Moving from Task-Oriented to Learning-Oriented Strategies on School Excursions to Museums

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ABSTRACT: Museums are best considered as venues for informal learning and yet the authors’ observations were that most school classes that visit museums are restricted and structured, the students not being provided with optimal opportunities to learn in an informal manner. Although research has addressed some features of successful school group visits to museums, such as preparation and orientation, emphasis on first-hand experience, and use of worksheets, there has been little research on the role of the class teacher in facilitating learning during excursions. This study investigated strategies used by class teachers before, during, and following excursions to two venues in Sydney, Australia, offering opportunities for learning science in an informal setting. The sample chosen for the study comprised 12 school groups involving 29 teachers and 735 students in 30 classes ranging from grade 5 to grade 10. Data were collected through observation and interviews before, during, and 2–3 weeks after the visit. The results indicate that class teachers used mainly task-oriented teaching practices and made little effort to link topics being studied at school and the museum. Little congruence was apparent between the practices observed and what the literature suggested for effective planning and management of school excursions. The authors propose a framework to guide teachers in planning learning-oriented excursions based on a synthesis of knowledge of natural learning behaviors exhibited by family groups in museums and lessons from constructivist theories of learning, together with strategies reported in the literature and confirmed by this study as contributing to learning on school excursions to museums. © 1997 John Wiley & Sons, Inc. Sci Ed 81:763–779, 1997.

1The term “museums” denotes a broad range of informal learning environments. When capitalized, “Museum” refers to the particular museum that was one of the venues for this study — the Australian Museum in Sydney.

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INTRODUCTION

Informal learning is characterized by free choice and by being unstructured and nonsequential; self-paced, voluntary, and exploratory; nonassessed and open-ended; and social (Birney, 1988; McManus, 1992; Ramey-Gassert, Walberg, & Walberg, 1994; Wellington, 1990). Museums are ideal environments for informal learning. They are designed with individuals or small groups in mind. Many museums recognize the need to make the dissemination of information closely linked to the interests, attitudes, and entering behaviors of their visitors. They present their visitors with a range of displays and topics from which to select. Museums increasingly offer a selection of learning media and methods: three-dimensional displays, the real thing in context, multimedia stations, videos, experts to talk to, interactive exhibits, lectures and demonstrations, resource rooms, and specimens to handle.

Into this visitor-centered learning setting comes a class of school students:

The class teacher looks stressed as she herds her students through the door. Once they are all assembled inside, the teacher hands out sheets of questions, at the same time berating those students who forgot their pens.

“I will be collecting these sheets as you get back onto the bus this afternoon. They must be complete. They count towards your assessment.”

The students glance at their sheets, and discover that they are here to look at fossils—“Again!”

“You must work through your sheets, answering all the questions— you won’t have time to get distracted as we only have 2 hours here. We all go first to the fossil gallery, then we will all move together to the environment gallery to complete the second half of our sheets. Remember what the guard told you—there are other people here who want to look, so no noise or running around—just concentrate on completing the sheet.”

The teacher leads her class to the fossil gallery, positions herself at the exit door, and watches the students to make sure no-one leaves.

An hour later, in the fossil gallery: “What are you doing sitting down? Come on, keep working on your answers.”

The teacher sits on the bench and talks to the parent helper accompanying the class. She is interrupted by a student wanting to know where to find an answer. The teacher points in the general direction of the appropriate section, and goes back to talking to her companion.

The group moves into the environment gallery. Some students head toward a video which is playing, others go to an interactive display. The teacher tells both groups that they don’t have time to watch films or play games—they must get on with answering their questions.

As they file back onto the bus at the end of the day, the teacher collects the sheets, then on the bus reminds the class that tomorrow is their topic test on light and sound.

This story encapsulates the observations made by one of the authors of many school-museum visits. Her experiences as a museum educator suggested that students were not being provided with optimal opportunities to learn in a museum environment. Such observations led to the study reported here, which was designed to test the authors’ impressions and assumptions
about the strategies most commonly used by class teachers before, during, and following excursions. This article outlines that study and develops a basis for a comprehensive, learning-oriented approach to school excursions in informal learning environments.

**Successful Use of Museums**

Features of successful group use of museum visits have been reported in the literature. These include: planning for learning during the visit; consideration of the unique learning opportunities of the institution rather than mirroring school-type behaviors; variation in the activities during the visit; sparing and/or careful use of worksheets; and emphasis on first-hand experience and observation (Price & Hein, 1991). A number of studies over a wide spread of time have shown that students who have done work on a topic at school before visiting a museum, and who have prepared for their visit, learn most from their experience (Gennaro, 1981; Koran, Morrison, Lehman, Koran, & Gandara, 1984; Reynolds, 1984). Falk and Balling (1982) found that, without orientation and preparation, students are more likely to concentrate on nonrelevant aspects of the surroundings, rather than those relevant to the learning intended. Very little research has addressed the role of the class teacher in facilitating learning during school-museum excursions.

**The Study**

Based on findings reported in the literature the research questions for this study were designed to investigate the practices being used by teachers who took school classes to museums in Sydney, Australia. Although it was recognized that the responsibility for facilitating learning on excursions is often shared between class teachers and museum educators, this study concentrates on the role of the teacher, an area which has been insufficiently researched.

The two questions investigated were:

1. What learning purposes, preparation, interactions, and follow-up did teachers provide when they took their classes on excursions to museums and science centers?
2. Was there a link between the topics of the excursions and the current classroom topics?

**Venues Selected**

Although there are several venues for informal learning in science in Sydney a purposive sample of two venues was selected and considered representative. The Australian Museum is a major natural history museum which has been altering its approach over recent years to allow greater visitor participation. It utilizes a variety of display types, including those behind glass, displays in which specimens can be handled, videos and interactive displays dispersed throughout the galleries, as well as a dedicated interactive display section. School classes may visit the Museum and follow their own teacher-led program, or they may follow a program provided by the museum education staff. As this study is concentrating on the role of the class teacher on excursions, only classes following an independent program led by the class teacher were selected. For many years, the Museum has been providing sets of worksheets for teachers to use and amend as they wish even if the teachers are otherwise running the excursion independent of museum educators.

The CSIRO Science Education Centre is a smaller venue open only to school groups. It contains a variety of short experiments and self-directed demonstrations. The students are
introduced to the activities by Centre staff and then work in pairs, independently choosing activities. Each of the activities in the Centre has a worksheet which students are invited to use to record notes on the experiment and answers to the questions it contains.

There is a small entry charge to both of these institutions. Teachers largely decide on the timing of the excursions depending on the availability of the institution and on the school’s yearly timetable. In some secondary schools the excursion day is determined by the science head teacher or the principal. Both institutions were approached officially and gave approval for the study to take place.

Classes and Schools Selected

Classes from school years 5 to 10 (approximate ages 10–16) were included in the study. This decision was based on several considerations. These years are the last two in primary school and the first four in secondary school in the New South Wales (NSW), Australia, school system. The lower end of the range was determined to ensure that the sample would include only students with adequate literacy skills to take advantage of the full display offerings of the institutions and to enable written notetaking. The upper end of the range was determined to exclude senior secondary school years. In NSW, the two senior years of school, years 11 and 12, are dominated by the final external examination and teachers have little flexibility in selection of topics studied or the range of learning experiences they can offer their students. By contrast the mandatory syllabus for years 7–10 is much less detailed and allows considerable autonomy and variety in the learning programs offered.

Schools included in the study were selected randomly from those that had already made bookings for one of the institutions on days when the researcher was available to gather data. The study involved 12 school group visits totaling 30 classes and 735 students. Five of the schools were primary, seven were secondary. Five of the schools were public schools, two were Catholic systemic schools, and five were private schools. Ten of the schools were coeducational, one was all girls and one was all boys. The schools visited the institutions in group sizes ranging from one to five classes. Seven schools visited the Australian Museum and five visited the CSIRO Science Education Centre.

DATA COLLECTION

The format of this naturalistic study was to observe school groups as they participated in museum visits. No intervention took place beyond randomly selecting small groups for short interviews during the museum visit and at their school. All data for this study were collected by one of the authors. The data were gathered through interviews with individual teachers and small groups of students, recorded observations of behavior patterns of teachers and students, and sample student worksheets.

Teachers and students were interviewed at the beginning of, and during, their excursion. About 2 weeks after the excursion, teachers and students were interviewed at their school. These follow-up visits were not able to be conducted with four of the schools, due to the proximity of their excursions to the end of the school year.

The interviews were conducted as open conversations based on, but not strictly following, a prepared set of guiding questions. This semistructured protocol allowed pursuit of responses that were potentially valuable for the study, as well as obtaining information on each of the research subquestions.

The students were interviewed in groups ranging in size from two to five students, the group size being that formed naturally as the students worked in the museum or at school.
Group interviews were used to provide a comfortable, supportive, and conversational atmosphere for the students and remove any feeling that they were being examined. Each question was directed initially to one student in the group, then answers were sought from other students. The interviews followed an informal pattern where the students sometimes answered together, or interrupted their peers. As far as possible, all opinions were canvassed.

Thirty-eight percent of all students involved in the study were interviewed. Due to the random selection of students for interview during the excursion, and back at school, some students were interviewed both during and following the excursion.

An attempt was made to interview as many teachers involved in the excursion as possible during the progress of the day, without impacting on the flow of the excursion. Twenty-three of the 29 teachers (79%) were interviewed. At the follow-up visits, all teacher interviews were with teachers already interviewed during the excursion.

Incidental observations of teacher and student behaviors made by the researcher were recorded on audiotape between interviews. Observations recorded included: the interactions between teachers and students; students’ attention to displays; on and off task behaviors; indications of tiring or boredom; and indications of curiosity and interest. At the completion of the visit, the observer’s overall impressions of the teachers’ and students’ behaviors, and the general conduct of the excursion, were recorded on audiotape. All taped interviews and observations were transcribed.

ANALYSIS

The interview transcriptions were scrutinized and information relevant to each of the research questions, as well as unexpected revelations, were annotated. Transcribed observations were used to inform analysis of the interview results for each research question for each school.

Modification of the Research Questions

For the initial analysis of the data, the first research question was expanded into its four fields: purpose, preparation, interactions, and follow-up. The research questions needed to be expanded further, however, as discrepancies appeared between information given by teachers and that given by students. There were also discrepancies between teachers’ planned follow-up to the excursion and the realization of these plans. As a result the data were analyzed using the following set of subquestions:

1.1a What were the teachers’ stated purposes for the excursion?
1.1b What were the students’ perceptions of the purposes for the excursion?

1.2a What preparation did the teacher report had taken place at school?
1.2b What preparation did the students report had taken place at school?

1.3a What were the teachers’ interactions with the students, and the exhibits during the excursion?
1.3b What were the students’ interactions with the teachers, other students, and the exhibits during the excursion?

1.4a What were the teachers’ plans for follow-up at school?
1.4b What were the students’ expectations of follow-up at school?
1.4c. What actual follow-up did the teacher report?
1.4d. What actual follow-up did the students report?

2. Was there a link between the topic of the excursion and the current classroom topic?

When the interview transcripts were scrutinized, patterns emerged in the observed behaviors and interview responses, which placed each school into one of three categories for each of the research fields:

- In the first category, the observed behaviors and interview responses were characterized by an absence of reference either to tasks or learning.
- In the second category, the observed behaviors and interview responses were dominantly task-oriented. These were characterized by emphasis on processes such as seeing a particular gallery, or completing a worksheet.
- In the third category, the observed behaviors and interview responses were dominantly learning-oriented. These were characterized by emphasis on outcomes such as finding information, or learning about aspects of a particular topic.

The authors’ allocation of particular categories for each school in each field was based on their experiences as science and museum educators, and was grounded in a constructivist theory of learning.

RESULTS

The results for each question field are discussed in turn. Schools are sorted in the tables according to categories allocated. Sample quotes, including the allocated category, are included in the description.

Purpose

The teachers were generally able to articulate some purpose for the excursion. The evident hesitation in giving their answer to this question, however, indicated that they may not have thought about it before the interview. Only half of the teachers were able to give a purpose that could be considered related to the students’ learning of content or skills. Completion of the worksheets loomed large as the ultimate goal for teachers.

It is an excursion to get them out of school. (Teacher, School B) Category 1

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<tr>
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</table>

Category 1: no clear purpose or objectives.
Category 2: purpose expressed in terms of task completion only (e.g., complete worksheets).
Category 3: purpose expressed in terms of learning (e.g., consolidate or extend school learning).
The students had a varied understanding of the purpose, and the topic, of the excursion. Very few students could see a purpose for their excursion other than a day out, or at best “to learn things,” but with no clear idea of what these “things” were. The discrepancy within some schools between the teachers’ ability to articulate a purpose when asked, and the students’ ability to do so may suggest that either the teacher was able to think of something on the spot, when asked the question, or that while the teachers had some purpose in their minds, this had not been communicated to the students. Students from a few schools had a clear understanding of the purpose of their visit.

Learn more, build more on what we’ve been doing . . . to get a better view of things we’ve been doing. (student, School A) Category 3

Preparation

In general, very little preparation was done for these excursions, and what was done was often purely organizational (see Table 2). Seventy-five percent of the groups (or more according to the students), that is, all those in Category 1 or 2, had only been told that they were going on an excursion to the institution, what money it would cost, that they had to bring a permission slip from their parents, and at best given the worksheets to look at the day before. The students of one school (School B) were unaware of which museum they were visiting as they got on to the bus that morning.

No, they wouldn’t have done any preparation. The preparation they basically would have had would have been with the Unit and if they haven’t done the Unit well I suppose this in itself, the worksheet isn’t that difficult, and I suppose that in itself is a bit of preparation for the subject. (teacher, School B) (the sheets were given to the students that morning as they boarded the bus) Category 1

In contrast, the class from School L had been working at school for some time on the topic of their excursion, and had been well prepared on how to use the museum’s exhibits. This was the only group that mentioned anything about discussing what to do in the museum before they came, apart from disciplinary cautions.

She told us to take time, and to read . . . there is things that you can do around here, like not just something you can look at and turn to the other thing, to read the plaques and see what happened and why . . . We’ve been doing dinosaur projects, we’ve been learning about them. (student, School L) Category 3

| TABLE 2 |

| Categorization of Each School with Respect to Preparation for Excursion |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| School          | L | A | H | C | E | K | G | B | D | F | J | M |
| Teachers’ description of preparation | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| Students’ description of preparation | 3 | 2 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |

Category 1: no preparation had taken place beyond organizational matters.
Category 2: task-oriented preparation only had taken place (e.g., handed out worksheets).
Category 3: specific learning preparation had been done on the topic and/or the venue (e.g., discussed topic and how to learn about it at museum).
Interactions between Teachers, Students, and Exhibits

In all groups observed the teachers were involved with the students to some degree throughout the excursion (see Table 3). However, this involvement varied considerably: some actively worked with small groups of students as they looked at the exhibits and answered questions on their sheets, others worked quite specifically and exclusively with one or two small groups and largely ignored the rest, others very superficially watched the group, mainly for behavior, yet others stood back, not participating in the learning activities at all. In one instance, the teacher actually left her class to have a cup of coffee, placing them in the care of a parent at this time. On many occasions, however, teachers sat down, at least for a short time.

The students, in most instances, were quite actively involved in the galleries and used their worksheets for about the first half hour. After this, their behaviors varied considerably, from finding the coffee shop, to sitting (and lying) on gallery benches, sitting on the floor copying each other’s worksheets, or moving very quickly from gallery to gallery, if they were allowed to move on their own. A few of the groups continued purposefully looking at the exhibits throughout the excursion.

The class from School E did not have worksheets; however, they were observed comparing one exhibit with the next, showing each other things that they recognized, asking each other and their teacher questions about the displays, using all aspects of the exhibit: the hands-on and computer displays as well as the real objects and the labels. They continued interacting with the exhibits for more than half an hour in each of two galleries.

Follow-up

Most of the teachers said that they would do some follow-up, although this often consisted of collecting and marking the worksheets (see Table 4). The students had little expectation that there would be any work done back at school based on the excursion, beyond collecting the sheets.

Well, the worksheets to begin with . . . I’ll get them to write something tonight for homework, not about the activities necessarily, but about their overall enjoyment of it. (teacher, School D) Category 2

When interviewed after the excursion, the results showed that, indeed, there was very little done—less than the teachers said they had planned. There were some striking examples

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<tr>
<th>School</th>
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<tbody>
<tr>
<td>Teachers' interactions</td>
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<td>Students' interactions</td>
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Category 1: little if any interaction between students, teachers, and exhibits.
Category 2: minimal, or reactive task-oriented interactions occurred (e.g., teachers keeping students on task).
Category 3: learning-oriented interactions were exhibited (e.g., students sharing search for information).
where promising plans for follow-up were not fulfilled. For example, one year 6 group of students (School M), who had visited the Science Education Centre, were to spend some time discussing their experiments in class and sharing what they had found. They did write reports but these were not discussed in any way. School L was one of few schools that incorporated the work done at the museum into their studies at school.

[We’ve talked about the excursion] indirectly and as a result of what we’re doing, like we’re talking about theories of extinction today. We constantly referred to what we saw: “Yeah, you saw so and so, and that didn’t do that and they found that there and you know that diagram thing they had”—they were going on like that so they were referring constantly back, we just used the knowledge that they got. (teacher, School L) Category 3

Second Research Question: Links between School and Museum Excursion Topics

Only four of the school groups were actually studying the topic of their excursion at school at the time of the excursion. A fifth group, which was a science club, came as part of a skills-based program, and therefore the excursion was considered to link with work being studied at school. Several groups had done the topic earlier in the year, however, the relationship of this excursion to the topic was not made clear to the students.

### TABLE 5
Link between Topics of the Excursion and Current Classroom Topic

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<tr>
<th>School</th>
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<th>M</th>
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</thead>
<tbody>
<tr>
<td>Topics linked?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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</table>

Y: yes, the topics were linked; N: no link evident between the topics.
In one instance (School B), where teachers were rotating their classes through several topics, the teacher who was taking the topic that related to the excursion (fossils) was starting with a new class the next day. In follow-up interviews, the students reported that on that day immediately following the excursion, when the teacher was starting the topic of fossils, he did not mention the excursion to the museum.

Relationship between Results of the Two Research Questions

In search of any further patterns, the schools were ranked with respect to the first research question by summing the number of times each category was obtained by that school. The schools are listed in Table 6 by decreasing numbers of category 3 rankings. Table 6 also shows the answer to the second research question; that is, whether there is a link between school and museum topics. Examination of these two sets of results revealed an interesting pattern.

The schools fell into a distinct and significant pattern. The schools given the greatest number of classifications in category 3, that is, those with the most evidence of a learning orientation, were also those with school and museum topics that were linked.

EMERGENT ISSUES

The interviews conducted with teachers and students were conversational in nature, and a number of issues beyond those covered in the research subquestions emerged. The data related to these issues are obviously not as comprehensive as those gathered in relation to the research questions. However, the issues are briefly canvassed here, acknowledging the limitations of the data, because they are seen to point to directions for further study to assist teachers to make better use of museums.

### TABLE 6
List of Schools Ordered According to Number of Category 3 Classifications

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<thead>
<tr>
<th>School</th>
<th>3’s</th>
<th>2’s</th>
<th>1’s</th>
<th>ND</th>
<th>Topics Linked?</th>
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<td>0</td>
<td>1</td>
<td>Y</td>
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ND: no data; Y: yes; N: no.
Management Strategies Employed by Teachers

While at the Museum, teachers appeared to abandon what might generally be considered basic good class management practice. In particular, there was little variation in teaching or learning strategies and little attention was paid to the physical comfort of the students. At the Museum the students were expected to stay on their feet seeking answers from the exhibits to the worksheet questions for about 1.5–2 hours (the most common visit length) before a break. They were not allowed to sit down and, if they did sit, they were asked to move on and continue answering their questions. By contrast the teachers were frequently seen sitting down. Also, the students frequently were moved away from any form of exhibits other than traditional displays. Rarely were they allowed to watch a video in the galleries, or to use hands-on exhibits. This means that even the potential for variety in activity provided by the exhibitions was not being realized.

Teachers’ Views of Their Expected Participation and Role

Most teachers’ behaviors and comments during interviews suggested that they felt they had little role in the planning or execution of the excursion. When the teachers felt that the students were having difficulty seeing any links between school and museum work, the fault was that of the institution. For example, teachers commented that the displays were not quite what they were learning about. Only a few of the teachers took on the role of facilitating the link between the students’ knowledge and the information available at the museum. Others relied completely on the sheets provided by the institution, and the displays or activities available. Individual teachers rarely saw a need to even participate in the planning of the visit. In schools where several teachers and classes attended, normally one teacher organized the visit and printed off the sheets for the students. The other teachers effectively followed, doing whatever had been planned or prepared for them.

Worksheets, Learning, and Play

At the Science Education Centre, worksheets are provided at each activity station. Despite this, not all the students used or collected these sheets. More than a third of the students interviewed during the visit were not working through the sheets as intended. At the Museum, 10 of the 12 groups brought worksheets with them. In all but one of these cases the sheets were based very closely, if not completely, on sheets provided by the Museum education staff. The sheets had not been adapted to suit the class or the specific topic being studied (if there was one). When asked about worksheets, most students said they did not like them, as they restricted what they saw, and they were boring. In answer to questions about what they would rather do, most students said they would prefer to look around without sheets. They felt that the imperative to have the sheets completed at the end of the day was very constraining and stopped them from looking at the exhibits. In particular, it stopped them from having any choice about the exhibits they looked at.

Following the experiences of Falk and Dierking (1992) the students were asked about what they remembered rather than what they had learned. This brought answers about specific displays that they had seen. When the idea of learning was introduced into the conversations it became very apparent that the students did not believe they were learning unless they were answering questions on their worksheets. They identified learning almost exclusively with the type of activities that go on at school, especially pen-and-paper activities.

This restricted view of learning was also apparent when students’ views were elicited on
what they had learned in the Discovery Space—a dedicated hands-on area of the Museum that has a mainly environmental theme. One group that used this space was adamant that: You don’t learn anything in there—you play. Interestingly, it seemed that most teachers had the same view. If the students did ever get the chance to move into this room, they were generally chased out again by the teachers so they could get back to “the real work” in the specified galleries. Only one class was intentionally taken to the Discovery Space by their teacher.

Social Groupings

Regardless of the manner in which the teachers organized the movement of the classes, all classes naturally broke into small groups of students who moved, talked, and worked together. The students said that they enjoyed working with, and talking to, their peers. With only a very small number of exceptions they did not like having to complete a worksheet individually. They preferred to do this as a group. The need to complete individual sheets led to students copying each other’s sheets during their museum visit time, rather than spending time learning from the exhibits.

Student Attitudes Reflected Teacher Attitudes

The manner in which the teachers and students answered interview questions, as well as the actual responses to questions, gave clues to attitudes toward the excursion and learning in the venues. If the teacher had a clearly defined purpose and an enthusiastic, positive attitude to the day, the students often reflected similar attitudes. If the teacher was bringing the class simply because this was the class’s allocated museum day, and the teacher had no clear goals or expectations, the students’ expectations and general behaviour reflected this. This attitude match was also apparent within specific sections of the Museum. For example, the one class that was taken to the Discovery Space by their teacher was left there in the care of a parent while the teacher went and had a cup of coffee. This teacher referred to the Discovery Space in the follow-up interview as the play area. It was this teacher’s students who said that it was a place to play, not learn.

Student Views on Running Excursions

Significantly, students had some clear ideas on conducting excursions. The following are examples of suggestions made by students during follow-up interviews in response to the question: If you were helping to organize an excursion, what would you do?

Well I’d find out if they’d been there before and I’d know what was there. I’d go to all the hands-on ones first but I’d really give the children the choice for what they want to do and join everyone together and find out what they want to learn.

Make it for the whole day and let us go where we want and find out what we want to find out.

[When you are allowed to look around] you go to things that you think are interesting, so I think its much better.

It needs to have something to do with school so we can relate what we’re seeing here to what we’re doing at school.
A very strong emphasis on choice and control of their own movement and learning becomes apparent through these comments, as well as a link with school studies and a preference for working in a social grouping.

DISCUSSION

The data gathered in this study indicate that when these teachers brought classes to a museum there was little evidence of a learning orientation. The teachers used mainly task-oriented teaching practices, perhaps because that was the way that museum visits “have always been conducted”—it was the only way they knew. The teachers showed little recognition of the different learning environment or the learning opportunities that museums present. Formal teaching practices were being imposed on an informal learning environment. The outcomes of this study suggested that the majority of the teachers had no clear idea of how to use the museum as an informal learning resource. Furthermore, most visits were poorly linked with topics being studied at school.

The method of sampling used for this study and the extent of data gathering would suggest that the findings of the study could be generalized at least to schools in the Australian city in which the study was conducted. The extent to which they apply more widely would depend on a number of factors such as the nature of teacher education and the school curriculum.

We would suggest that, currently, the majority of teachers feel greatly intimidated and even fearful when they bring their classes to museums. They have no strategies in their “kit” for facilitating learning in this environment. Any possible learning objectives are therefore overtaken by structural, task-oriented objectives as these are more concrete and immediate. Teachers have many causes for concern: losing children, risking the reputation of their school, not knowing where to go, being asked questions they cannot answer, and not having any back-up as they do at school. In addition, teachers have a lifetime of mixed (at best) memories of excursions.

Moving toward a Learning Orientation

In search of an alternative, learning-oriented approach to school-museum excursions the authors have looked to three potential sources: previous studies on school visits to museums; the literature on the use of museums by family groups; and previous works on social constructivist theory of learning.

The results of the study reported here closely reflect those found in other studies of museum visits where there had been little intervention, but contrasted with those that had demonstrated successful facilitation of learning. In general, teachers express vague or limited learning goals for their excursions, concentrating mainly on enrichment or social interaction (Brigham & Robinson, 1992; Gottfried, 1980; Laetsch, Diamond, Gottfried, & Rosenfeld, 1980a; Pontin, 1995). There is commonly little or no preparation or follow-up (Gottfried, 1980; Kubota & Olstad, 1991), whereas there have been a considerable number of studies that have shown the positive effect of preparation before the visit (cognitive, setting and learning skill preparation) (Falk & Balling, 1982; Gennaro, 1981; Koran, Lehman, Shafer, & Koran, 1983; Lucas, 1991; Symington, Boundy, Radford, & Taylor, 1986; Wolins, Jensen, & Ulzheimer, 1992). Other studies have shown the importance of social interactions between peers and between students.
and adults (Birney, 1988; Laetsch, Diamond, Gottfried, & Rosenfeld, 1980b; Priest & Gilbert, 1994), and the questionable value of worksheets (McManus, 1985; Parsons & Muhs, 1994; Price & Hein, 1991).

Family groups adopt a set of learning behaviors that differ markedly from those observed in this study. Family group use of museums has been extensively studied revealing clear patterns regarding: viewing and movement behavior; length of stay in each exhibit and in the whole museum; social interactions; what visitors like to see and what they remember; orientation behaviors; and attitudes and motivation (Dierking & Falk, 1994; Falk & Dierking, 1992; Falk, Koran, & Dierking, 1986; McManus, 1992). Falk and Dierking (1992) and Ramey-Gassett et al. (1994) have each summarized the literature to show the characteristics of an informal setting. A number of authors also discuss the differences between formal and informal learning, and how informal learning environments differ from formal learning environments (Bitgood, Serrell, & Thompson, 1994). These differences highlight the mismatch that emerges when formal approaches (including a structured, assessed, competitive, teacher-centered, individual, and compulsory atmosphere) are imposed on an informal setting (which evokes an unstructured, nonassessed, cooperative, learner-centered, social, and voluntary atmosphere).

The third source is the literature on applying a constructivist theory of learning to teaching approaches, particularly in science. Children’s views and understanding of science develop as they “attempt to make sense of the world in which they live in terms of their experiences, their current knowledge and their use of language” (Osborne, Bell, & Gilbert, 1983, p. 3). To assist students to learn in this way requires an approach in which the teacher takes on a facilitative rather than a directive role, stimulating curiosity and challenging views (Harlen, 1985). Inclusive, facilitative, learner-centered approaches to teaching and learning are integral to this approach (Appleton & Asoko, 1995; Claxton, 1990; Duschl, 1990; Fensham, 1983; Fraser & Tobin, 1989; Schultz & McRobbie, 1994). A learners’ questions approach (Faire & Cosgrove, 1988) derived from Biddulph and Osborne’s (1984) interactive teaching model may be an appropriate vehicle for framing a model for learning-oriented school-museum visits.

In contrast to the task-oriented scenario described in the Introduction, a learner-oriented school-museum excursion incorporating the ideas presented in the literature on family group learning behaviors, and an interactive teaching and learning model, might look like this:

The teacher and students move into the museum in a group. In the foyer the teacher sits with her class and together they compare the maps in their hands to the building. They look at some displays nearby to see how they include real objects, text, and often some interactive elements. The teacher reminds the students of their discussion at school on how each of these components will help them to find information on the aspect of the topic they have been studying at school. The students take another look at their books which contain the questions that they have prepared before the visit.

The students break into small groups, each with a parent. Each group has its own areas of inquiry to follow. One member of the group is carrying paper and pen. Another member of the group is carrying a camera and another a tape recorder.

They move off in different directions. As they leave, the parent asks the students where they would like to go first.

The teacher moves among the groups and shares her learning with the students, expressing interest in the displays and activities that they meet and asking questions to stimulate deeper thinking about the displayed information.
After about an hour the groups start to drift back to a central area to sit and have a break. The students enthusiastically share their findings with their friends in other groups. It is not long before the groups are keen to move on to new areas to find more information for their projects.

After about 2 hours the teacher moves through the museum reminding each group that it is time to go back toward the foyer, ready for departure. She finds some students using computer interactives, some watching a video, some writing notes, some quietly viewing displays and others discussing and comparing information in different displays. They are all eager to show her all the information they have found that will help them complete their projects back at school.

CONCLUSION

Clearly this study reveals a lack of congruence between what can be implied from the literature as appropriate to planning and managing a museum visit and what was observed. Based on the findings in this study and in the literature, a set of guidelines could be developed that would form the basis for a learning unit including a museum visit. The guidelines we are proposing as a basis for testing are as follows:

- Integrate the museum visit with a classroom-based learning unit.
- Use a learner-centered approach in which the students are finding answers to their own questions, rather than their teacher’s or the museum’s questions.
- Encourage students to gather further questions while at the museum. That is, use the museum visit to stimulate interest in finding out more about a topic.
- Apply natural learning methods and behaviors used by informal groups (such as family groups) to the program developed for a school class. For example, allow an orientation period and decreasing detailed examination of exhibits over the time of the visit.
- Develop learning styles, approaches, and strategies that recognize the importance of social interaction.
- Recognize the need for students and teachers to adapt to this different type of learning setting.

Further research will explore the outcomes of such an approach and the extent to which teachers are able to adopt it. In the meantime, teacher educators, teachers, and students can interrogate their own practice and knowledge of museum settings in the context of the findings of this study. Museum educators may also find these results useful to help in their collaboration with teachers to develop more purposeful and linked preparation and follow-up activities and by exploring ways of providing more learning autonomy for students at their institutions. For example, this and earlier studies raise questions about the value of the museum staff providing worksheets for use by schools. Recognition of the need to provide teachers with viable alternatives to their current ways of conducting school excursions opens the way for productive professional development on facilitating learning in informal settings.

REFERENCES


