
Museum Survey for
“Development of Teacher Training Program to Realize Science Education for
Sustainable Society”

(Preliminary Report)

(Research Project Number 20240068)

Grants-in-Aid for Scientific Research (A) 2008-2011
March 2011
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Museum Survey for
“Development of Teacher Training Program to Realize Science Education for
Sustainable Society”

1. Summary of Survey

(1) Purpose of Survey

This survey was conducted as part of the Grants-in-Aid for Scientific Research (A) “Development of Teacher Training Program to Realize Science Education for Sustainable Society” (Research Project Number 20240068) (FY2008-2011, Principal Investigator: Tomoyuki Nogami, co-investigator: Yoshikazu Ogawa of National Museum of Nature and Science, Tokyo)

The aim of the project is to have teachers engage in educational activities throughout their careers by utilizing museums and other social resources in a variety of situations, and so become equipped with the knowledge and skill (museum literacy) that will enable them to connect with the local community. The purpose of this survey is to reveal the present state of teacher training programs in museums, as well as to provide information for designing ideal future training programs.

(2) How the survey was conducted

① Survey method

Self-administered questionnaire survey distributed and collected through the mail

② Survey period

November – December, 2010

③ Survey target

The staff in charge of school education in 227 museums

④ Extraction of survey targets

Members of Japanese Council of Science Museums (JSCM)

⑤ Surveys collected

128 museums (recovery rate: 56.4%)

(3) Survey items

Question 1. Name of Museum

Question 2. Whether the museum offers teacher training programs

Question 3. If the museum offers teacher training programs, how are the training programs categorized?

Question 4-1. How the teacher training programs are implemented

- Question 4-2. How the teacher training programs are implemented (based on number of programs) *
- Question 5-1. Collaboration partners for implementation of the teacher training programs
- Question 5-2. Collaboration partners for implementation of the teacher training programs (based on number of programs) *
- Question 6-1. Style of the teacher training programs
- Question 6-2. Style of the teacher training programs (based on number of programs)*
- Question 7-1. Topics covered by the teacher training programs
- Question 7-2. Topics covered by the teacher training programs (based on number of programs)*
- Question 8. Aim of conducting the teacher training programs in museums; what kind of teachers the programs aim to create
- Question 9. The benefits gained from the teacher training programs, for participating teachers, museums, and collaborating institutions
- Question 10. Reactions from participating teachers, museums, and collaborating institutions as a result of the teacher training programs
- Question 11. Issues for the teacher training programs conducted in museums
- Question 12. Reasons for not conducting teacher training programs
- Question 13. Opinions regarding the teacher training programs conducted by museums
- Question 14. Staff in charge of school education and teacher training programs

* In regards to the number of training programs, the result is counted and calculated based on the numbers indicated in parenthesis next to each answer.

2. Survey results

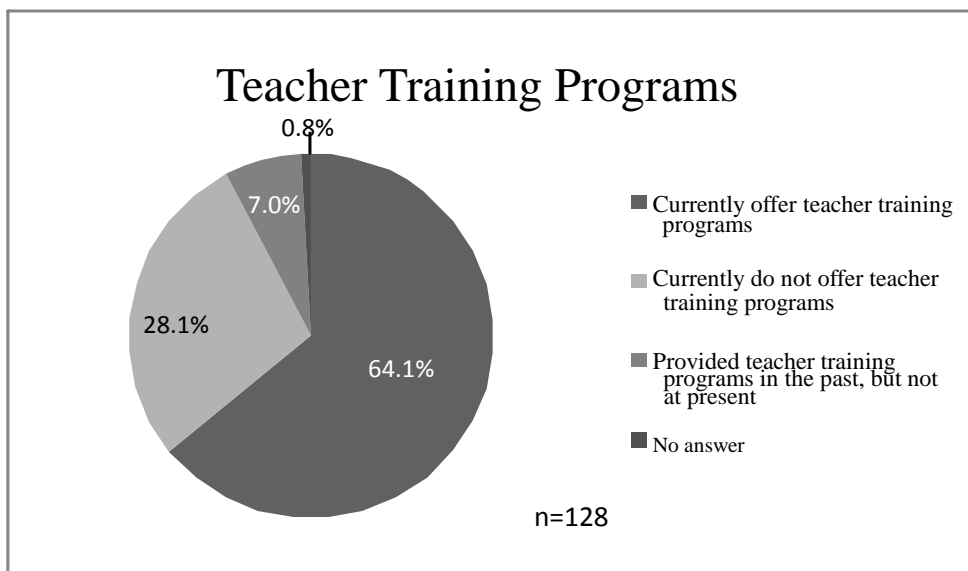
Question 1.

Name of Museum (omitted)

Question 2.

Does the museum offer teacher training programs?

Out of the museums that responded, 60% offer teacher training programs. Some responded, they "provided teacher training programs in the past, but not at present." Including these, the percentage of museums offering teacher training programs account for 70%.

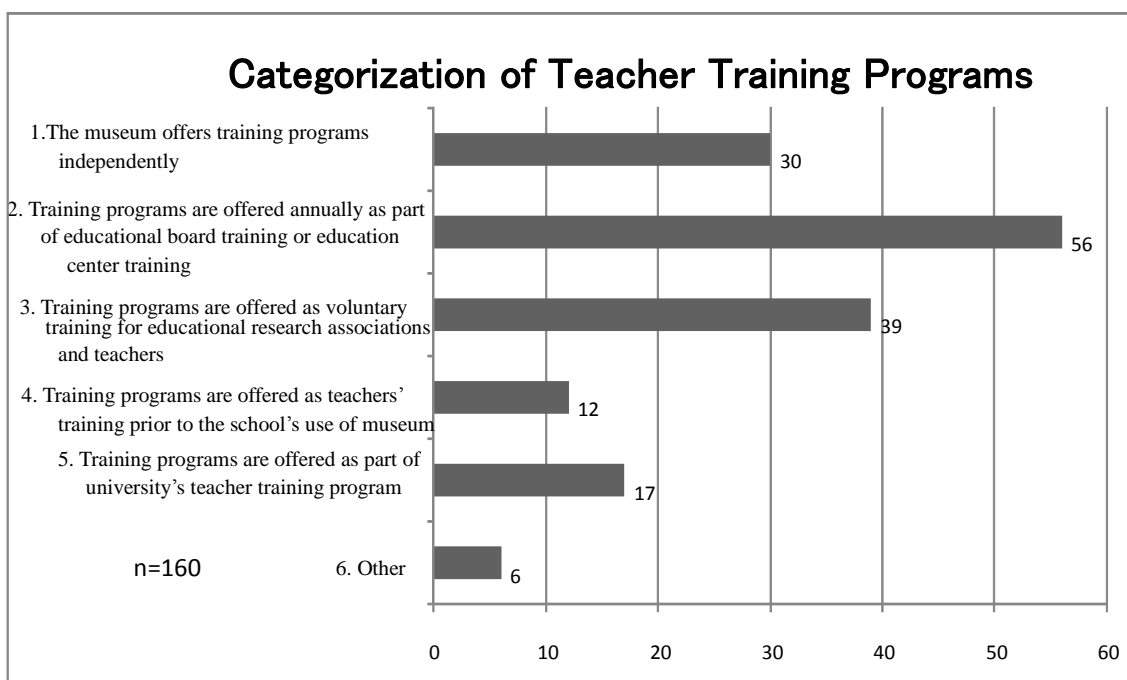


Question 3.

If the museum offers teacher training programs, how are the training programs categorized? (check all that apply)

Most answered that the "training programs are offered annually as part of the educational board training or the education center training." The next popular answer was the "training programs are offered as voluntary training for educational research associations and teachers." While many training programs are conducted by school education related organizations and associations, there are cases where "the museum offers training programs independently from other institutions" as well. Also, it is distinctive in a way that there were several examples where "the training programs are

offered as part of university's teacher training program.



No.	Question 3.	6. Other
1	The training programs are offered due to demand from schools and teachers.	
2	The training programs are offered at renewal of teaching certificates. (2)	
3	The training programs are offered as training for newly hired teachers, etc.	
4	The training programs are offered upon request from teachers and schools.	
5	The training programs are offered as part of "Refresh Science School," jointly organized with a physics-related academic society.	

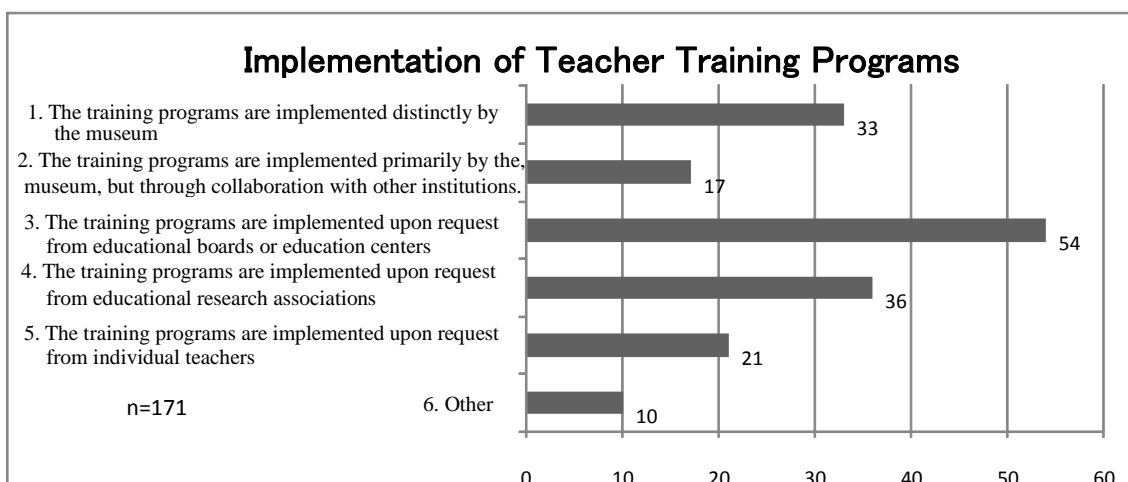
* If the response is not followed by a number in parenthesis, it signifies that there was only 1 museum with that particular response.

Question 4-1.

How are the teacher training programs implemented? (check all that apply)

The most popular response was "the training programs are implemented upon request from educational boards or education centers" followed by "the training programs are implemented upon request from educational research associations" and "the training programs are implemented distinctly by the museum" as though to reflect the responses to Question 3. Responses under "Other" reveal several cases which implement training programs through collaboration with (teacher training) universities upon request

from these institutions.



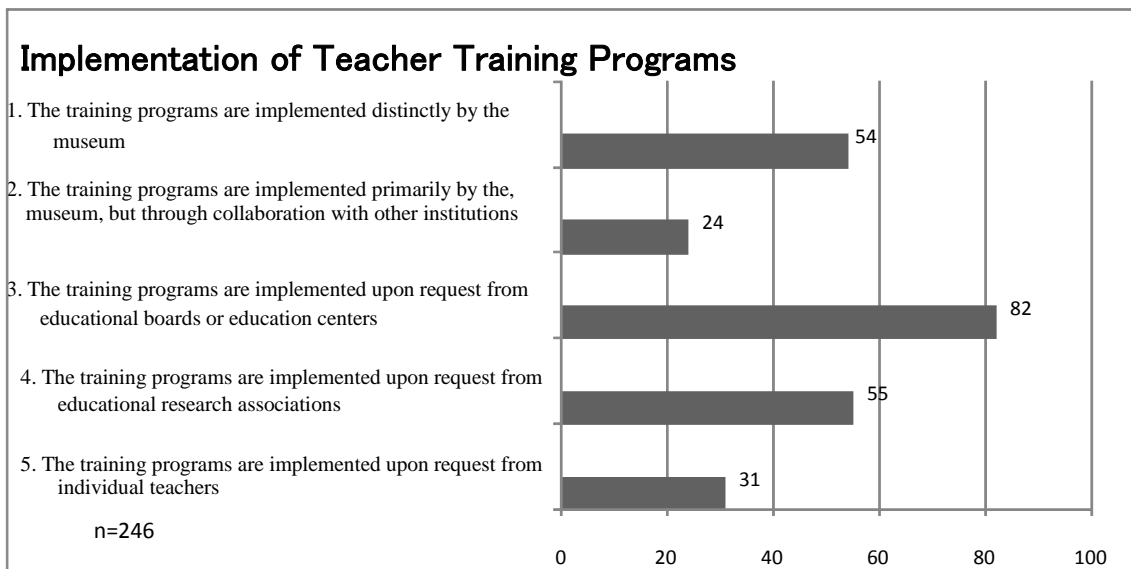
No.	Question 4-1. 6. Other
1	The training programs are implemented upon request from teacher training universities, etc.
2	The museum is placed in charge of a class, upon request from teacher training universities. The museum is placed partly in charge of a Core Science Teacher (CST) projects.
3	The training programs are implemented upon request from universities
4	The training programs are implemented upon request from schools (2)
5	The training programs are not intended as projects, but rather often implemented upon request from teacher(s).
6	The training programs are implemented at renewal of teaching certificates. (Initiative taken by neighboring universities.)
7	The training programs are offered as part of a facility tour for teachers, organized and conducted by other museums.
8	Collaboration with universities to utilize science museums.
9	Training programs are implemented as teacher training programs upon their preliminary visit, prior to the 4 th grade hands-on activities on folk handicrafts. Other: Training programs are implemented as teacher training programs upon their preliminary visit, in case they choose to volunteer (explaining about displays).

* If the response is not followed by a number in a parenthesis, it signifies that there was only 1 museum with that particular response.

Question 4-2.

How are the teacher training programs implemented? Result is based on number of programs. (check all that apply)

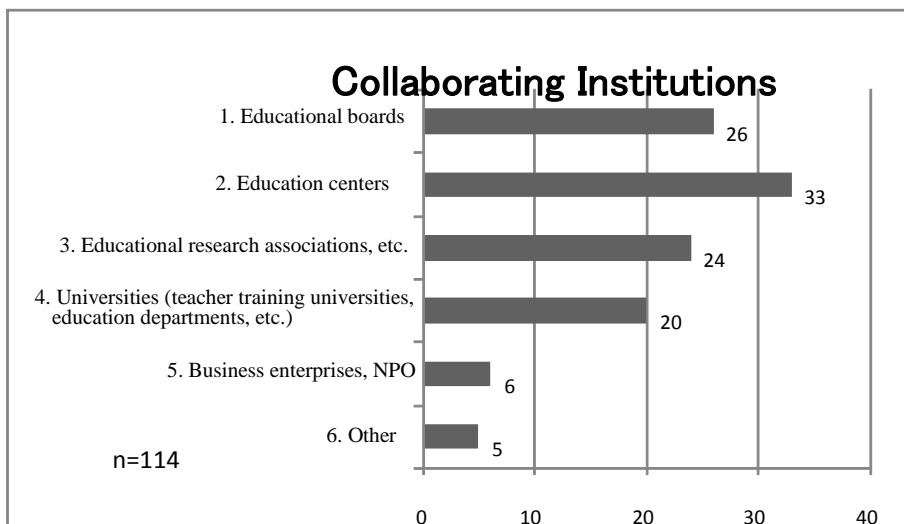
In terms of the number of teacher training programs, the response that “the training programs are implemented upon request from educational boards or education centers” was the greatest, followed by “the training programs are implemented upon request from educational research associations” and then “the training programs are implemented distinctly by the museum.”



Question 5-1

If the teacher training programs are implemented through collaboration with other institutions, through what kind of institutions are the programs implemented? (check all that apply)

Those that responded “education centers” were the greatest in number, followed by “educational boards” and then “educational research associations, etc.” The responses correspond with the responses to Question 3 and Question 4.

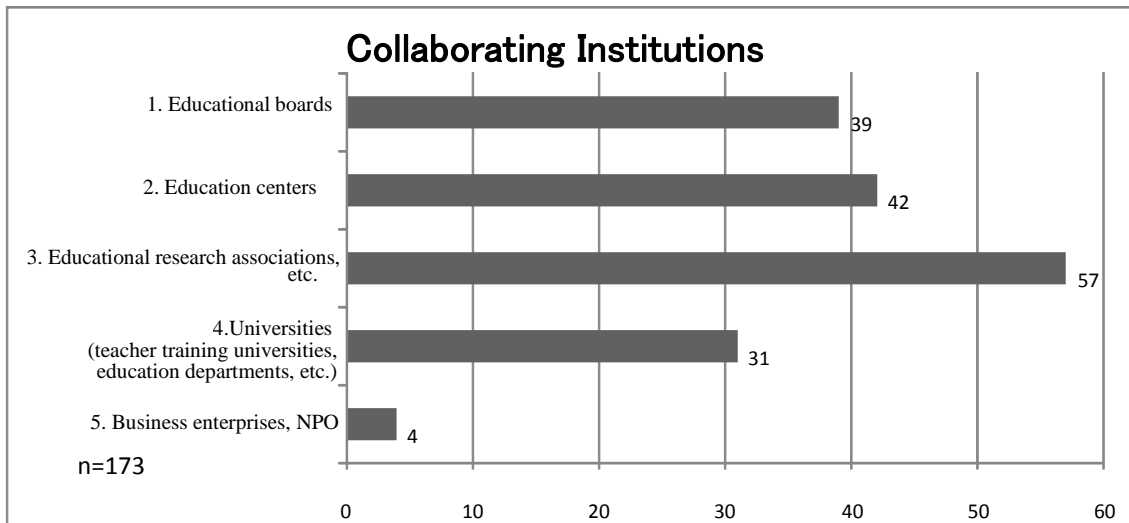


No.	Question 5-1. 6. Other
1	JAXA, technical colleges
2	Newspaper companies
3	Other museums (related to natural history)
4	Schools
5	Other museums, teachers from other regions

Question 5-2.

Through what kind of institutions are the programs implemented? Result is based on number of programs. (check all that apply)

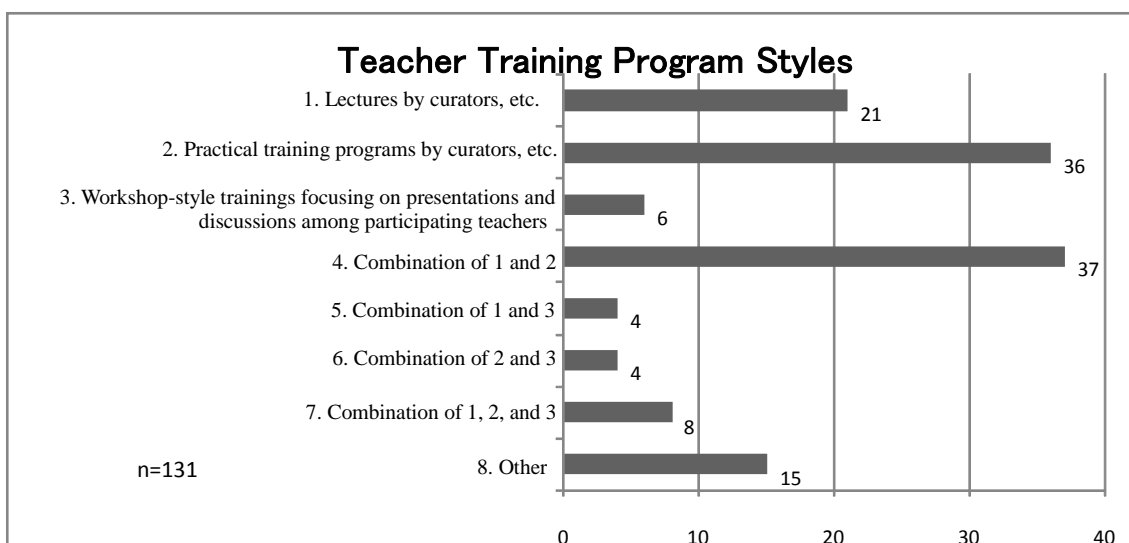
Not much difference was seen in the responses regarding the number of training programs offered in collaboration with other institutions. However, those that responded “educational research associations, etc.” were the greatest in number. Out of the remaining responses, those that responded that they collaborate with “universities (teacher training universities, education departments, etc.)” were the greatest, in line with the responses to Question 4.



Question 6-1.

In what style are the teacher training programs conducted? (check all that apply)

The responses were greatest in “a combination of ‘lectures by curators, etc.’ and ‘practical training programs by curators, etc.’” followed by “practical training programs by curators, etc.” and “lectures by curators, etc.’”. “Workshop-style training programs focusing on presentations and discussions among participating teachers” were few, and interactive training programs such as participation-type and workshops were very few. “Other” include several examples of training programs conducted through collaboration with universities.



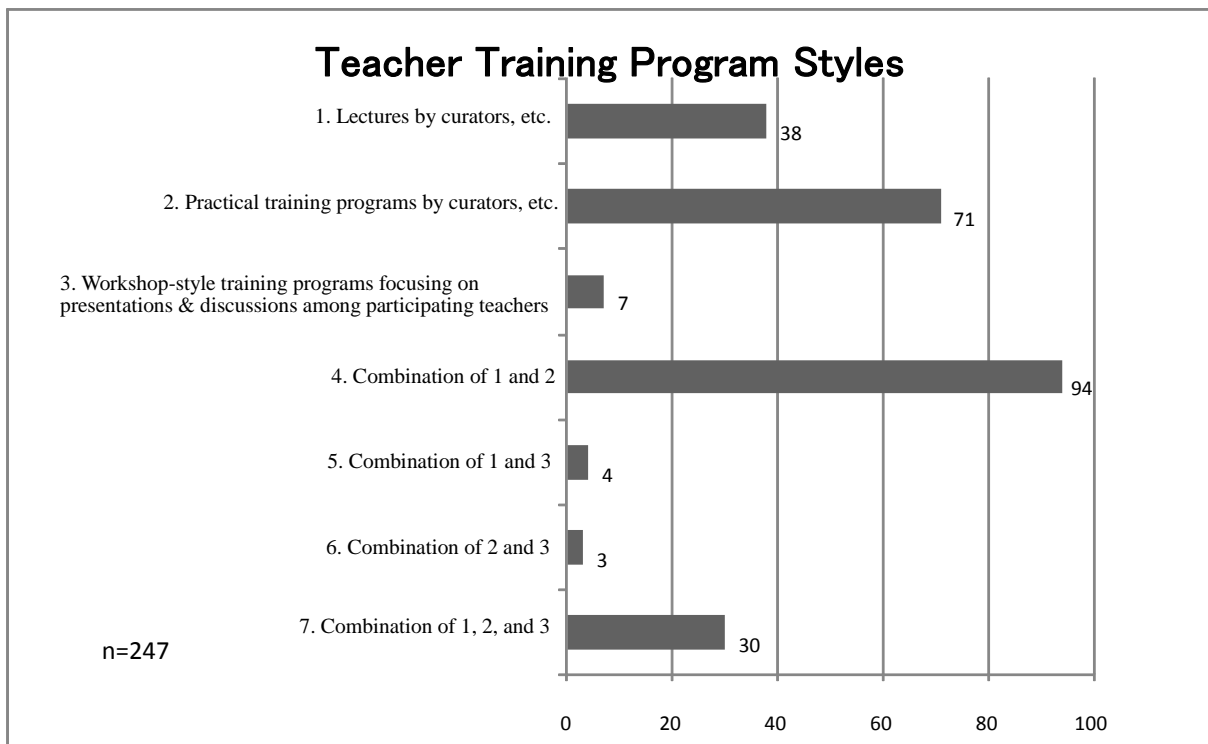
No.	Question 6-1. 8. Other
1	<ul style="list-style-type: none"> •The museum is placed in charge of a class, upon request from a teacher training university. •The museum is placed partly in charge of a CST project.
2	Practical training programs by science activity teachers
3	Practical training programs by museum tenants and business facilities
4	Acting as guides during special exhibits, or attending to visitors
5	Practical training programs by teachers' consultants and science educators
6	Training programs concerning museum work (handling and organizing objects) in addition to 1 (lectures by curators) and 2 (practical training programs by curators).
7	Lectures and practical training programs by educators
8	<ul style="list-style-type: none"> ① Lectures and practical training programs by professors of education universities ② Lectures and practical training programs by local tour guide in Oze
9	Hands-on experience
10	Explanation of exhibits, behind-the-scenes tour
11	Lecture by museum director
12	Hosting science teacher meetings and research seminars, introducing projects, etc.
13	Observation of exhibits and fossil-processing operation
14	Not fixed
15	Lectures by university professors, etc.

Question 6-2.

In what style are the teacher training programs conducted?

Result is based on number of programs. (check all that apply)

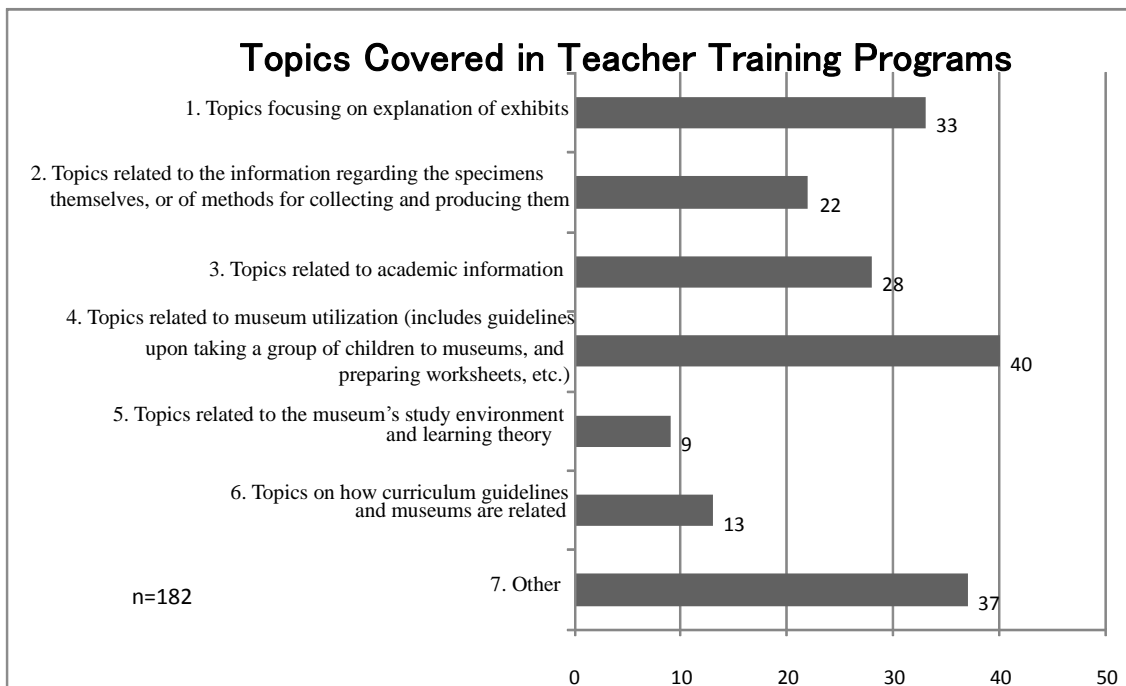
In terms of number of teacher training programs, those that responded “combination of ‘lectures by curators, etc.’ and ‘practical training programs by curators, etc.’” were the greatest in number, followed by “practical training programs by curators, etc.” then “lectures by curators, etc.” There were very few workshop-style training programs focusing on presentations and discussions among participating teachers, as was the case in Question 6-1. However, the number of training programs conducted as a “combination of ‘lectures by curators, etc.’, ‘practical training programs by curators, etc.’ and ‘workshop-style training programs focusing on presentations and discussions among participating teachers’” was the fourth greatest in number.



Question 7-1.

What topics are covered by the teacher training programs? (check all that apply)

The most popular response was “topics related to museum utilization (including guidelines for taking a group of children to museums, and preparing worksheets, etc.), followed by “other”, “topics focusing on explanation of exhibits”, “topics related to academic information”, and “topics related to the information regarding the specimens themselves, or of methods for collecting and producing them”, all of which had about the same number of respondents. However, those that responded “topics related to the museum’s study environment and learning theory” or “topics on how curriculum guidelines and museums are related” were few. Some of the specific examples mentioned under “other” indicated that training programs involving experiments and hands-on activities were conducted in several cases, as well as training programs which studied teaching materials and teaching methods. Also, examples of the course contents revealed that many were related to astronomical observations and practices.

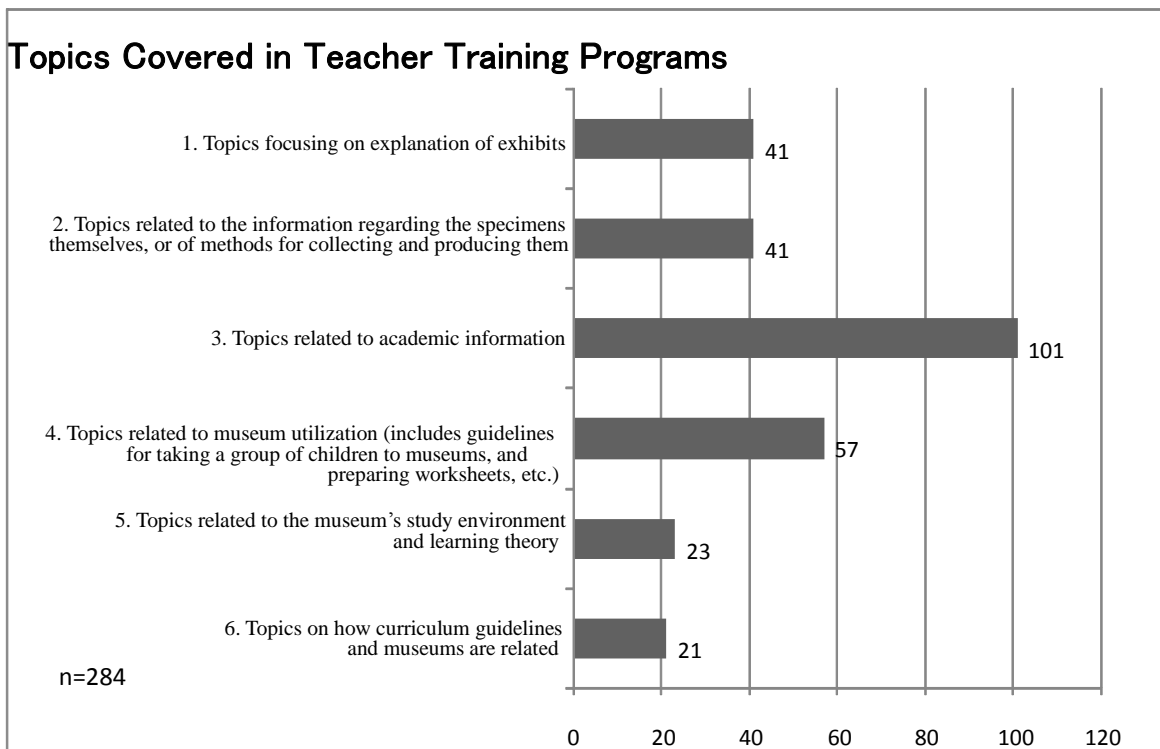


Question 7-2.

What topics are covered by the teacher training programs?

Result is based on number of programs. (check all that apply)

The most popular response was "topics related to academic information" in terms of the number of projects, followed by "topics related to museum utilization (including guidelines for taking a group of children to museums, and preparing worksheets, etc.)", "topics focusing on explanation of exhibits", and "topics related to the information regarding the specimens themselves, or of methods for collecting and producing them", all of which had about the same number of respondents.



Question 8.

What is the aim of conducting teacher training programs at museums? What kind of teachers are the training programs aiming to create? (check all that apply)

The responses could be classified into several categories. The first category's aim is to have the teachers understand the museum, and to have them acquire the knowledge and skills to utilize the museum. "Understanding the museum" includes making the teachers aware of the objects and resources available there. The second category's aim is raising the teachers' qualities and strengthening their expertise. Some of the training programs aim at dispelling the uneasiness that some of the teachers feel toward science. In particular, the training programs seem to offer the teachers a chance to experience some of the experiments and observations carried out in the museums. The third category aims for the improvement of the teachers' classroom performance. For example, one of its aims may be to enable the teacher to teach using local resources. Also, it aims to improve the teachers' overall ability to teach by covering topics such as the study of educational materials, creation of educational materials, and instructional methods. In some cases, the training programs were aimed at adding to the teachers' experience in society.

Question 9

If conducting teacher training programs, what are the benefits for the participating teachers, museums, and collaborating institutions?

- **Participating teacher**

The responses follow the same trend as in Question 8, and also several additional trends. It is notable that the teachers desire to utilize the museum resources in classrooms right away. The first point is that the teachers are able to acquire new acquaintances and networks with specialists and a variety of others as well. The second point is that the teachers are able to broaden their knowledge and perspectives. Here, "knowledge" refers to highly technical level of scientific knowledge, which cannot be acquired or experienced in schools.

- **Museums**

There are several prominent responses. The first is that the museums are able to understand the present state and needs of the local area / schools, and of the children. For example, through interactions with teachers, the museum is able to gain an understanding of the teachers' skill level and the current status of schools (learning styles and teachers' opinions). The second is that, by establishing a communication channel with teachers, it is easier for museums to collaborate with schools. The third is that, by conveying the museums' social role and value, its significance is also conveyed, especially in terms of its educational role as a place for learning. The fourth is that, the museums are able to disseminate information and advertise themselves through the training programs. The fifth is that, the training programs have led to an increase in the number of people visiting and utilizing the museums.

- **Collaborating institutions**

The collaborating institutions are able to reduce their workload and burden, as well as conduct training programs on topics which they cannot offer on their own. They seem to place value on the highly scientific level and uniqueness of museums. It is also beneficial for the collaborating institutions in the sense that they are able to secure human resources for implementation of future undertakings.

Question 10.

What are the reactions from participating teachers, museums, and collaborating institutions as a result of the teacher training programs?

- **Participating teachers**

The majority of the feedback was positive, the teachers being glad to have participated. Although limited in number, some of the museums conduct evaluation surveys after the training programs. By understanding the activities conducted by the museums, the teachers seem to become further interested in utilizing the museums in more specific terms. Some point out that having training programs inside the museums brings them into an environment different from the course of their day-to-day activities. This gives them a fresh feeling and enables them to uncover new findings. Multiple responses indicated that the training programs covering astronomical topics were popular among other coursework topics, since they give opportunities for the teachers to learn about astronomy on a regular basis. However, although very few, there are still issues that need to be resolved, for example, (1) it is difficult to convey training program information to teachers, (2) the number of participants in the training programs is not necessarily proportional to the actual number of teachers visiting or using the museums, thereby revealing the fact that the training programs do not necessarily lead to increased utilization of museums by the teachers.

- **Museums**

The museums are able to interact with school teachers, which is a rare opportunity in the course of their day-to-day activities. This helps them understand what the schools expect from museums and it also provides an opportunity for publicizing the museum's existence and activities. The museums that conduct the training programs recognize the meaning and significance of these programs. But on the other hand, there are many issues that need to be resolved as well. The first is the fact that it places a heavy workload and burden on the staff in charge of conducting and organizing the training programs. However, although limited in number, there are some museums that have many teachers' consultants and teachers, and maintain ideal conditions for conducting effective training programs. The second is that the museums cannot be sure whether the information and experience conveyed through the training programs are actually utilized in classrooms, and that the programs may not necessarily convey the appeal of museums.

- **Collaborating institutions**

Many responses reveal the demand to continue the training programs, since it enables them to conduct high-level practical training programs covering technical topics.

Question 11.

Issues for the teacher training programs conducted in museums

The prominent responses could be classified as below:

- (1) Securing the time and budget, staff assignment
- (2) The training programs are conducted during the summer, which coincides with the museums' busy season
- (3) Matching the demands/needs of schools and museums
 - The schools would like the training programs to cover topics related to the curriculum guidelines (When the training programs focus too much on the museums' uniqueness, it becomes difficult to utilize the information in school classrooms).
 - There are demands for the educational board to take more initiative in conducting and supporting the training programs in museums.
 - The demands from the teachers are so diverse, that it is difficult to fully accommodate them.
 - There are no opportunities for schools and museums to get together beforehand to discuss and plan the training programs.
- (4) The school teachers are getting increasingly busy.
- (5) Methods for publicizing and raising awareness of the training programs
 - As is illustrated in the participating teachers' responses, it seems that the information regarding the training programs is not circulated sufficiently.
- (6) The necessity of evaluating and measuring the effects of the training programs.

Question 12.

Reasons for not conducting teacher training programs

The most popular reason was related to issues regarding the museums' operating structure, such as the lack of professional staff capable of conducting the training programs, both in terms of number and quality. There were also cases where conducting training programs was deemed inconsistent with the purpose or mission of the museum (example: a company-owned museum). Others stated that the concept of the exhibition did not conform to the curriculum guidelines, or that it has not been sufficiently reviewed. Also, some responses indicated the lack of demand for these training programs, however, in some cases, the museum will respond to a demand on an individual basis, as and when it arises.

Question 13.

Opinions regarding the teacher training programs conducted in museums

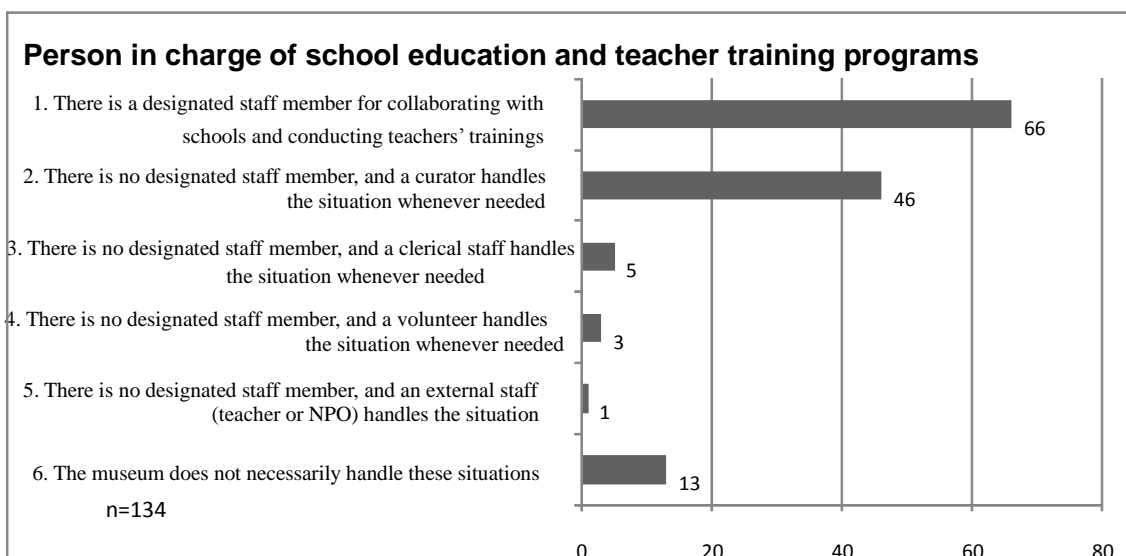
The prominent responses could be classified as below:

- (1) The teachers' lack of motivation to participate in the programs.
- (2) It is necessary to understand the difference between the learning that takes place in schools (curriculum and educational activities) and that in museums, and to have cooperation from each end. One example of an issue that needs to be resolved is how to incorporate the museums' unique learning experience into the school education that is based on the curriculum guidelines.
- (3) It is difficult to set a theme for implementing more effective training programs (this is related to the opinion in above (2)).
- (4) The training programs tend to lack novelty, and it is difficult to see how the training experience could be utilized afterwards.

Question 14.

Person in charge of school education and teacher training programs

Half of the museums responded "there is a designated staff member for collaborating with schools and conducting teacher training programs" and where there is no such designated staff, the next popular response was "there is no designated staff member, and a curator responds to the situation whenever needed".



Museum Survey Form

November 5, 2010

RE: Request for cooperation in conducting a Museum Survey for “Development of Teacher Training Program to Realize Science Education for Sustainable Society”

For the Attention of School Education Manager

Dear School Education Manager,

We are conducting a survey as part of the Grants-in-Aid for Scientific Research (A) “Development of Teacher Training Program to Realize Science Education for Sustainable Society” (Research Project Number 20240068) (2008-2011, co-investigator: Yoshikazu Ogawa, National Museum of Nature and Science, Tokyo). The aim of the project is to have the teachers engage in educational activities throughout their careers by utilizing museums and other social resources in a variety of situations, and so become equipped with the knowledge and skill (museum literacy) that will enable them to connect with the local community. The purpose of this survey is to reveal the present state of teacher training programs in museums, as well as providing information for designing ideal future training programs.

For the above purpose, we ask that you please kindly fill out and return the attached survey form. Your cooperation is greatly appreciated.

The information collected through this survey will be used exclusively for the purpose of this research study, and we will assume responsibility over the management and processing of the data. The results of this study will be disclosed in our research report and research meetings, etc.

Please contact the following for any questions regarding this matter:

National Museum of Nature and Science, Tokyo
Education Division

Thank you in advance for your time and cooperation.

Sincerely,

Yoshikazu Ogawa
Head, Education Division
National Museum of Nature and Science, Tokyo

- Please answer the following questions regarding teacher training programs (for the purpose of this study, this includes training programs for teachers-to-be as well as current teachers). There are 14 questions in total.

Please circle the number of your answer, or write your answer in the space provided.

Question 1.

Please write the name of your museum.

()

Question 2.

Does the museum offer teacher training programs?

1. Yes (→Skip down to Question 3)
2. No (→Skip down to Question 12)
3. Provided teacher training programs in the past, but not at present
(→Skip down to Question 12)

Question 3.

If the museum offers teacher training programs, how are the teacher training programs categorized? (check all that apply)

1. The museum offers training programs independently from other institutions.
2. Training programs are offered annually as part of educational board training program or education center training program.
3. Training programs are offered as voluntary training program for educational research associations and teachers
4. Training programs are offered as teacher training program prior to the school's use of the museum.
5. Training programs are offered as part of university's teacher training program.
6. Other (Please be specific:)

Question 4.

How are the training programs implemented? If you have more than one training program, please indicate the number of training programs in the parenthesis beside each applicable answer. (check all that apply)

Question 10.

What were the reactions from participating teachers, museums, and collaborating institutions as a result of the teacher training programs?

Participating teachers:

Museums:

Collaborating institutions:

Question 11

What are the issues for the teacher training programs conducted in museums?

Question 12

What are the reasons for not conducting teacher training programs?

Question 13

Please write down any opinions regarding the teacher training programs conducted in museums

Question 14

Please provide us with the information regarding the staff in charge of school education and teacher training programs

1. There is a designated staff member for collaborating with schools and conducting teacher training programs.
2. There is no designated staff member, and a curator handles the situation whenever needed.
3. There is no designated staff member, and a clerical staff member handles the

situation whenever needed.

4. There is no designated staff member, and a volunteer handles the situation whenever needed.
5. There is no designated staff member, and an external staff member (teacher or NPO) handles the situation.
6. The museum does not necessarily handle these situations.

**This concludes our survey. Thank you very much for your cooperation.
We would greatly appreciate it if you could kindly attach any related materials
that you have to this completed survey form, and mail it back to us.**

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Sustainable Society”
(Preliminary Report)

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