

Museum Field Trips in Taiwan: Teachers' Perceptions of Large Group Visits to a Science Museum

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ABSTRACT

The purpose of this study was to investigate teacher perceptions of group visits to a science museum in Taiwan. Specifically 30 teachers who traveled with large groups were interviewed. The interview questions were focused on two issues: the involvement of travel agents and the size of the group. The findings indicate that responsibility and administrative details were the primary reasons that teachers chose to travel with a larger sized group, or with assistance provided by a travel agency. Curriculum fit was not the first consideration in planning field trips. The study also found teachers' ability and attitudes to using museums as an educational resource need to be improved. The author suggests that teacher education institutes should work with museums to help both pre- and in-service teachers to connect museum experiences with their classroom instruction.

INTRODUCTION

School teachers and students are always target audiences of science museums. Most science museums around the world are trying very hard to expand their relationship with nearby schools, not only to increase their attendance but also to foster lifelong learners. The educational value of field trip experiences in museums has been recognized by many researchers (Anderson & Zhang, 2003; Michie, 1998). However, these experiences are not always as effective as they could be.

In Taiwan, countless school groups visit science museums every year during regular school hours. Generally speaking, these groups are led by classroom teachers, but this is not always true. Based on my own informal observation in the National Science and Technology Museum (NSTM), some schools hire travel agents to plan and conduct field trips, the teachers being just one of the group members traveling

with their students. Another problem observed was that some schools bring more than one class group at a time without an appropriate plan.

The literature discussing large group field trip visits to museums is limited, although Price and Hein (1991) found that "the size of the group can affect learning" (p. 511). For large groups, opportunities to respond to individual students' problems and make time for hand-on experiences are limited. Michie (1995) identified the problems of large group visits, such as limited space, less benefits, and less serious students. No research could be found regarding the involvement of travel agents in school field trips. Hence, it was considered necessary to allow teachers to express a range of opinions regarding these two issues. The aim of this study was to explore the factors underlying the problems observed in the field.

THE SITE

The National Science and Technology Museum is a large science museum with floor areas of 1.23 million square ft, sited in Kaohsiung, the second largest city in southern Taiwan. Opened in November 1997, the museum has become a popular location for school field trips. The museum exhibitions focus on contemporary science and technology subjects and contain both hands-on displays and artifacts. It can be classified as a combination of science center and technology museum, with a target audience of K-12 students and family visitors.

In 2002, a total of 1,036,237 people participated in NSTM programs, including 134,136 students who came to the museum on field trips in 1,320 groups (an average of 102 students per group). The percentages of each age group visiting in groups of different size are reported in Table 1. These data indicate that almost 70% of students

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Table 1. Percentage of students of each level visiting in different group sizes

Group Size	Pre-School*	Elementary School	Junior High	Senior High	College/University	Total
Less than 49	25%	15%	9%	10%	49%	16%
50–99	34%	14%	5%	4%	27%	15%
100–199	30%	32%	13%	9%	24%	23%
200–299	6%	21%	10%	15%	0	14%
More than 300	5%	19%	63%	62%	0	33%
Total	25,431	51,841	32,285	20,281	4,478	134,316

* including pre-school and kindergarten groups

visited the museum with large groups (over 100), especially in elementary school, junior high school and senior high school levels. Therefore, this study focuses on large groups in these three school levels.

PROBLEMS

When schools groups visit museums in Taiwan, guided tours of the exhibitions are frequently requested by teachers to fulfill the educational goal of the field trip. The NSTM has 10 full-time explainers and 120 volunteers, each volunteer donating at least 3 hours per week. Under ideal circumstances, every class can be assigned either a full-time or volunteer explainer to guide students through an exhibition. That means every explainer needs to take care of at least 30–40 students at a time. Comparatively, in some museums in the US, 15 or fewer students per guide are usually recommended for tour experiences (Ybor City Museum Society, n.d.).

Fall and spring are two primary seasons for school field trips. Many schools arrange for the entire school, or all students in the same grade, to take trips together to museums or other cultural institutes. Many of these groups have

over 300 students and a few even have over 1,000. For such large groups, orientation and guided tours are the only services the museum can provide. Sometimes, so many students come at the same time that the museum cannot provide enough docents to give quality tours. Hundreds of students are left unsupervised in the exhibition halls and have no idea what to look for, or how to use the exhibitions. This kind of field trip has little educational value.

As a museum educator, I have been working on promoting the concept of using museums as an educational resource for several years. This requires that teachers play an active role in facilitating students' learning. Although many teachers work very hard to help their students learn at the museum, some teachers still allow travel agents to do their jobs for them, especially those who travel with larger sized groups.

METHOD

In order to explore the factors underlying these observed problems, an interview survey was designed and conducted on site. In this study, large school groups referred to groups with over 100 students. In Taiwan, the

average number of students in a class is 30 in elementary schools, 36 in junior high schools, and 40 in senior high schools. Thus, when 3 to 4 classes travel together the total number of students in a group is usually over 100. Interviewees were selected from the teachers in these groups. The interview questions included school information, interviewee information, and 8 semi-structured questions. The interviews were conducted after the groups finished their visits and before leaving the museum. In total, 30 teachers accepted the request for interviews in October and November 2003.

RESULTS AND DISCUSSION

Analysis of teacher demographics showed the teachers involved in this study had 2–36 years of teaching experience, and included 24 elementary, 4 junior high, and 2 senior high school teachers. Most of their schools were located in the southern part of Taiwan, except for two from the north. The two junior high schools stayed in the museum for 1 to 1.5 hours, and the two senior high schools stayed 2 to 2.5 hours. The visiting time for elementary school groups ranged from 1 to 6 hours, with 17 groups staying longer than 4

hours and 7 groups staying less than 4 hours. There was one school that only stayed for 1 hour to view the IMAX film. In summary, then, elementary school groups visited the museum for a longer time than junior and senior high school groups.

The interviews included both closed- and open-ended questions. Teachers' responses to each question were summarized as follows:

Q1. Did your school hire a travel agency to handle this trip? If yes, why?

In total, 12/30 (40%) of teachers hired travel agencies to handle the trip for them. Planning and implementing a field trip for such large groups is not an easy job. Travel agencies in Taiwan usually provide many services to help schools conduct field trips. Their services include communicating with museum staff to set up the visit agenda, arranging transportation and lunch, and even hiring an assistant for each class to help teachers keep constant watch over their students. All these efforts make teachers' jobs easier on field trips when they are responsible for large numbers of students. Some schools even make this a required policy. Thus, teachers can concentrate on monitoring students' behavior and safety, ensuring the agents do their jobs, or enjoying the exhibitions themselves.

Q2. Did you think the visiting time in this museum today was enough? If no, how many hours do you think is enough for one visit?

Nearly half (14/30) of the interviewed teachers felt that the visiting time was not long enough, and they should have stayed 1 to 3 hours longer in the museum. Overall, most teachers thought at least 4 hours was needed to tour the museum. Some groups reported

having rushed in and out because they had arranged more than one place to visit in a day. This reflects another issue, which is the lack of preparation for the trip. If a field trip is to fulfill educational purposes, teachers need to know in advance how many hours are needed. Travel agents should not be left to make this decision – it should be the teachers' responsibility.

Q3. How did your school decide the visiting site for this trip? Was curriculum relevance the key factor?

Many factors other than curriculum relevance were reported to influence the decision to visit NSTM. Some of the responses were:

- They chose a city first, and then chose field trip venues from that city;
- To let students to see what a museum is, and to enjoy an interesting 3D movie;
- To provide an eye-opening experience for rural students; and
- To give students familiarity with modern technology.

Only seven of the 30 teachers mentioned that they had come to see a particular exhibition or film because they were currently teaching a related topic in the classroom. Unlike other studies done in North America (Anderson & Zhang, 2003; Hannon & Randolph, 1999), this study found that curriculum fit was not the primary consideration in field trip planning. This cultural difference should be paid greater attention by school and museum educators in Taiwan.

Q4. Did you help students prepare for this trip beforehand? If yes, how?

Although the importance of providing pre-trip orientation activities has been emphasized by researchers (Gennaro,

1981; Hooper-Greenhill, 1994; Martin, Falk & Balling, 1981), only two teachers reported having talked about their trips with students before leaving school to help students get ready for their trip. Some of the interviewees mentioned that the travel agency had provided worksheets for students to use in the gallery. Also, there was one senior high school teacher who asked students to prepare by searching for information about the museum and exhibitions before the trip. It seems most of the teachers did not feel they were responsible to provide worksheets or help students to prepare for the trip in advance.

Q5. What did you do while students were visiting or participating in activities?

Most teachers accompanied students as they visited the exhibitions or participated in activities. Two junior high schools had hired assistant guides to accompany students, allowing teachers the freedom to undertake their own visits. Six interviewees reported that they had not accompanied their students all the time during their visits, three of these having left their groups when a guided tour or movie came to the end. No teacher mentioned that he/she was teaching students in the exhibition halls. Observation studies are necessary to find out what teachers really do when they accompany students visiting exhibitions.

Q6. Based on your observation, how was students' learning in the museum? Were you satisfied and why?

Teachers whose students received museum guided tour services during their visits reported satisfaction with their students' learning. Teachers whose students had no explainer to lead them through the exhibitions often reported

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Figure 1: Students gather in the main lobby of the National Science and Technology Museum in Taiwan. The spacious main lobby is the first and the last stop in the museum for student groups and has a capacity of approximately 800.

this as a reason for their dissatisfaction regarding students' learning. It was obvious teachers relied heavily on explainers to help their students learn in the museum. Maybe it was because teachers didn't have enough confidence to help their students to interact with exhibits.

The data gathered from Q5 and Q6 indicated that most teachers believed they had little responsibility to engage students in learning in the museum. This finding is similar to the one reported in Griffin & Symington's (1997) study.

Q7. Have you ever taken one class out of school for a field trip? Please compare the strengths and weaknesses of traveling with multiple classes rather than one class.

Sixteen of the thirty interviewed teachers had never experienced bringing only one class of students out for a field trip. Seven of these teachers stated that they preferred to travel with multiple classes and had no intention

of taking one class to revisit NSTM in the future. Regarding the strengths and weaknesses of multiple-class and one-class trips, the responses of interviewees were:

Strengths of multiple-class trips:

- The school would hire travel agencies for large groups to handle the whole process of field trips;
- Travel agents take care of most things, making it easier for teachers on field trips;
- The school would assign administrators to help teachers; and
- The more classes that traveled together, the more teachers (and sometimes administrators or travel agents) could share responsibility.

Weaknesses of multiple-class trips:

- Too many students crowded around a tour guide was not good for learning;
- Time consumed on gathering students, waiting for each other;
- Inflexible schedule (difficult to make modifications);

- Too many students getting together caused poor behavior (difficult to control);
- Due to the limitation of space, classes have to be assigned to visit different exhibitions; and
- Require more tour guides (they are not available all the time).

Strengths of one-class trips:

- Fewer students are easier to control;
- Flexible schedule (easy to make modification); and
- Easy to monitor students' learning.

Weaknesses of one-class trips:

- The school may not approve a one-class trip;
- Higher cost (less students to share expenses);
- The teacher needs to handle the trip alone (because schools seldom ask administrators to help teachers make arrangements, if they decide to bring only one class); and
- The teacher will be the only one taking full responsibility.

In Michie's studies (1995, 1998), the difficulties of working with large groups have been identified, such as limited services, unsatisfactory learning behaviors, and safety issues. From the responses above, it is clear that teachers are aware of the problems caused by taking a large number of students on a field trip. However, other factors such as administrative details, responsibility and discipline, lead teachers to choose to travel with a large group, regardless of its inefficiency.

Q8. Will you bring one class to NSTM in the future instead of coming with a large group? And, why?

Eleven interviewed teachers said they would NOT take one class to visit the museum in the future. The reasons were:

- Far away from my school;
- School policy does not allow to do so;
- Have to take full responsibility (no one to share);
- Not teaching science related subjects;
- Administrative procedures and other practical details discourage them; and
- Safety considerations.

Clearly, traveling long distances between the school and the museum is a barrier that discourages teachers from taking students on field trips. Teachers believe that the longer distances they have to travel, the greater responsibility they have to take.

Teachers in other studies have often reported that cost is one of the important elements to be considered in planning a field trip (Anderson & Zhang, 2003; Orion, 1993). However, in this study, only one teacher mentioned cost. Traditionally, field trips in Taiwan are paid for by the parents. Parents usually view field trips as a part of school activities and seldom have arguments about sharing the trip expenses.

Nineteen interviewed teachers said they WILL take one class to visit the museum in the future. The reasons were:

- To see more exhibitions;
- To participate in hand-on programs for different subjects;
- For students to gain more knowledge; and
- The effectiveness of students' learning could be better on one class visit

Apparently, these teachers thought one visit with a large group did not allow enough time and freedom to do the things they wanted to do in the museum. However, the trip did motivate

these teachers to visit the museum again with smaller groups.

IMPLICATIONS

Previous studies have identified that teachers' responsibilities in relation to field trips include communicating curriculum objectives with museum educators, doing pre-visit activities, and following up students' learning (Hannon & Randolph, 1999). Teachers' concerns regarding the division of responsibility between themselves and their administrations have also been identified (Anderson & Zhang, 2003). In this study, many teachers mentioned the word "responsibility" more than once during interviews. However, their perspective was totally different from that reported in the previous studies. In Taiwan, any unpleasantness that happens to students during a field trip will be considered the teacher's responsibility. For this reason, teachers feel more comfortable traveling with a larger sized group, or with assistance provided by a travel agency, in order to share the responsibility. However, it

is difficult for the museum to take care of such large groups and to meet the individual needs of students. Involving travel agents in the trip may shift the focus to the entertaining rather than the educational aspects of the trip. These are not the trips we as educators would like to see in the museum. When traveling with large groups is inevitable, more communication and preparation are needed in advance to work out ways to better serve a large number of students at the same time.

Without guidance from teachers or museum staff, most students do not know how to visit a museum. If teachers prefer visiting museums with a large group, they need to know how to help their students learn in the museum. Using worksheets was mentioned by a number of interviewed teachers. However, for some groups, their worksheets were not provided by either teachers or museum staff, but by travel agents. Do these worksheets really meet the needs of student learning? This is a question that needs to be considered before asking students to use them.



Figure 2: Students line up to see the Robot Show.

Overall, the schoolteachers' ability and attitudes toward using museums as an educational resource need to be improved. Some teachers in this study acted like "visitors" in the museum - there was a lack of active participation in students' learning, and a lack of awareness of the need for appropriate pedagogical activities. Although travel agents can help teachers to take care of administrative procedures and practical details, they cannot replace the role teachers should play in field trips. However, as most teachers in Taiwan have had limited museum experiences themselves, it is not easy for them to recognize the educational functions of museum field trips.

Most museums in Taiwan offer various opportunities, such as lectures, workshops, and printed materials, to help teachers make good use of museum resources. These efforts will have limited chance of success unless teachers understand the need to become involved as partners with the museum. Teacher training/education institutes need to attend to this issue, in order to influence teachers' views on the educational uses of museums. There are many successful collaborative programs in which museums and teacher education institutes work together to help pre-service teachers develop the abilities and attitudes to use museum resources (Chin, 2004; Hodgson, 1986; Leroux, 1989; Stillman, Butler, & Vukelich, 1983). Such programs should be integrated into the curriculum for all students who choose teaching as their career.

Teachers should not be allowed to overlook the potential of museums in enhancing students' learning (Commission on Museums for a New Century, 1984). Teachers' perceptions

of museum field trips, and the way they handle such trips, will have a great influence on the next generation. It is hoped that the issues emerging from this study will lead to better partnerships between teachers and museums in the future.

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