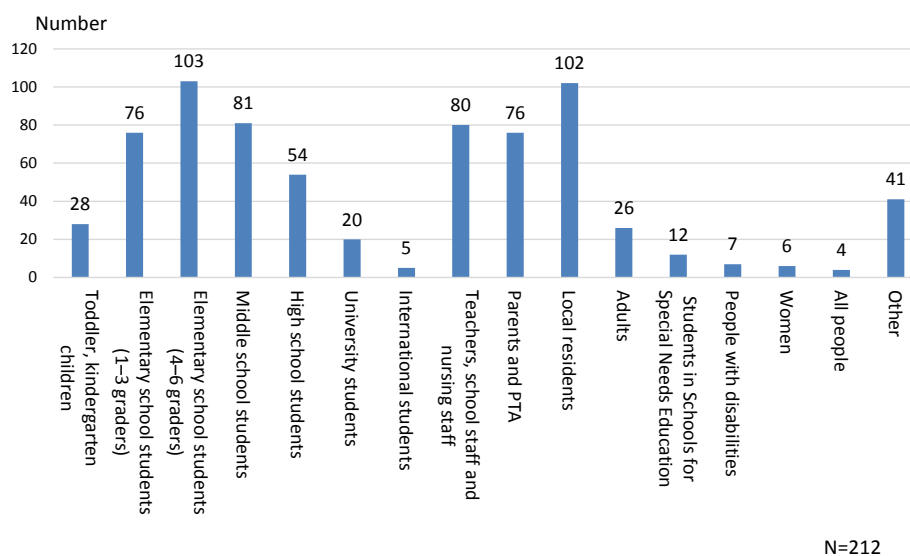
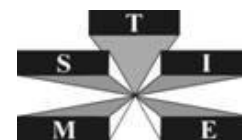


Figure 2 The distribution of programs according to their target audiences

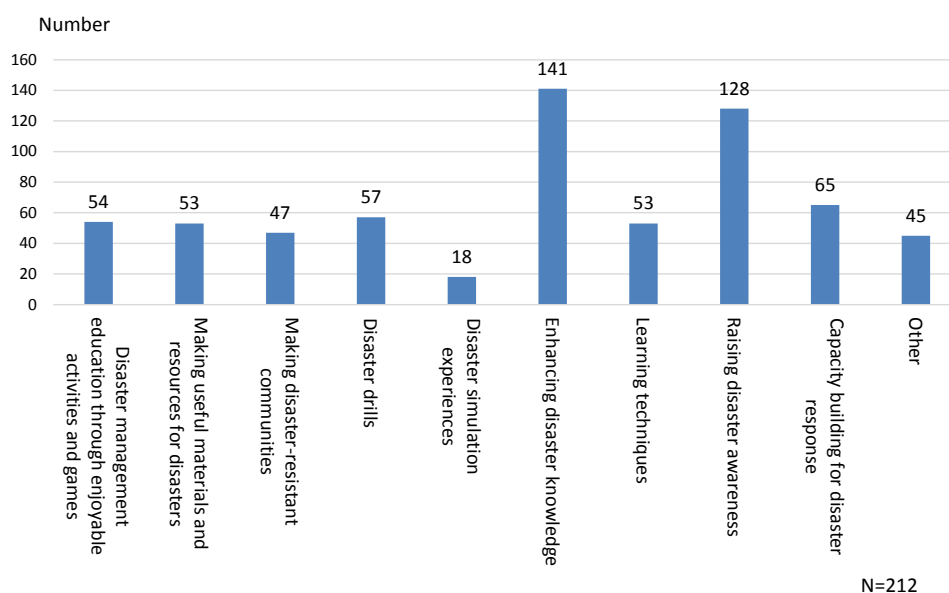


Figure 3 The distribution of programs based on the educational focus of the programs

The distribution of programs based on the educational focus of the programs community groups),” and “application categories (Introductory and General).” In the initial analysis, the current state of the disaster educational programs was assessed. This was followed by a cluster analysis to categorize the characteristics of the disaster educational programs, and then by an examination of the types of disaster management education programs based on the results. The study also introduced practice cases that could serve as model cases for each type of program. The individuals and organizations that do not have expertise and knowledge of disaster management education can practice disaster management education by learning outstanding practices and adapting them to their school and local communities.

### 3. Analysis of disaster educational programs in the Disaster Management Education Challenge Plan

#### 3.1. Basic analysis

Figure1 represents the number of programs according to the types of practicing bodies. For both the Introductory Challenge and the General Challenge initiatives, the programs implemented by schools and

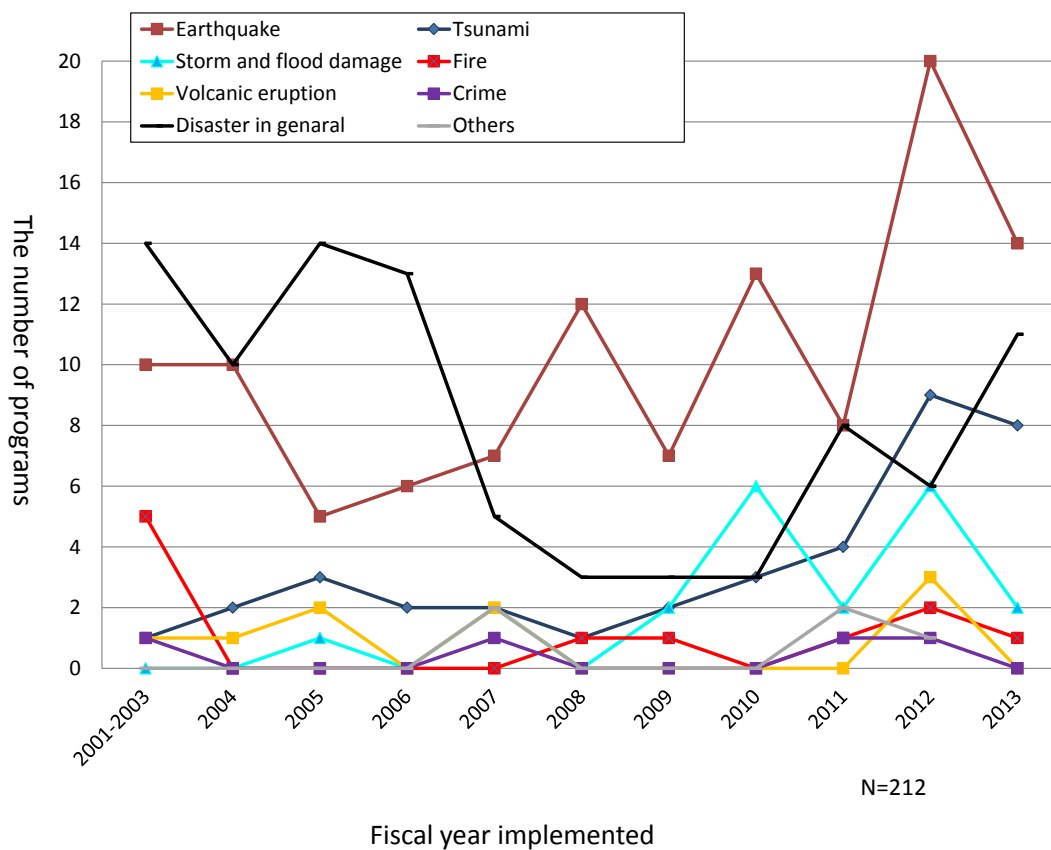
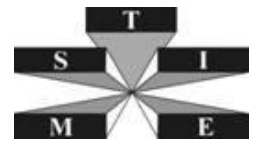


Figure 4 Yearly changes in the number of educational programs for various disaster (2001-2013)

educational organizations were the most numerous. Programs implemented by volunteers, NPOs, and Nongovernmental Organizations (NGOs) were the second most numerous. Taken together, these data suggest that schools and other educational organizations, volunteers, NPOs, and NGOs are leaders in the field of disaster management education. Most of the programs were designed to target students especially those in elementary school and local residents (Figure 2). This was followed by programs that were designed to target parents, PTAs, teachers, school staff, and nursing staff, or in other words, people who have a close connection to students. Interestingly, while the majority of these programs focus on students and local residents, the number of programs that target people requiring assistance during a disaster, including foreigners and people with disabilities was notably low. When the programs were analyzed according to their purpose of education, the vast majority of the programs were focused on “enhancing disaster knowledge” and “raising disaster awareness” (Figure 3). On the other hand, programs that were focused on “disaster simulation experiences” were the least common. This could be attributed to the fact that simulating disaster conditions requires comprehensive knowledge of disasters and involves massive preparation.

The disaster educational programs practiced under the Disaster Management Education Challenge Plan were identified based on the type of disaster that they covered. Figure 4 shows the yearly change in the number of disaster educational programs for the different types of disasters. It should be noted that many single programs targeted multiple disaster types. A relatively high number of programs targeted earthquakes, tsunamis, and disasters in general. In the fiscal year 2012, which was a year after the Great East Japan Earthquake, there was an increase in programs related to earthquakes and tsunamis. On the other hand, the number of educational programs for floods and storms was relatively low despite the frequency of their occurrence.

This could be because the Great East Japan Earthquake raised the nation’s interest in earthquakes and tsunamis. Typically, when a natural disaster leaves behind extensive devastation there is an increased interest in that particular type of disaster and it promotes disaster management education designed specifically to address that

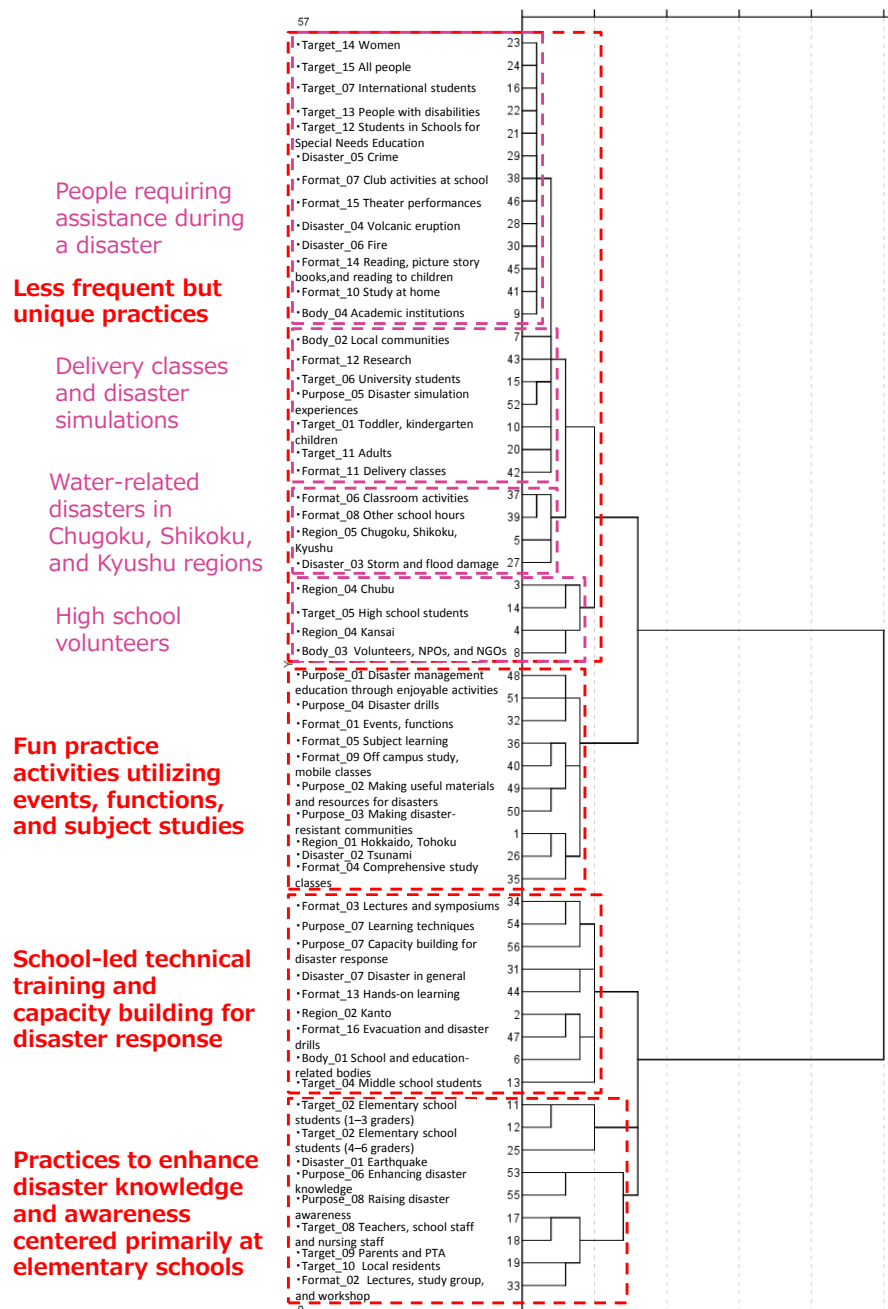
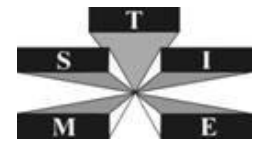
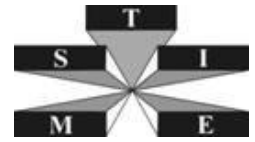


Figure 5 Cluster analysis of disaster educational programs

type of disaster. However, this is not a desirable outcome because it leads to low interest in other types of disaster and it disproportionately limits the other types of disaster management. While increased interest in disasters would drive further disaster management educational programs, it should be promoted in a way such that a variety of disaster management educational programs are promoted rather than promoting disaster management education designed for particular types of disasters.

### 3.2. Typifying disaster educational programs by cluster analysis

The study used cluster analysis (Ward's method) to organize the current disaster educational programs into distinct types based on variables that represent the characteristics of the programs. The dendrogram created by the cluster analysis suggested that the programs could be classified into four types: (1) practices to enhance disaster knowledge and awareness centered primarily at elementary schools, (2) school-led technical training



and capacity building for disaster responses, (3) fun practice activities utilizing events, functions, and subject studies, and (4) less frequent but unique practices (Figure 5). The less frequent but unique practices was further divided into four groups: high school volunteers, water-related disasters in Chugoku, Shikoku, and Kyushu regions, delivery classes and disaster simulations, and people requiring assistance during a disaster. The details and model cases for each type are described below.

### *3.2.1. Practices to enhance disaster knowledge and awareness centered primarily at elementary schools*

Practices to enhance disaster knowledge and awareness centered primarily at elementary schools included disaster educational programs that focused on raising awareness at elementary schools and equipping citizens with disaster knowledge that could be a prerequisite for having the capacity to overcome disasters.

The 2012 Grand Prize for Disaster Management Education was awarded to the Nechi Elementary School in Itoigawa City, Niigata Prefecture for their disaster educational program called, “Nechi School Original! 2012 Local Disaster Management Education Taking Place in the Wilderness of Geopark.” This program focused on the elementary school as a center for disaster management education and tried to raise the bottom line for local disaster readiness involving students and their parents as well as local community members. The program curriculum is designed to improve elementary school level disaster awareness as well as to encourage the acquisition of basic knowledge regarding the mechanism of disasters by exploring types of natural disaster that are most likely to occur in the areas in which they live.

The programs involve distinctive activities that incorporated game style learning in order to further motivate elementary school students to learn and disaster management roundtables in which parents and local community members participate.

### *3.2.2. School-led technical training and capacity building for disaster response*

School-led technical training and capacity building for disaster responses includes the type of disaster educational programs that focus on school-led efforts to encourage learning by training in specific techniques that are useful in the face of disasters, building disaster response capacity, as well as improving disaster awareness and learning basic knowledge.

Nechi Elementary School in Itoigawa City, Niigata Prefecture organized a disaster educational program called “EAST-Rescue,” which was awarded the Special Prize for Reconstruction Education in 2012. This program is not only meant to equip participants with the ability to protect their lives through evacuation drills during earthquakes and tsunamis, but also to develop techniques and the capacity to assist others during these disasters. Their slogan is, “from the one who’s saved to the one who saves.” It was distinctive in the way that elementary and middle schools have joint tsunami evacuation drills while setting forth an educational goal of middle school students taking the initiative to guide the younger elementary school students.

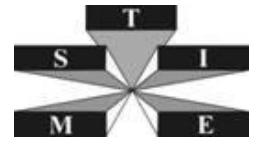
### *3.2.3. Fun practice activities utilizing events, functions, and subject studies*

Fun practice activities utilizing events, functions, and subject studies included educational programs that provide fun opportunities, such as creating materials on disaster management, and utilizing these opportunities for people to get together for these events to acquire new knowledge of these disasters.

Kochi Higashi High School in Kochi Prefecture organized a program called, “From School to Local Communities and Schools. A Project to Spread Disaster Management Culture,” which won the 2008 Grand Prize for Disaster Management Education. This program focused on educating a wide range of people at special events and effectively utilized learning time during school for disaster management education. An example of one such event was a disaster awareness activity at a local festival called the ‘Ichinomiya Exchange Festival that included a mascot created by the Kochi Prefecture. As a part of their effort to utilize the subject learning time during school, the students also hand-made disaster prevention items during home-economics classes that were later exhibited at the festival.

### *3.2.4. Less frequent but unique practices*

Less frequent but unique practices include the types of disaster educational programs that are less common in



the Disaster Management Education Challenge Plan but responds to specific needs. These programs can be further divided into four smaller groups called (1) programs by high school volunteers, (2) water-related disasters in Chugoku, Shikoku, and Kyushu regions to address water-related disasters that occur in those regions, (3) delivery classes and disaster simulations in which classes take place on requested sites to provide disaster simulation, and (4) people requiring assistance during a disaster program that is designed to address the specific needs of this population. These less common programs do not have many practice cases and thus leaves much room for reinforcing educational programs. In particular, the last program is a key priority of disaster management; therefore we should focus on and enhance disaster management education in this field.

According to the “Evacuation Guidelines for Assisting People Requiring Assistance During a Disaster”<sup>5)</sup> published by the Cabinet Office Government of Japan, people requiring assistance during a disaster are “people who require support in a series of actions to protect themselves during a disaster such as evacuating themselves to a safe place.” A number of elderly people and people with disabilities reportedly fell victim to the Great East Japan Earthquake<sup>6), 7)</sup>.

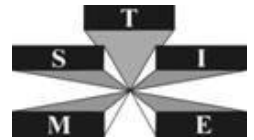
Takatsu Regional Network Promoting Committee of Takatsu School for Special Needs Education organized a disaster educational program with people requiring assistance during a disaster. This program, “Community Disaster Simulation Drill for Assisting People with Disabilities, Elderly People and Other People Requiring Assistance” won the 2011 Outstanding Program Prize. This program organized a drill for students with disabilities in partnership with schools and local communities in order to identify how emergency shelters should be set up and managed to be accessible to people with disabilities, elderly people, and other people requiring assistance. The aim of this program was to raise disaster awareness among students with disabilities. An added benefit of the program was the revitalization of local communities by providing opportunities for exchange between students with disabilities and local residents and fostering a deeper understanding of disabilities and the school.

#### 4. Conclusion

The study analyzed disaster educational programs in the Disaster Management Education Challenge Plan to classify them into different types. Basic analysis assessed active programs dedicated to current disaster management education, the target of the programs and the purposes of the education that they emphasized. The changes in the number of programs according to the type of disaster revealed how massive disasters could influence people’s interests in disasters. As a result of cluster analysis, the study was able to organize the disaster educational programs into four types based on their characteristics. The study also identified areas where disaster educational programs should be intensively reinforced. Overall, it is expected that citizens and workers who are engaged in disaster management and responses will be able to launch disaster management education work by referring to the past practice cases according to the types and develop their ideas into new programs for the future.

#### REFERENCES

- 1) KIMURA, R., HAYASHI, H., SUZUKI, S., KOBAYASHI, K., URABE, K., INOUE, S. and NISHINO, T. (2014). Systematization and Sharing of Disaster Management Literacy by DMLH *Journal of Disaster Research*, **Volume: 9, No: 2**, 176-187.
- 2) KIMURA, R., HAYASHI, H. and TAMURA, K. (2008). Which Persons and Organizations will be Relied upon the Most in the Case of the Next Major Disaster? -Results from random sampled social surveys of disaster victims of the 1995 Kobe earthquake and the 2004 Mid-Niigata earthquake disaster- *14th World Conference on Earthquake Engineering Conference Proceedings*, CD-ROM(8pp).
- 3) Committee for Promoting a Nationwide Movement for Disaster Reduction (2006). Basic Framework for Promoting a Nationwide Movement for Disaster Reduction



- [http://www.esri.go.jp/jp/workshop/forum/070130/panel-nishikawa2\\_01.pdf](http://www.esri.go.jp/jp/workshop/forum/070130/panel-nishikawa2_01.pdf) [accessed October 1, 2014]
- 4) “Disaster Management Education Challenge Plan” cite <http://www.bosai-study.net/top.html> [accessed October 1, 2014]
  - 5) Japan cabinet office (2006). The Guidelines for Evacuation Support of People Requiring Assistance During a Disaster <http://www.bousai.go.jp/taisaku/youengo/060328/pdf/hinanguide.pdf> (in Japanese) [accessed October 1, 2014]
  - 6) MATSUMOTO, A., TATSUKI, S. (2012). “Study of Casualties of Elderly and Disabled People by the Analysis of Aggregate Data by the Local Municipalities in the Great East Japan Earthquake” *Journal of Social Safety Science*, **No. 18**, 241-250 (in Japanese).
  - 7) UEDA, R. (2012). Multiple Regression Analysis of Human Damage Due to the Tsunami in the 2011 Great East Japan Earthquake-Synthetic Study Characteristics of Tsunami and Social Factors- *Journal of Social Safety Science*, **No.18**, 443-450 (in Japanese)