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A Short Review of School Field Trips: Key Findings from the Past and Implications for the Future

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ABSTRACT

This review of the literature on field trips to out-of-school settings will briefly summarize key findings and discuss implications for future research and field trip practice. Cognitive and affective learning can occur as a result of class visits to out-of-school settings, and learning outcomes are fundamentally influenced by the structure of the field trip, setting novelty, prior knowledge and interest of the students, the social context of the visit, teacher agendas, student experiences during the field trip, and the presence or absence and quality of preparation and follow-up. Field trips, however, are not ideal for teaching complex concepts or even isolated facts, they are not "better classroom settings"; instead, they serve best as opportunities for exploration, discovery, first-hand and original experiences. Despite systemic pressures to the contrary, teachers and informal educators tend to agree on this broader vision of field trips and this article makes a variety of suggestions for putting such a vision into practice.

A substantial body of research on field trips has accumulated over the past 30 years, much of which has attempted to identify whether and to what degree field trips contribute to school-based instruction and learning, the factors that may contribute to such learning, and, to a lesser degree, the kinds of learning outcomes that can result from these experiences. Much field trip related research in the 1970s, 1980s, and 1990s focused on the learning potential of informal learning environments like museums, zoos, planetaria or outdoor settings, or contrasted out-of-school learning opportunities with in-school instruction. Most of this research focused on cognitive or conceptual outcomes and was based on the general premise that school field trips had to be able to compete with classroom instruction to show their educational worth. The general consensus that emerged from this line of research was that under certain favorable circumstances, field trips may lead to somewhat better learning outcomes than school-based instruction. Though depending on setting and specific situation, other results at times also suggested

that school-based instruction might provide "more learning per unit of time" (see Bitgood, 1989, or Storksdieck, 2006, for an overview). However, museum practitioners as well as classroom teachers also value the opportunities afforded by field trips for positive affective and social experiences (Anderson, Kisiel, & Storksdieck, 2006; Storksdieck, Werner, & Kaul, 2006), and more recently even "cognitive" learning outcomes of field trips are being broadened beyond facts and concepts to include process skills, awareness of lifelong learning community infrastructure (e.g., museums) and the like (Storksdieck, Robbins, & Kreisman, 2007). Learning on and from a field trip, hence, is no longer seen as simply an extension or improvement of classroom teaching, but as a valuable supplement and addition to classroom instruction, as well as an excellent way to prepare students for future learning (Hofstein & Rosenfeld, 1996; Orion & Hofstein, 1994; Storksdieck, 2006; Watson, personal communication, April 2007). In line with this interest in more broadly defined cognitive learning outcomes, increasing attention has also been paid to affective impacts of field trips.

Nevertheless, just as the research is beginning to document their broad educational value, field trips are coming again under attack and are faced with the need to prove their worth. Field trips are increasingly threatened by limited school funding, lack of time and crammed curricula, the pressures of standardized tests and student assessments, and a need for teachers and principals to document whether and in what way individual field trips satisfy curricular demands (Anderson et al., 2006; Schatz, 2004).

Fortunately for many concerned with the outcomes of field trips, research indicates that both cognitive and affective learning can occur as a result of class visits to out-of-school settings and surrounding experiences, but such learning is fundamentally influenced by a number of factors, including the structure of the field trip itself, setting novelty, prior knowledge of the students, the social context of the visit, teacher agendas and actions on the field trip, and the presence or absence and quality of preparation and follow-up experiences. Moreover, despite their potential, field trips still are often underused as learning experiences. This review of the literature will briefly summarize key findings from research on field trips and discuss implications for future research and field trip practice.

LEARNING FROM FIELD TRIPS

Researchers have had varying degrees of success in measuring cognitive learning resulting from a school field trip, but the evidence generally suggests that such trips can have a positive impact on learning of facts and concepts (Anderson, 1999; Anderson & Lucas, 1997; Bamberger & Tal, 2006; Beiers & McRobbie, 1992; Feher & Rice, 1985; Flexer & Borun, 1984; Gottfried, 1980; Knapp, 1996; Mallon & Bruce, 1982; Miglietta, Belmonte, & Boero, 2008; Orion & Hofstein, 1994; Stronck, 1983; Tuckey, 1992a). Documented learning gains are often relatively small, but small effects are not surprising given the one–off nature of most school trips. Indeed, it could be argued that any gains at all are noteworthy, given the brevity of the experiences and the variety of factors that can affect the extent to which learning occurs. Thus, considering that cognitive learning can be an outcome of school trips—and that it is an outcome valued by many teachers, parents and administrators—it is important to consider ways of maximizing these outcomes by focusing on field trip designs that make best use of the

unique learning opportunities of specific field trip destinations (Storksdieck et al., 2006, 2007).

Although cognitive gains from field trips are considered important, social and affective outcomes have also been proposed as valuable for field trips to museums (Csikszentmihalyi & Hermanson, 1995; Hooper-Greenhill, 1991; Meredith, Fortner, & Mullins, 1997; Rix & McSorley, 1999; Wellington, 1990). It could even be argued that affective outcomes—such as increased motivation or interest, sparking curiosity, or improved attitudes towards a topic—may be more reasonable for school trips than specific factual or concept learning outcomes, since the short-term nature of most field trip experiences may not be best suited to create lasting cognitive effects.

While major gains in cognitive understanding are unlikely in the short time span of most school field trips, brief experiences can certainly evoke strong emotional responses. Fewer studies have focused on affective learning from school field trips, but those that have point toward the positive impacts that such experiences can have on affective outcomes (Finson & Enochs, 1987; Fortner & Lahm, 1990; Javlekar, 1989; Knapp, 1996; Mallon & Bruce, 1982; Sibthorp & Knapp, 1998; Storksdieck, 2006). In addition, a survey of university students as to why they had chosen their area of study indicated that visits to science centers played a role in the decisions of at least some to pursue science careers (Salmi, 2003). On the other hand, school field trips can also create less favorable emotions. Although students seem more likely to remember social and personally relevant aspects of field trips, they also seem to dislike and keep less favorable memories of field trips that seem overly structured and leave little room for their personal visit agenda (Falk & Dierking, 1992, 1997; Gilbert & Priest, 1997; Jensen, 1994; Wolins, Jensen, & Ulzheimer, 1992). Clearly, teachers and informal educators need to consider what can be lasting impacts of school field trips.

IS THERE A LONGER-TERM IMPACT?

Few research studies have attempted to look at longer-term impacts of school field trips, due primarily to the logistical challenges involved in collecting data over extended periods of time. However, in one study schoolchildren participated in individual, open-ended interviews about class trips they had taken during the previous two years (Wolins et al., 1992). Based on the elaborateness of the children's descriptions, the authors concluded that high personal involvement, links with the curriculum and multiple visits to the same institution enhanced long-term impact. Although repeat visits are rarely possible, it would seem that the impact of even a single trip could be enhanced by making the experience more memorable and personal and by building on the trip experience in the classroom. Moreover, we would argue that increasing the impact of trips is even more important for pupils who have few opportunities for such experiences.

Other researchers have found evidence of visitors' long-term memories of museum visits (from two months to several years later), although such memories tend to be episodic in nature and the impact of such visits on cognitive outcomes is unclear (Falk & Dierking, 1997; McManus, 1993; Stevenson, 1991). Nevertheless, it would seem that field trips at least have the possibility of leading to longer-term cognitive outcomes, especially if those are defined broadly to include awareness and general learning. Evidence for such a possibility comes from a recent study of primary and secondary students visiting a

marine biology museum in Italy (Miglietta et al., 2008, in this issue). Using pre- and post-questionnaires, this study found that students retained information they had learned about sharks, particularly shark behavior, up to three months after a visit.

Evidence of even longer-term outcomes was found in study of a class trip to a science center in Israel (Bamberger & Tal, 2008, in this issue). Although pre-trip measures of knowledge or understanding were not used, interviews with 8th grade students 16 months after the visit revealed that the students recalled facts and details of the experience, such as exhibit names, activities in which they had participated, and guides' explanations. Students also indicated that they felt they had learned from the visit and that social interactions were a valued part of their experience.

Although the extent of long-term effects of school trips on cognitive learning may remain relatively unclear, there is some evidence that suggests long-lasting positive affective impact, with students expressing increased interest in the subject matter of a school trip 18 months after a visit (Knapp, 2000; Sibthorp & Knapp, 1998). In a larger-scale study (involving 655 and then 300 children in two phases), Jarvis and Pell (2002, 2005) found that 20% to 25% of children visiting an interactive space center developed a new interest in science and in pursuing a science career, an interest that was maintained five months after the visit. However, although students who were strongly interested in becoming scientists before the visit retained this interest, science enthusiasm expressed by other students dropped. Thus, it appears that school trips can have a positive impact, but perhaps not on all students.[1] Affective impacts in this study were also influenced by teacher activities: Students whose teachers were enthusiastic about science and engaged in more extensive follow-up activities expressed more positive attitudes than students in other classes (Jarvis & Pell, 2005).

Generally, though, the challenges of measuring long-term impacts of a museum visit either on cognitive understandings or on attitudes are formidable. The difficulty of doing so is compounded by the many factors that impact learning both during and following a visit, as well as the influence of subsequent experiences on an individual's knowledge (Bransford, Brown, & Cocking, 1999; Dierking, 2002; Falk & Storksdieck, 2005). The persistence of long-term memories of such events, however, suggests that these visits have significance; they are thus likely to add to a person's repertoire which they can draw upon to interpret future experiences. It is this potential connection with future experiences that makes a visit—or any experience—fundamentally or genuinely educative (Dewey, 1938), but also difficult to assess in terms of its learning potential. A school field trip begins as preparation in the classroom and ends in some form of follow-up, and the extent and quality of both strongly influence the learning potential of the entire field trip experience.

WHAT FACTORS IMPACT THE EFFECTIVENESS OF SCHOOL FIELD TRIPS?

In addition to attempts to measure outcomes, research also provides insight into the factors that can impact the effectiveness of school trips as learning experiences. One such factor is the novelty of the trip setting, which can detract from students' conceptual and possibly affective learning if novelty of the environment is either very strong, or absent altogether (Balling & Falk, 1980; Balling, Falk, & Aronson, 1980; Martin, Falk, &

Balling, 1981). Orientation to the trip setting prior to or during the visit can mitigate this impact (Anderson & Lucas, 1997; Falk, 1983; Orion & Hofstein, 1994).

The social interaction that occurs on a museum visit can also be an important feature of the school field trip experience (Falk & Dierking, 1992, 2000; Dierking, 2002; Price & Hein, 1991). Students are often observed sharing discoveries and experiences with others on their visits, behaviors that could support learning if used constructively in the field trip design (Carlisle, 1985; Gottfried, 1980; Tuckey, 1992b). Moreover, in a review of years of evaluations of non-school science programs, Price and Hein (1991) advocated having students work in small groups because small groups allow students to ask more questions, do more hands-on work, and become more involved generally with the program—all conditions which could plausibly contribute to learning. Thus, research suggests that attention to the social context of the visit is important in order to support both affective and cognitive learning from these experiences (Birney, 1988; Jensen, 1994; Rennie, 1994).

Another important factor that can influence what children or adults learn—particularly cognitively—from a museum visit is their prior knowledge about a topic (Falk & Adelman, 2003; Falk & Dierking, 1992, 2000). The impact of prior knowledge on learning in any setting is well documented (diSessa, 1982; Falk & Storksdieck, 2005; Minstrell, 1989; Resnick, 1983; Roschelle, 1995; Strike & Posner, 1985; Wray & Lewis, 1997). In a museum setting, discussions with students suggest that they learn the most from an exhibit when they already have some understanding of the concept being presented (Feher & Rice, 1985; Tuckey, 1992a). Put differently, students' prior knowledge impacts what they learn from an exhibit (Anderson, 1999; Beiers & McRobbie, 1992; Falk, Koran, & Dierking, 1986; Storksdieck, 2006). At the same time, it can be difficult for museum practitioners to provide experiences specifically appropriate to each student's prior knowledge. Thus, the role of the teacher (who, we hope, is relatively attuned to the prior knowledge of his or her students) in mediating such experiences becomes even more apparent.

Other factors that can also affect learning on any museum visit include individuals' interests in particular topics, motivations, and agendas with which they approach the experience (Falk & Adelman, 2003). Furthermore, it appears that children bring their own personal agendas when visiting with their families, which affect what is learned (Ellenbogen, 2002). Nevertheless, accommodating the agendas and interests of each child in a class would be quite challenging for any teacher leading a visit.

WHAT IS THE IMPACT OF STRUCTURE?

One important factor that has been shown to impact learning from school field trips, but that is discussed controversially in the literature, is the field trip's degree of structure. Generally, research suggests that in a museum setting, structured experiences—such as guided tours or specific, detailed tasks, mostly supported by worksheets and other attention focusing devices—can increase cognitive learning but may dampen interest overall or result in less positive attitudes (Flexer & Borun, 1984; Stronck, 1983). Structure is often imposed by worksheets, which have been criticized for the way in which they may be used (e.g., as a tool for behavior management, often with many detailed questions that do not allow pupils to explore and engage with the unique experience the museum setting offers; Kisiel, 2003b, 2006a; McManus, 1985; Price & Hein, 1991). However,

teachers are fairly comfortable with worksheets, museums are eager to provide them, and there is some evidence that both teachers and students feel that learning is supported with (well thought-out and appropriately designed) worksheets (Griffin, 1994; Kisiel, 2003a). Their use should certainly not be dismissed; in fact, worksheets can be highly effective in promoting discovery- and inquiry-style field trip experiences (Kisiel, 2003a), especially when they expose students to a wide range of relevant information. Mony and Heimlich (2008, in this issue) reported that visitors to a zoo mentally merged message sources about conservation: They attributed messages to docents, when in fact they actually received them through signage. The study suggests that visitors to museum-type settings, including students on field trips, might learn more by reading than they themselves realize. By focusing student attention, well-designed worksheets might tap into the power of existing interpretive materials while providing students with a visit experience that is more reflective of free-choice visits.

McManus (1985) made several recommendations for ways to turn worksheets into more effective learning tools in a museum setting. Worksheets should (a) encourage observation, (b) allow time for observation, (c) refer to objects rather than labels, (d) be unambiguous about where information might be found, and (e) encourage talk among group members. Based on a synthesis of research on worksheets, Mortensen and Smart (2007) developed a set of design criteria for worksheets to support learning from a school trip. Worksheets based on these criteria—intended to encourage free-choice exploration of curriculum-related topics—were found to increase the number and diversity of students' content-related conversations during a museum visit.

Based on existing research, it seems that the degree and type of structure matters, not simply its presence or absence. To maximize both cognitive and affective outcomes, it would seem that field trips should provide a moderate amount of structure while still allowing for free exploration (Falk & Dierking, 1992; Hooper-Greenhill, 1991; Price & Hein, 1991; Rennie & McClafferty, 1995; Storksdieck, 2006). Such a format is also congruent with preferences expressed by children for less rigidly structured museum visits (Birney, 1988). Moreover, a more recent study (Bamberger & Tal, 2007) found that "limited choice" visits—in which students were given some kind of structured task or direction, but also allowed some choice and control in exploring an exhibition—were more engaging than highly structured *or* unstructured visits. Such visits also seemed to enhance deeper involvement, scaffold content learning, and encourage social interactions, particularly between students and adults.

Finally, the structure of an experience includes what happens before and after the visit, and research demonstrates that both cognitive and affective learning from a school field trip can be enhanced by the use of pre- and post-visit activities in the classroom (Anderson, 1999; Anderson, Lucas, Ginns, & Dierking, 2000; Farmer & Wott, 1995; Finson & Enochs, 1987; Gennaro, 1981; Lucas, 2000). For instance, Lucas (2000) documented the way in which one teacher's extensive preparation and follow-up to a science center visit resulted both in conceptual learning and a greater appreciation of the learning opportunities provided by the experience itself. Although such extensive preparation and follow-up are not realistic for many teachers, particularly those who must contend with a national curriculum or rigid state standards, the role of the teacher in extending school trips' impact via preparation and follow-up activities is key, especially in light of

the ephemeral nature of many such experiences. These findings also highlight the need for museum practitioners and researchers to find effective ways to support the use of pre- and post-visit activities by teachers who bring their students on class trips. In fact, it could be argued that pre-visit preparation and post-visit in-class follow-up are integral parts of the overall field trip experience, the learning pathway that is anchored around a field trip to an out-of-school setting or venue (Storksdieck, 2006).

THE TEACHERS' ROLE IN FIELD TRIPS

In light of such findings, it is not surprising that research makes explicit recommendations to teachers about best practices, or how they can maximize the effectiveness of field trips as learning experiences (Bitgood, 1989; Braund & Reiss, 2004; Carroll, 2007; Griffin, 1998; Koran & Baker, 1979; Leary, 1996; Rennie & McClafferty, 1995; Rudmann, 1994). For instance, teachers are encouraged to (a) become familiar with the setting before the trip; (b) orient students to the setting and agenda and clarify learning objectives; (c) plan pre-visit activities aligned with curriculum goals; (d) allow students time to explore and discover during the visit; (e) plan activities that support the curriculum and also take advantage of the uniqueness of the setting; and (f) plan and conduct post-visit classroom activities to reinforce the school field trip experience and to allow students opportunities for sharing and feedback.

However, evidence would suggest that such recommendations are not necessarily followed by teachers (Anderson et al., 2006; Griffin & Symington, 1997; Sorensen, 2003), even though teachers do seem to view school trips as an educational opportunity (Kisiel, 2005; Wellington, 1990), and many believe it is important for the trip to fit into the curriculum (Anderson & Zhang, 2003; Kisiel, 2005). In fact, recent research on teachers' agendas for school trips reveal complex and comprehensive reasons for school field trips; teachers seem to value such experiences as learning opportunities and aspire to connect them more closely to the classroom curriculum, as well as considering them as opportunities for social and affective learning (Kisiel, 2005; Storksdieck et al., 2006). Nevertheless, institutional constraints often hinder teachers' ability to maximize the learning opportunities afforded by out-of-classroom experiences (Anderson et al., 2006). In addition, research findings conflict as to the extent of teachers' awareness of the importance of recommended practices, particularly pre- and post-visit activities (Cox-Petersen & Pfaffinger, 1998; Storksdieck, 2006). Many teachers continue to use field trips simply as a "day out" (Sorensen, 2003) or focus on busy-work types of tasks and behavior management at the expense of encouraging engagement with exhibits and objects (Cox-Petersen & Pfaffinger, 1998; Griffin & Symington, 1997). Even when teachers seem aware of "best" field trip practice, their own field trip implementation might still deviate from a "best practice" script.

SUPPORTING BETTER FIELD TRIP PRACTICE OF TEACHERS

One issue for the out-of-school, informal or free-choice learning field, then, becomes whether anything can be done to encourage teachers to engage in the kinds of practices likely to support increased cognitive and affective learning from school trips, despite all the constraints they face. Researchers have begun to examine the role that museums and similar institutions might play in facilitating good practice among teachers. It appears

that an important first step is to be aware of current teacher practice on school field trips, of teacher objectives for these visits, and of contextual factors which can impact how teachers conduct such excursions (including what they do before and after in the classroom).

Based on observations of 10 primary school groups (students between ages 8 and 11) at a natural history museum, Kisiel (2006) articulated a number of types of teacher actions or behaviors. "Structured student engagement" (worksheets or other writing activities; or a museum-led tour) was the most common one used by teachers. Kisiel also identified a number of "unstructured student engagement strategies", which were essentially ways in which teachers could interact with students during the visit; they included explaining an exhibit or object, posing open-ended questions, reading labels, and encouraging free exploration. Perhaps not surprisingly, he observed many actions intended to supervise student behavior, and noted that structured engagement activities may also serve this purpose. Finally, he found that teachers frequently used an "event documentation" strategy, capturing students' experience in photographs or video. Developing an understanding of teachers' current field trip practices could serve as a basis for the development of resources or programs that could support better teacher practice on field trips.

An additional prerequisite for developing resources likely to be used by teachers involves being aware of teachers' goals or objectives for class trips, which may not be the same as those of museum educators (Anderson et al., 2006; Kisiel, 2007). Kisiel (2005) has identified a number of teacher motivations for school trips, which include connecting with the classroom curriculum, providing a general learning experience, enhancing student motivation and interest in science, providing exposure to new experiences, providing a change in setting or routine, and student enjoyment. Other research (DeWitt, 2007; Storksdieck, 2006; Storksdieck et al., 2006; Tal & Steiner, 2006) highlights similar teacher objectives. Moreover, teacher agendas for a trip can and do influence their practice (Kisiel, 2003b; Storksdieck, 2006). For instance, teachers with a survey agenda (for a general experience or "seeing it all") tended to prepare worksheets with a greater number of questions, which were more directive, exhibit-specific, required label reading, and used lower-order cognitive skills. In contrast, worksheets prepared by teachers with a concept agenda (to use the museum for a specific learning goal) contained fewer questions, which could often be answered by referring to a greater variety of exhibits, were more open, directed attention to objects rather than labels, and called upon higher-order cognitive skills (Kisiel, 2003b).

Although museum practitioners are urged to attend to teachers' goals for museum visits, doing so can be challenging, particularly because teachers also seem to have multiple objectives for field trips (Anderson et al., 2006). These frequently include both affective and cognitive (or curricular) goals, as well as an interest in exposing students to what the settings uniquely have to offer. In addition, it seems that many teachers consider affective goals (such as enjoyment or providing a positive experience for pupils) to be equally, if not more, important (Anderson et al., 2006; Marshdoyle, Bowman, & Mullins, 1982; Richter, 1993; Storksdieck et al., 2006), and museums and other out-of-school settings ought to support affective outcomes of visits to their institutions as much as they support cognitive ones.

Although teachers' objectives are an important influence on how they conduct school trips, cultural context may play an even larger role in shaping such visits. For instance, the curriculum (whether national or more local) is one aspect of the teacher's context that can be expected to influence decisions and motivations not just in the classroom, but on school field trips as well. Irrespective of whether a specific field trip ultimately serves curricular goals, teachers often need to show to administrators or themselves that the field trip has the potential to do so. In addition to the topics included in the curriculum itself, time constraints resulting from an overcrowded curriculum form a further barrier to teachers engaging in certain practices surrounding school trips, such as pre- and post-visit activities, or even taking pupils out of school at all (Anderson et al., 2006; Bartosh, Mayer-Smith, & Peterat, 2006; Jamison, 1998; Kisiel, 2006). Finally, logistical hurdles within the school environment (such as arranging parental consent, filling out safety forms, coordinating the field trip with other teachers, or proving curricular fit), in the out-of-school setting (e.g., wayfinding in an unfamiliar environment, behavior issues), and even in between (transportation) are other elements of the teacher's context that can impact practice related to school trips (DeWitt, 2007; Gammon, Burch, Davies, & Graham, 2002; Jamison, 1998; Kisiel, 2007; Mason, 1980). For instance, the need to keep students "on task" and to manage their behavior can influence a teacher's decision to use a survey-oriented worksheet filled with questions (Kisiel, 2007). Finally, field trips are often limited by monetary constraints (Anderson et al., 2006), be they transportation or to cover the fee for the field trip experience per se.

THE ROLE OF THE OUT-OF-SCHOOL SETTING IN INFLUENCING FIELD TRIP PRACTICE

Despite some of the barriers teachers may face in implementing better practice with respect to school trips, research does suggest that there are ways that out-of-school settings themselves (such as museums and science centers) can help improve such practice. Not surprisingly, it seems that such attempts—whether via programming or paper- or web-based resources—are more likely to be successful when teachers' perceived needs, current practice, objectives and contexts are taken into consideration.

Museums, science centers, and other informal learning settings offer a wide variety of field trip experiences—from highly structured programs, to casual interactions with gallery staff, to simply making objects and exhibits available for visits. However, it seems that some types of experiences may have more potential to help teachers maximize student learning than others. For instance, when programs are developed in alignment with school curricula and teacher goals rather than being driven primarily by what museums feel teachers should value, integration of the visit into the classroom is more likely (Xanthoudaki, 1998). Out-of-school settings should therefore consult teachers and other school officials when designing field trip experiences and related support materials.

Professional development has been a key component of other attempts to improve teacher practice surrounding museum visits. For instance, Griffin (1998, 1999, 2004) developed the SMILES (School-Museum Integrated Learning Experiences in Science) approach, which incorporated many of the recommendations found in the literature and particularly aimed to help teachers integrate visits more closely into their classroom teaching. Nevertheless, the SMILES approach requires a considerable commitment of time and effort from the teacher, as well as a degree of flexibility in the curriculum that

permits a large amount of classroom time to be devoted to a visit-related learning unit. Moreover, professional development was used to train teachers in this approach, which may not be feasible for all teachers and museums.

Another way in which museums may support improved teacher practice with school trips is via the resources they provide. Indeed, many science centers, museums, zoos, aquaria, nature centers and other kinds of informal learning environments create such resources, which vary widely in scope and quality. However, successful museum–school collaborations are often characterized by the museum reaching out to teachers and developing materials in conjunction with them and local school officials (Chase, 1989; Gutierrez de White & Jacobson, 1994; Hannon & Randolph, 1999). Recent research (DeWitt, 2007) has also explored what happens when resources are developed based on a close consideration of teacher needs and context, of museum goals and the unique learning opportunities afforded by such settings, and of the kinds of activities likely to support cognitive and affective learning from school field trips to museums. Findings indicated that when resources are developed along these lines, they can support student learning, as well as being well-received —and thus more likely to be used—by teachers.

Perusal of previous research reflects that discussions on field trip quality often focus solely on teachers and the extent to which they follow "best practice". However, the visited venue, be it a museum, science center, nature center, zoo, or other out-of-school learning setting, may also play a major role. Field trip experiences offered by museums and museum-like settings, particularly larger ones, can be inflexible, overly structured, transmission–absorption oriented and classroom-like experiences with a strong focus on student numbers and revenue generation; impersonal experiences that start with a booking department that is disconnected from the education staff, and a strong sense that individualized experiences for specific school classes are logistically and financially impossible to create (Storksdieck et al., 2006; Storksdieck et al., 2007). "Best practice" for field trips cuts both ways: out-of-school learning settings need to provide customizable experiences based on exploration and discovery of unique features and opportunities of the venue or site itself, and may have to shift their attention from the "learning" that happens onsite to the learning potential created at the setting and realized later in the classroom. They also need to provide opportunities for teachers to share their field trip experiences with the venue (for continuous improvement and adjustment) and with fellow teachers (to learn from each others' successes and failures).

WHERE DO WE GO FROM HERE?

Opportunities to be Offered

Drawing on the growing body of research conducted into field trips and how they can best facilitate learning outcomes—both cognitive and affective, a number of recommendations emerge as to the kinds of opportunities that informal learning settings should offer to schools. Field trip offerings should

- be responsive to teachers' needs, goals and contexts (including the classroom, school, district, and beyond) and be developed in cooperation and consultation with teachers;
- support embedding the field trip into the classroom curriculum (by aligning with curriculum topics, offering pre- and post-visit materials, and providing support during

the visit via the kinds of activities and materials available and, wherever possible, staff);
- offer multiple learning opportunities during the trip;
- take advantage of the unique qualities of the setting and provide experiences that cannot be replicated in the classroom;
- provide a degree of structure, but also allow time for exploration;
- give students a measure of choice and control over their experience;
- provide opportunities and encouragement for students to engage in discussion with adults (teachers, chaperones, museum staff) and with other students;
- be based on exploration, discovery and process skills rather than transmission of facts, whereby the out-of-school setting functions less as a place at which specific learning occurs, but more as a place in which students collect primary experiences and data that are subsequently analyzed in the classroom; and
- be continuously improved through feedback from teachers and students.

"Talk to Me!"

Out-of-school settings have many ways to seek and receive constructive feedback from teachers and school officials that allow them to offer field trip experiences that maximize their learning potential and satisfaction. One such technique, the 90-second "snapshot" interview, has been successfully used by DeWitt (2007) in a variety of settings. In addition, educators can talk informally to teachers, conduct semi-structured spot or brief interviews, conduct occasional deeper interviews, provide written or online opportunities for feedback, create a teacher advisory council or an informal advisory group, embed assessment and evaluation into the field trip experience itself, seek the counsel of colleagues elsewhere, and more (Storksdieck et al., 2007). There are many ways to find out what works and what doesn't, and why, but like teachers, staff at out-of-school settings are perpetually overcommitted with core tasks, and evaluation is rarely considered one of them. Anecdotal evidence suggests that even if feedback from teachers is collected (mostly through feedback forms), time and expertise might be missing to enter, analyze and interpret the data and feed the findings into a system that could respond to the findings. Nevertheless, a great opportunity certainly exists for informal learning settings to make better use of teacher feedback in order to improve their offerings.

Research Agenda for the Future

Although much is known about educationally effective and motivational school field trips, more remains to be learned. Some issues are relatively unexplored, others change in response to changing circumstances, particularly in the broader realm of education, and some questions may be impossible to answer fully. Nevertheless, there are some questions and issues on which, we believe, researchers should focus. Pressing questions for us include the following:

- *How can we best support and engage teachers?* Although there are some constants across field trip venues (e.g., the unfamiliarity of such settings for many teachers, the need for logistical support), other things are likely to vary among geographic locations (e.g., the technological resources available to teachers, specifics of the curriculum) or over time within a single location (e.g., curricular and testing requirements do change). Consequently, there is an ongoing need for continuing evaluation into teachers' needs,

goals, and context at the local level. However, in some cases it may be possible to share evaluation findings among institutions, reducing the burden on any single organization.

- *How can we engage and make better use of chaperones?* Although chaperones are present for most school trips (or should be), relatively little research has been devoted to how best to support and engage chaperones (Burtnyk, 2004; Parsons & Muhs, 1994; Sedzielarz, 2003). It seems that the role of chaperones remains controversial—should their role be primarily to supervise and conduct behavioral control, or are they interfering with student learning? Are they even appreciated by teachers and museums as having a potential educational role during a field trip, and what would it take to make use of them in ways that are aligned with best field trip practice (Storksdieck et al., 2006)?
- *How should we assess field trips and "prove" their value?* Research has pointed to the value of field trips for learning, with both cognitive and affective outcomes. However, the nature of the learning from these experiences, which is often very individualized and impacted by many factors outside of the trip itself—including what happens at school and at home, makes assessment challenging. Much remains to be learned about the most appropriate way to assess them (e.g., should the focus be primarily on affective outcomes, or cognitive ones?) Moreover, how can busy practitioners realistically document the value of field trips to their institutions? Given that time and resource constraints make it impossible to gather as much data as would be preferred, should more emphasis be placed on outcomes or on learning behaviors observed during the trips? In addition, it is not yet clear how museums or other informal learning settings can work most effectively with school administrators (at the school level, district level, and beyond) to make the case for school trips. Further, ideal ways of working with schools may vary geographically.

Other questions remain as well, including the following:

- How can we best involve stakeholders (teachers, administrators, parents, and children) in the development of field trip experiences?
- To what extent should we align field trip offerings to curriculum standards? And how can we do so while still capitalizing on the uniqueness of our settings?
- How can we provide more individualized experiences that better meet students' needs? Is doing so realistic for a visit, or do we need to look more carefully at resources—including technology—used before and after?
- How can technology best be used to support teachers bringing students on visits?

During the past 25 years, we have learned an enormous amount about field trips and how they can be effective learning experiences. The research has been translated into a variety of publications that provide "best practices" for field trips. Much work is now needed to translate the notions of "best practices" into actual field trip experiences, and as the questions listed above suggest, the focus of research might switch towards issues of implementation. We know what makes for "good" field trips, and we have identified many of the barriers that prevent ideal field trips from taking place. We now need to learn more about how these barriers can be overcome.

Note

1. An alternative explanation is that some students rightfully identified for themselves that science and technology is not of interest to them—an important insight because the world needs more than scientists and engineers; realizing what one does not want to do is as important as the opposite.

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