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Practical Research on Educational Dissemination for Volcanic Disaster Prevention: A Case Study Based on the Ecomuseum Concept

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Synopsis

An ecomuseum is defined as an area where the natural surroundings are the exhibits and the purpose is to inform people about their environment. However, the purpose of this study is to educate people about local disasters. Therefore, we have conducted practical research on Mt. Sakurajima to verify whether the concept of an ecomuseum can be applied to the dissemination for disaster prevention. It is important to emphasize the opportunity to enjoy the natural environment and culture of Mt. Sakurajima, and to show how this relates to volcanic disasters. In this way, the concept of an ecomuseum is an effective way of educating people on disaster prevention.

Keywords: ecomuseum; education; dissemination; volcanic disaster prevention

1. Introduction

Natural disasters are unique to each region, therefore it is important to have countermeasures specific to the risks of a particular region. An ecomuseum displays the whole natural site as museum articles informing people of the region's nature and disaster characteristics, thus playing a very important role in disaster prevention. The application of this concept of disaster prevention surpasses the traditional one-sided information transmission or education dissemination in two ways: (a) to provide learning opportunities that match the local features rooted there, and (b) to motivate local citizens to learn spontaneously. Ecomuseums provides museum activities conducted under the initiatives of local people and aims towards obtaining enjoyment through immediate nature and cultural interaction while developing the environment as to protect it for generations to come.

In this study, the concept of this ecomuseum is applied to Mt. Sakurajima, one of the most active volcanoes of Japan, to practice the educational dissemination of volcanic disaster prevention. In addition, the problems are verified through practical research in order to search for a methodology that can be applied to disaster prevention in other areas.

2. The concept of an Ecomuseum

2.1 The definition of an Ecomuseum

The concept of ecomuseum originated in France in the late 1960's. It is an English translation from French words of écomusée, a compound created from the words ecology and museum. In this case, ecology is thought to be referring to human ecology (Varine, 1978). This term ecology is not simply referring to the academic term bio-ecosystem, but rather it is used in a comprehensive sense encompassing the natural and social environment (Ohara, 1999).

The definition of an ecomuseum differs from person to person. Generally, however, it is an organization that recognizes the heritage and memories of nature, history, culture and industry, preserving and displaying them as a living museum (Ishimori, 1999). Furthermore, it also utilizes such heritage as research themes and lifelong learning opportunities, thus contributing to the development of local communities.

Three vital elements in the implementation of

museum activities are “place”, “materials” and “people.” In conventional museums, “place” is the “building” called “museum”, “materials” are the “documents and collections” and “people” are those involved in museum activities, the “experts and visitors”. Contrastingly, in ecomuseums “place” is a particular “territory”, “materials” are the “heritage and memories” of nature, culture and industries within that territory, and the main “people” involved in activities are the “local residents” (Rivard, 1984). The comparison is shown in Fig. 1 (Arai, 1995; Ohara, 1999).

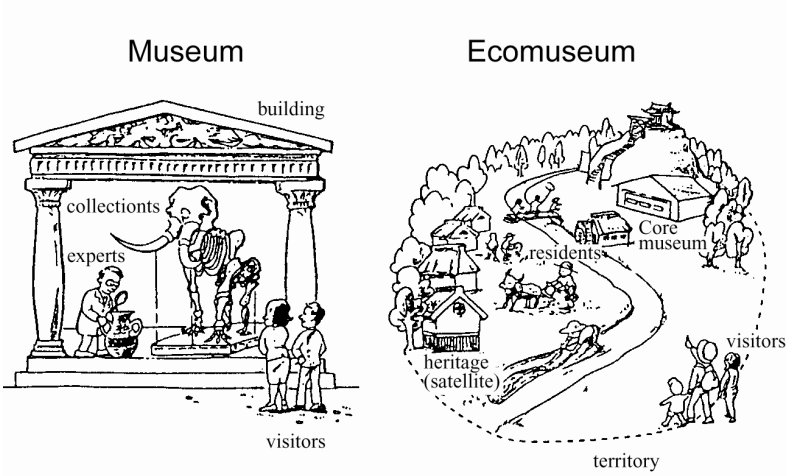
An ecomuseum is a new type of museum that greatly enhances its possibilities created from the separation from building constraints. This has recently caught attention in Japan. In most cases, ecomuseums are aimed to revitalize an area by rediscovering the local heritage and appealing to local residents. There is a strong tendency that these initiatives are taken not by local citizens but instead by governments. In reality, some people are over-bound to the definition of an ecomuseum hindering them from conducting progressive activities appropriate to their own area (Iwahashi, 1999).

2.2 Application of disaster prevention

There are very few cases that the concept of an ecomuseum was employed to improve the awareness of disaster prevention among local citizens. However, in many cases, local nature, history and culture are closely related to disasters. By making the area itself a lifelong learning target place, it is expected to enable the improvement of the local citizens’ awareness of disaster prevention. For example, in an area where floods frequently occur, the topography is a product of flood disasters and memories of flood disasters historically remain. In addition, culture rooted in the region such as folktales, customs, and rituals are in many cases lessons learned from disasters or wisdom acquired to overcome such disasters. There exists “material” of natural and cultural heritage that is closely related to disasters. They are “conserved and displayed” on the site, and local citizens become “curators” and while ecomuseums act as catalysts to convey disaster memories for future generations.

2.3 Application in Mt. Sakurajima

Mt. Sakurajima, one the most active volcanoes in Japan, is an optimal place to practice an ecomuseum to increase awareness of disaster prevention. In this study, to facilitate the practice of the ecomuseum concept in Sakurajima, “Sakurajima Friends Association” was initiated in August, 2002 as a citizens’ organization for the enjoyment of the nature and culture of Sakurajima. The purposes of this organization are (a) to allow local citizens to take the initiatives of activities, and (b) to analyze the feedback and questionnaires of participants with the purpose of investigating problems and solutions. Thirty five events have been held previous to March, 2004 including lectures, on-site tours for the general public, integrated studies and on-site studies for elementary and junior high school students (Tables 1, 2 and 3). In our practice, emphasis is not placed on the educational dissemination of disaster prevention but on the enjoyment of immediate nature and cultural interaction of Mt. Sakurajima. We intend to



		place		materials		peole
Museum	=	building	+	collections	+	experts visitors
Ecomuseum	=	territory	+	heritage memories	+	residents

Fig. 1 Comparison between museum and ecomuseum

Table 1 Practical examples of lectures

Date	Title	Details	Participants
2003/01/26	Find out more about Sakurajima!	Dissemination lecture about disaster prevention by Sakurajima Friends Association	31
2003/03/17	Sakurajima ecomuseum plan	Regular meeting of local regional vitalization group	20
2003/05/11	Sakurajima: A living museum!	Lifelong Learning Course sponsored by Sakurajima Town	100
2003/06/03	The history of eruptions and disasters on Sakurajima	Lecture about disaster prevention requested by local civil engineering company	30
2003/11/27	Sakurajima ecomuseum plan	Regular meeting of the “Considering the future of Sakurajima” group sponsored by Ministry of Land, Infrastructure and Transport	20

Table 2 Practical examples of on-site tours

Date	Title	Details	Participants
2002/08/11	Take a sightseeing tour!	Touring around Sakurajima by bus	10
2002/09/08	Try your hand at growing Sakurajima radishes!	Planting of Sakurajima radish seeds	10
2002/10/27	Volcano tour	Volcano study tour by bus	28
2002/11/22	Fishery tour	Hands-on tour of a fishery	12
2002/11/24	Nature tour	Nature study tour by foot	19
2002/12/15	Tour of historical sites	History study tour by foot	19
2003/02/02	Sakurajima radish harvest festival	Radish harvesting and cooking class	30
2003/03/29	Cherry‐blossom viewing	Cherry‐blossom viewing	13
2003/04/20	Shinjima expedition	Exploring a small volcanic island	24
2003/05/11	Sabo tour	Sabo study tour by bus	29
2003/05/17	Ecomuseum exploration	Touring around Sakurajima by bus	8
2003/05/18	Shinjima expedition	Exploring a small volcanic island	26
2003/05/24	Tour of historical sites	History study tour by foot	26
2003/06/21	Sakurajima seminar	Talk on Sakurajima ecomuseum	13
2003/07/26	Let's go sea kayaking!	Viewing Sakurajima from the sea	5
2003/08/23	Talk on Sakurajima	Talk on a book about Sakurajima	20
2003/09/06	Try your hand at growing Sakurajima radishes!	Planting of Sakurajima radish seeds	10
2003/09/28	Sabo tour	Sabo study tour by bus	66
2003/10/26	Volcano tour	Volcano study tour by bus	19
2003/11/22	Let's go sea kayaking!	Viewing Sakurajima from the sea	12
2003/12/14	Hands on pottery experience	Unique pottery using volcanic ash	15
2004/01/17-24	Taisho eruption postcard exhibition	Old postcards with pictures of the last big eruption	1057
2004/02/04	Volcano tour	Volcano study tour by bus	22
2004/02/14	Sakurajima radish harvest festival	Radish harvesting and cooking class	30
2004/02/28	Revisiting the site of the Taisho eruption	Visiting the site where pictures of the last big eruption were taken	41

Table 3 Integrated studies, on-site studies

Date	Title	Details	Participants
2003/02/28	What kind of a mountain is Sakurajima?	East Sakurajima Elementary School / Lecture	30
2003/06/02	Hometown report	Ishikidai Junior High School / On-site study	278
2003/11/27	Process of eruptions on Sakurajima	Takeokadai High School / Lecture	22
2004/01/28	Volcano tour	Sakurajima Junior High School / On-site study	13
2004/03/04	Why does Sakurajima erupt?	East Sakurajima Elementary School / Lecture	37

show their relations with disasters.

3. Practical examples

3.1 Lectures

Thus far, we have provided 5 lectures (Table 1). The contents are largely divided into two areas: ecomuseums and other disaster related topics. All the lectures related to ecomuseums were provided upon requests mostly by governments and local regional vitalization groups who hope to revitalize their respective local areas. In these ecomuseum lectures, it is intended to slightly mention the history and disasters of Sakurajima's volcanic eruptions.

Some lectures on disaster prevention were organized by Sakurajima Friends Association while others were conducted upon request. As an example of the latter case, a lecture was planned in response to a request from a local civil engineering company who wishes to increase the awareness of disaster prevention among their employees. The request was made after some members of the company participated in the lecture on ecomuseums during the Lifelong Learning Course sponsored by Sakurajima Town (Table 1). Although the lecture was not directly connected to disaster prevention, it represents a case in which a company spontaneously planned a lecture on disaster prevention. This exemplifies that activities which do not primarily place emphasis on disaster prevention also produce a certain positive outcome.

The lecture organized by Sakurajima Friends Association was entitled "Find out more about Sakurajima! - The record and the lessons learned from our predecessors - ". In the lecture, the past eruptions of Mt Sakurajima studied from historical materials were introduced and the lessons learned from them were interpreted. The content of the lecture is important from the perspectives of disaster preventions. The lecture was held in the community hall (capacity of 200 people), the largest venue in Sakurajima. Regarding PR, we informed the concerned people of the disaster prevention and schools. In addition, we announced to general public through TV, radio, newspapers and disaster prevention radio (in town broadcasting). Out of approximately 6400 Sakurajima citizens, only 31 people attended. This shows that lectures are generally regarded with non-interest. Furthermore, this reveals that people feel they are being forced to attend many of the disaster prevention related lectures. The result of the questionnaire relays that 71% of the participants answered "Lecture was interesting", 86% of them said that they want "to participate again", and 89% of them answered "awareness of disaster prevention was improved" (Fig. 2). This displays a very high educational impact. This concludes lectures provide important opportunities for those who are interested, and therefore it is necessary to increase the frequency of lectures. However, the effect of dissemination seems to be low.

3.2 On-site tours

We have held 25 on-site tours, and other events for the general public (Table 2). We distributed circulars to members of the Association and made announcements via newspaper, TV and radio. The quota set for one event varies from 10 to 30 depending on the number of staff members (guides) and the contents of events. The participants age

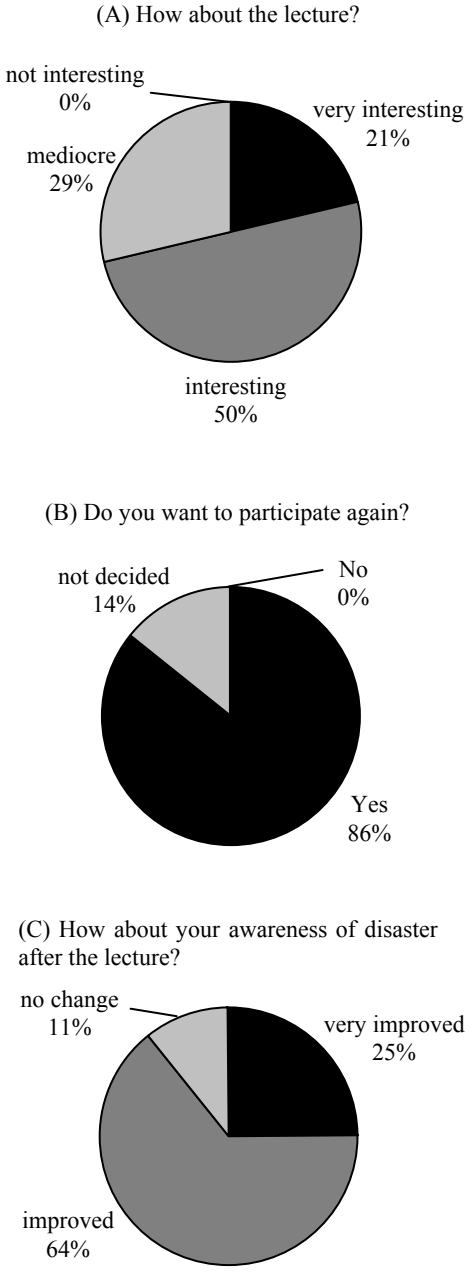


Fig. 2 Result of questionnaire of the lecture

group differs considerably from elementary school children to senior citizens, and there are also many couples and parents with their children. Males and females in their 50's make up the majority, followed by females in their 40s. Approximately 1600 people have participated thus far making this event more popular than lectures.

Roughly 30 % people have participated more than once. Diverse topics, ranging from those directly related to disaster prevention to those without any direct relation, were arranged. For academic tours, guides with experts were requested, and for agricultural and fishery tours we asked local citizens to guide.

The number of participants differs greatly depending on how events are informed. This is because people seem to be sensitive to such phrases as "only this time" and "specially prepared". For example, there were two Sabo (debris flow control) tours. After the first tour which was attended by 29 people, different notification method was applied resulting in 66 participants in the second time. For the 1st event, we only ran a classified ad in newspapers. However, before the second tour, there was an opportunity to obtain AM radio interviews in which we emphasized that we will visit "Sabo facilities only found in Mt. Sakurajima" or "the area where it is usually off-limit". The desired amount of applicants increased by two-fold. In this case, we hired another bus and accepted all applicants. The result of questionnaires also shows that people were interested because this tour was "special". There were few participants with interest in Sabo itself (Fig. 3). At any rate, approximately 90% of the participants replied that the awareness of disaster prevention was increased after joining the tour. It can be concluded that there was a high educational effect and dissemination.

Regarding tour content, programs that impress people with unexpected "links" between immediate topics and volcanoes or those which appeal to one's intellectual curiosity are popular. For example, participants enjoy themselves by realizing such immediate facts related to volcanoes such as: (a) pumice found in Sakurajima radish fields were created by eruptions, (b) volcanic ash used for pottery glaze was originally magma, and (c) a settlement of the Jomon Period was devastated due to a debris flow. It is considered that learning effect is higher if we allow participants realize the relationship with immediate facts than to directly teach about volcanoes and disasters.

Incidentally, the event that gathered the largest number of people was "Exhibits of picture postcards of Mt. Sakurajima", which was visited by 1057 people. In this exhibit, we displayed about 280 old postcards with pictures of the Great Eruption and disasters of the Taisho era. The reason for the high turnout can be contributed to advertising methods, the conditions of venues, content of exhibits and other factors. This very interesting consequence will be reported later in depth.

3.3 Integrated studies, on-site studies

A total of five educational dissemination activities were held targeting for schools (Table 3). Mainly integrated studies class hours are used; some are lecture type and some are on-site leaning type studies. In case of lecture type studies, quiz or visual aids as well as parables are used to teach. In addition, only one topic is chosen for each lecture in order to prevent information overload. According to the questionnaire, more than 80% of the students answered "it was easy to understand", and more than 70% students answered "awareness for disaster prevention was increased", showing good results.

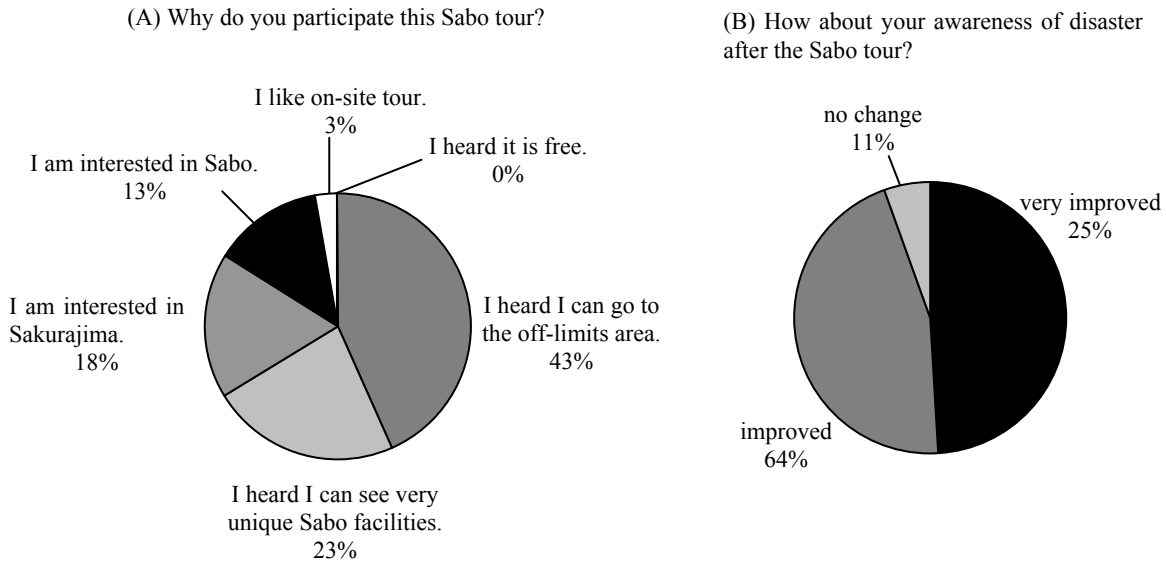


Fig. 3 Result of questionnaire of the on-site Sabo tour

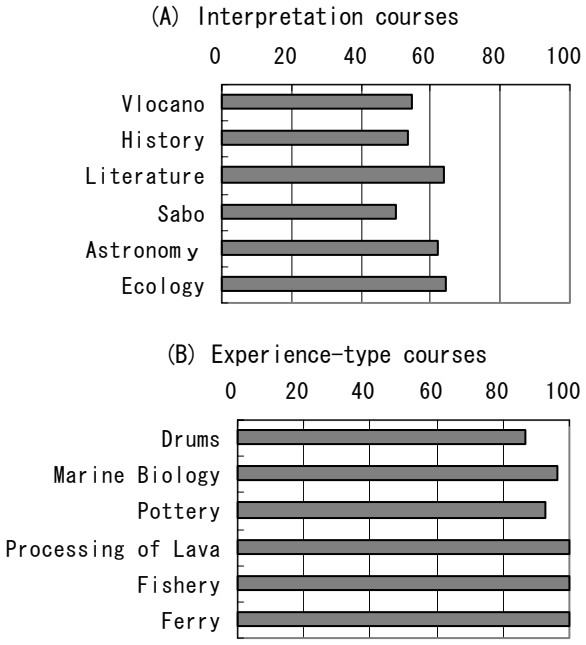


Fig. 4 Percentage of who answered "interesting" in the on-site study for Ishikidai Junior High School

I would like to introduce one example of the on-site studies arranged for 280 1st year students of Ishikidai Junior High School. After talking about an outline of Sakurajima for the first 20 minutes, on-site studies were made in 12 different courses unique to Sakurajima (Volcano, History, Literature, Sabo, Astronomy, Ecology, Drums, Marine Biology, Pottery, Processing of Lava, Fishery and Ferry). Each course was guided by a volunteer instructor with a particular field expertise or occupation involvement. We asked each instructor to tell the relationship between their respective experience and volcanoes. According to the questionnaire, experience-type courses were favored while interpretation courses that appeal to intellectual curiosity were not well received (Fig. 4). In contrast to that, programs appealing the intellectual curiosity that are well recognized among adults required some ingenuity among the children to disseminate this knowledge. From now on, it will be necessary to develop programs that allow participants to be engaged in experiment involving tasks such as writing, making, searching and touching. It is considered that this will be effectively used as the introduction not only for children but also for adults.

There are few opportunities of on-site studies where over 100 students can be accepted at once. As for on-site studies, it is necessary to act in a whole school or whole grade. Therefore, the larger the school is, the more difficult it becomes. In addition, school teachers are transferred after several years, which makes it hard to conduct studies rooted in the region. It is hoped to have an ecomuseum in order to provide integrated studies and/or lifelong studies based on and unique to the region.

4. Conclusions

We have applied the ecomuseum concept that regards the whole area as a museum and provided an interpretation of the Sakurajima site. We also carried out educational dissemination activities which include awareness of disaster prevention. Through our practices, the following points were found.

(a) Lecture meetings are important opportunities for those who are interested. However there is little effect in dissemination of awareness.

(b) Tours which allow people experience “unique opportunities” are attractive.

(c) Programs that help people realize the relationship between immediate matters and disasters are effective means in disaster prevention education.

(d) Programs that satisfy intellectual curiosity are effective for adults.

(e) Hands-on type programs are favored by children, but interpretation type programs that appeal to intellectual curiosity are not well received by children.

It was understood that the concept of an ecomuseum that provides study opportunities that match the local features rooted there is an effective method in carrying out educational dissemination for disaster prevention. The important issue remains is how to develop the scheme which enables the establishment, operation and continuation of an ecomuseum in the future.

Acknowledgments

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References

Arai, J. (1995): Practice, Introduction of ecomuseum -Revitalization of local area in 21th century-, Makino Publication, 171p..

Ishimori, S. (1999): Introduction of museum, Soc. Promotion Univ. Air, 290p..

Iwahashi, K. (1999): Ecomuseum of France, *Ecomuseum: Revitalization of local area in 21th century*, IE-NO-HIKARI Association, pp29-63.

Ohara, K. (1999): Trip for the ecomuseum, Kashima Publication, 183p..

Rivard, R. (1984): Opening up the museum or Toward a new museology: ecomuseums and "open" museums, Québec, René Rivard, 117p..

Varine, H. (1978): L' écomusée, *La Gazette*, Ottawa OMA/AMC, Vol.11, No.2, pp.28-40.

火山防災のための教育普及に関する実践的研究
―エコミュージアムのコンセプトを適用した事例について―

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要旨

地域全体を博物館と考え現地で解説するというエコミュージアムのコンセプトは，その地域の自然や災害の特色を伝えることができる。このコンセプトを桜島で適用し，その有効性を検証した結果，防災を前面に出した教育普及よりも，身近な自然や文化と災害との関連を伝える方が学習効果が高いことが分かった。地域に根ざし，地域の特色を生かした生涯学習の場を提供するエコミュージアムは，防災のための教育普及に有効な方法である。

キーワード:エコミュージアム，教育，普及，火山防災

火山防災のための教育普及に関する実践的研究
― エコミュージアムのコンセプトを適用した事例について ―

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１．はじめに

自然災害は地域ごとに特色があり、その地域のリスクに合った対策が重要である。地域をまるごと博物館と考え現地で本物を展示するというエコミュージアムのコンセプトは、その地域の自然や災害の特色を伝えるという防災にとって極めて重要な役割を果すことが可能である。本研究では、日本で最も活動的な火山の一つである桜島でエコミュージアムのコンセプトを適用した実践を行い、火山防災のための教育普及の方法論を探っている。ここでは、その理念とこれまでの実践例を紹介する。

２．エコミュージアムのコンセプト

エコミュージアムとは、1970 年代にフランスの博物館学者リヴィエールによって提唱されたコンセプトで、自然・文化・産業遺産を特定の施設に閉じこめず、そのまま生きた博物館と捉え、研究や生涯学習の場にしようとするものである。近年日本でも注目されつつあるが、地元の遺産を再発見しアピールするという地域振興を目的としている場合がほとんどである。

これまで地域住民の防災意識の向上を目的としてエコミュージアムのコンセプトが適用された例はない。しかし、地域の自然や文化は災害と密接に関連していることが多く、地域そのものを生涯学習の場とすることで、住民の防災意識が向上することが期待できる。

本研究では、エコミュージアムのコンセプトを桜島で実践するために、まず、桜島の自然と文化を楽しむための市民団体「桜島友の会」を発足させた。この会を発足させた目的の一つは、実践を通して参加者の反応やアンケート結果などを分析し、その問題点や方法論を探ることにある。2004 年 3 月までに行ったイベントは 35 回で、講演会、一般向けの体験型ツアー、小中学校の総合学習や体験学習などである。

３．実践例

（１）講演会

これまでに、防災関係の講演会を 5 回行っている。ある講演会では、200 人収容できる桜島島内の会場を使用し、防災関係者、学校等に告知したほか、マスコミ、防災無線を使って一般家庭にも告知したが、参加者はわずか 31 名であった。一般に講演会は面白くないものと思われている。

一方、参加者のアンケート結果を見ると、「おもしろかった」「また参加したい」という回答が 8 割を超えており、教育的効果が高かったことを示している。防災意識の高い人にとって講演会は重要な機会であり、開催頻度を増やすべきであるが、普及としての効果は低いと思われる。

（２）体験型ツアー

一般向けの体験型ツアー等はこれまでに 25 回行っている。参加者は 20 代～80 代と幅広く、夫婦や親子連れも多い。

テーマは防災と直接関係あるものから無関係のものまで様々なものを用意した。内容よりも「今回だけ」「特別に」などのフレーズに良く反応する傾向があり、イベント告知の仕方によって参加者数は激変する。また、身近なテーマと火山との意外な「つながり」に感動し、知的好奇心に訴えるプログラムの評判が良い。

（３）総合学習・体験学習

小学校、中学校、高校で総合的な学習の時間を利用した桜島に関する授業・体験学習を行った。中学校の体験学習では 280 名の生徒を受け入れた。まず 20 分の講演で桜島の概要を解説した後、桜島ならではの 12 コースに分けて体験学習を行った。アンケートの結果、体を動かすような体験コースの反応が良く、知的好奇心に訴えるような解説コースは反応が悪かった。大人が知的好奇心に訴えるプログラムが有効であるのとは対照的であり、子供向けに知識の普及を図る場合には工夫が必要である。