

Studies on Motivation in Museums

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Abstract

The purpose of this paper was to research studies on field trips and to glean information regarding motivation and learning in the museum setting. Museums are considered to be “informal learning settings” or “novel instructional resources.” Research confirms that the personal, social, and physical contexts all figure significantly into the equation that determines the outcome of the field trip experience.

Visitors, including students on a field trip, have an agenda when visiting a museum. The case has been made that these personal expectations have the potential to cause anxiety and to take up cognitive “working space,” which invariably compromises a student’s ability to learn. Specific pre-visit preparation has been found to ameliorate the potential for anxiety, related to a student’s personal expectations.

One of a museum’s strongest attributes is the “novelty factor.” Conversely, this asset can become a liability and can negatively affect the learning potential of a student, if he becomes over-stimulated. Therefore strategies should be employed to balance the novelty factor.

Studies concur that a well-organized field trip is the key to maximizing the learning opportunities for students. Research indicates that motivational strategies must be applied before, during and after the field trip to maximize learning, retention and the social experience. The strategies include pre-visit preparation; use of a skilled facilitator or “docent”; structured and unstructured time during the visit; and post-visit activities.

Studies on Motivation in Museums

Introduction

“Museums are the best device for conveying three-dimensional facts of reality to large numbers of people.” Falk, John H. & Dierking, Lynn D. (1992) Whether an exhibit features artifacts, science demonstrations, animal habitats or paintings, visitors can see, touch, smell, and hear real things from the world.

Hundreds of thousands of students across the nation go on field trips every year. What makes field trips to museums a productive learning experience? What are the effects on cognitive development, attitude, and motivation? What does it take to maximize the learning opportunity?

As in Keller’s Macro Model, (1999) a variety of influences determine the motivation for students to learn on a field trip, “Such a macro-level representation of a human learning and performance system must include both the internal, psychological factors and the external, environmental factors that influence performance.” In analyzing the field trip experience, one must bear in mind that the visitor’s perception is highly contextual and encompasses the interplay of the personal, physical and social contexts. Personal beliefs, social interactions and the physical setting are salient factors that shape the visitor’s experience.

Personal-Context

Museums are free choice environments, where the interests and beliefs of the

learner are fundamental for learning. Personal feelings, beliefs, and attitudes form much of the basis for motivation, a key ingredient in the museum learning process. Prior experiences and knowledge not only influence what a person is interested in looking at, but also his capacity to perceive it. Psychologists in the field of Visitor Studies have explored other terms, such as “meaning-making,” to describe the processes a person uses to personalize and assimilate information in a museum setting.

Jerome Bruner advanced the idea that learning, particularly discovery-learning, is greatly facilitated by previous expectation that there would be something worth learning. In the absence of motivation for learning, little learning occurred. Bruner’s study (as cited in Hurd,1997)

Social-Context

Museum learning occurs in a highly social context. Researcher Koran and his colleagues conducted a Museum study to see if modeling could be used to change visitor’s behavior positively. Koran, J.J. (1972) They placed headphones with recorded messages at intervals along a boardwalk that led visitors through a fabricated ecosystem. Each headphone contained a different message, but all headphones looked the same. The visitors assumed that all headphones contained the identical message.

The researchers worked in a pair, modeling to the visitors that all the headphones contained different messages. The role model would move from one headphone to the next, exclaiming something like “Oh! This one tells you something new!” Following this modeling sequence visitors spontaneously changed their behavior.

In a study on recollections, people were interviewed and asked to discuss their earliest museum memories. The responses would suggest that the social context of field trips is important because, even after fifteen and twenty years had passed, most of the recollections were social–context details, such as whom they sat with on the bus, whether their parents were chaperones, and what the docent was like. Falk, John H. & Dierking, Lynn D. (1992)

Physical Context

There is abundant evidence that social context has an important influence on the museum visit, but sometimes the social and physical contexts are not separable; they work together in a physical/social context. In the late 1940's, two psychologists Barker and Wright proposed that the physical/social setting should not be thought of as a passive backdrop, but as an “active, organized, self-regulating system” where people carry out actions that they freely choose. They called these physical/social settings “behavior settings.” Barker, R.G. & Wright, H.F. (1955)

Early in their careers, Barker and Wright tried to gain insight about the behavior of people, by observing their everyday lives and taking copious notes. After studying dozens of children, they realized that “the behaviors of children could be predicted more accurately from knowing the situations the children were in than from knowing individual characteristics of the children.” Barker & Wright (1955) referred to the physical context as the “behavior setting.”

Their research showed that the behavior of a child would change as he moved from one setting to the next. For example, a child may be quiet and thoughtful in a math

class, but when he gets outside to recess, he becomes loud and exuberant. In general an individual behaves differently in a classroom than he would behave in a soccer stadium than he would behave in a church. The conclusion is that different settings induce different behaviors, regardless of personal traits and tendencies. According to Barker and Wright (1955) behavior settings are culturally determined which indicates that social influences of modeling are at work.

Museums, like classrooms, churches and stadiums are behavior settings. Within the physical context of Museums, two important considerations emerge, *expectancy* and *novelty*. Perhaps the physical and social-context are inextricably linked, but according to research, the personal-context also is an integral part of the equation. The personal, physical, and social contexts are bound together to create an interactive experience, which defines the museum visit.

Personal Expectations:

Students have two agendas when visiting a Museum. One is self-centered: a hope to see a favorite exhibit, to purchase something in the gift shop, to have fun on the bus, to enjoy the break from a normal school routine. The other agenda is actually in line with the school and the Museum: to meet an “expert” in the field, and/or to learn something new from a Museum offering. Studies have shown that the interaction between the student’s agenda or expectations and the reality of the experience, as it unfolds, measurably affects the outcome of the trip.

A *pre-trip, orientation* study was conducted, on more than 900 nine- and ten- year old children who were taken on a total of thirty-three school field trips to the National

Zoo. Balling, Falk, & and Aronson's study (as cited in Falk & Dierking 1992) Before the field trip, students participated in an orientation session. Three different types of orientation sessions were designed, representing three different approaches. All three included a slide show, a game-like worksheet that students did at their seats, and a poster that hung in the classroom.

The first orientation type was cognitive. The researchers talked about what the students would be learning on their trip to the zoo, led a discussion about mammal adaptations to aquatic environments, and showed slides of the animals they would see and study. The researchers also brought a worksheet, emphasizing key concepts of adaptation and an aquatic mammals poster.

The second type of orientation was based on "process skills." The researchers explained to the students how good observational skills were necessary on a trip to the zoo, and offered strategies for improving their abilities to see things in a zoo. The slides, worksheet and poster all emphasized observational skills.

The third type of orientation was child-centered, designed to put the children at ease by explaining the practical aspects of the trip. The researchers explained how they would get to the zoo, where they would park, what they would do, what they would see, what they could buy, and what was for lunch. The slide presentation walked the children through the zoo, and the worksheet and poster both contained a map of the zoo, and pictures of the animals they would see.

The children were divided into five groups. The three test groups, as described above, were given a pre-test one month before the visit, a post-test within a week after the visit, and a second post-test three months after the visit. The tests measured concept

learning, knowledge of setting, observational skills, and attitudes. The three groups also were observed during their visit. In addition to the test groups were two control groups who took both the pre-visit and post-visit test. One group went on the field trip with no orientation, and the other “test-only” group had neither the orientation nor a field trip.

All of the groups, except the “test-only” group, showed significant learning in the areas of content, observational skills, and knowledge of setting, and the learning persisted over three months, as indicated by the post-test. Furthermore, all of the groups showed significant positive changes in attitude toward animals and zoos in general.

The surprising, counter-intuitive outcome was that the child-centered orientation group showed significantly higher learning than any other group. The students who were told where the bus would park and what they could buy at the concession stands performed better on the cognitive tests than the groups who were told what cognitive facts and concepts would be presented. The child-centered orientation group also showed significantly better observational skills than the groups who were given the observation-orientation session.

The researchers explained that children, who received prior knowledge about what they would or would not be able to satisfy within their personal agendas, were able to perform better on the academic part of the trip. The children who were not given the child-centered orientation went through the motions of the trip but were probably wondering the whole time about whether or not they would see a lion, what would be for lunch, if they were going to be able to buy anything with the dollar they brought, etc. The behavior observations made of these children, during the zoo visit, reinforced these

findings. The child-centered orientation groups seemed more relaxed and attentive to the tour guide than did the other groups.

This study correlates with research on the effects of test anxiety. Low self-efficacy for study strategies and test taking abilities tends to generate anxiety in test-taking situations, thus consuming working memory capacity, and negatively affecting the individual's academic performance. Pintrich, Paul R. & Schunk, Dale H. (2002) Anxiety also interferes with the learning process in students on a field trip who are preoccupied, worrying about whether or not their personal expectations will be met.

The researchers did a follow-up study that shed even more light on the importance of visitor expectations. They constructed a lesson that would compare the effectiveness of teaching a lesson in the classroom versus taking the class on a field trip and teaching the lesson there. Balling, Falk, & and Aronson's study (as cited in Falk & Dierking 1992) One group had the lesson "mammals that swim" in the classroom; a second group had the same lesson at the zoo where they were able to see the animals they were learning about, actively moving about in their habitat. A third group had the lesson at the zoo, but only saw a couple of the animals. The fourth group had the lesson at the zoo, but none of the animals were present.

The researches evaluated the museum experience with pre- and post- tests that measured concept learning. Again there were significant differences among all the groups. All groups showed significant learning between the pre- and post- tests, but the groups that went to the zoo showed significantly greater concept learning than the classroom group, and the groups that saw all the target animals showed significantly

greater concept learning than the groups who saw only a one or two or none of the animals.

The conclusion was that real world, relevant contexts support and enhance concept learning but also, expectations do figure prominently in the outcome. The students expected to see and learn about animals on the trip to the zoo, and whether they saw them or not, they were more receptive to the information provided to them within the context of the zoo than were their classroom bound peers. The most reinforcing condition was actually seeing all the animals, however the very act of going to the zoo was enough to augment concept learning.

Visitors expect to see animals at the zoo, artifacts in a history museum and paintings and sculptures in an art museum. These content-specific expectations not only shape the visitor's agenda but seem to affect the outcome of the visit as well. Falk, John H. & Dierking, Lynn D. (1992)

Novelty Factor

It is a paradox, that a Museum's best asset to motivate learning, also can be a detriment. That asset is the "novelty factor" which has been linked to ineffective learning outcomes by visiting school students. Museums are a potential source of anxiety because they are highly stimulating, novel and interactive physical and social environments.

Piscitelli, B. & Anderson D. (2000) Novelty stimulus, if provided in the right context, is beneficial and motivating to the learning process, however too much novelty can distract and impede the learning of factual information and concepts. (Falk, Martin & Balling, in Bailey, p.2)

Alberti, E. & Witryol, S. (1994), define novelty as “the presence of new, unfamiliar, or relatively rare stimuli against the background of familiar events in the child’s perceptual history.” They hypothesized that there would be a positive correlation between novelty (curiosity motivation) and cognitive function. Much of their hypothesis was based upon the earlier research of Berlyne who postulated that motivation arises from the drive to maintain an optimal level of arousal. Pintrich, Paul R. & Schunk, Dale H. (2002)

Alberti and Witryol (1994) found that novelty-producing motivation is independent of cognitive ability, and their research further supports the influence of novelty on cognitive growth. They found that an important aspect of curiosity motivation is *preference* for novelty. Curiosity motivation energizes exploration and exposes the individual to a greater variety of experiences. In turn, the individual will come in contact with new information, forming the elements of cognitive development thereby, increasing competence and general adaptiveness. Hurd (1997)

In another study, researchers set out to define the degrees of curiosity stimulus and its effects on learning. They put forth a hierarchy of variables, arranged according to their information processing demands on cognition. Wentworth & Witryol (1984) The model had three levels. Variety was at the bottom, requiring the least amount of information processing – then novelty – then uncertainty. Novelty is associated with encountering an experience that differs from past experience. Wentworth & Witryol (1984) claimed that “being able to compare the present environment with the past requires more information processing than that necessary to discern a variety of stimuli

that are familiar.” The variable requiring the most information processing is what they called uncertainty.

Museums often operate on the variety level, instead of producing exhibits and demonstrations that tap into the novelty or even uncertainty level. Hurd (1997) At the latter levels, cognitive growth is enhanced via the “drive to maintain optimal levels of arousal.” For example, a science center can invite visitors to explore 350+ hands-on exhibits, but as the visitor jumps from one unrelated display to the next, pulling levers and punching buttons, the novelty factor soon wears off, and the visitor loses interest. The variety is great but the novelty factor is not enough to maintain attention and lead to further exploration. In this case cognitive growth is not enhanced, and the visitor is overcome by doubts or uncertainties about learning in that over-stimulating environment Pintrich & Schunk (2002)

The obvious challenge of the novel instructional resource is to achieve a novel environment that is stimulating in regard to exploration, yet not over- or under-stimulating. Novel instructional resources, working actively with classroom teachers, can turn the use of these resources into productive learning experiences, enhanced by pre-post-visit materials.

Maximizing the Field Trip Experience

It has long been known that field trips add a special component to learning, enhance the student’s understanding of specific disciplines, and produce attitudinal change Hurd (1997)

It also has been widely researched that the better organized the field trip – the greater the cognitive gains, attitudinal change, and retention. McKenzie and White (as cited in Hurd, 1982) concluded the excursions are most effective when teachers deliberately make efforts to link the field trip with the knowledge students were obtaining in the classroom. Field trips should be a learning experience (which may seem a trivial assertion) but field trips too often are summarized as adventure-social events. Orion (1993)

George Hein and his colleagues implemented studies focused on the teacher's role in preparing the class for a field trip and found that a teacher's familiarity with the field trip site has a vital influence on the outcome. Price & Hein's study (as cited in Bailey, 2002) In fact, data suggests that teachers who attended workshops, offered by these institutions, had a greater effect on their student's learning than those who did not attend workshops. Unfortunately, statistics show that the majority of teachers are not attending the workshops, provided by the institutions.

Data gathered by Griffin and Symington (as cited in Parsons & Breise, 2000) indicate that teachers bringing their classes to museums often

- express vague or limited learning goals, concentrating mainly on enrichment and social interaction
- demonstrate little evidence of site orientation
- show little or no preparation or follow-up
- have no clear idea of how to use the museum as an informal learning resource
- poorly link visits with topics being studied in the classroom

Field Trip studies reveal that pre-visit preparation is the key to success. Although researchers have yet to determine the exact nature of that, it is agreed that some type of classroom lesson is necessary before the trip. Ideally, field trip activities should be linked to classroom curriculum. Furthermore novel instructional resources can provide pre-visit activity kits so that teachers and students can become prepared in advance of the field trip.

During the field trip students should be encouraged to explore, experience, observe, and work in small groups, sharing their discoveries with one another. Parsons & Breise (2000) According to Woods (as cited by Hurd 1997) the value of a “critical other” should not be overlooked. A critical other is a docent or other key individual at the site who provides direction and helps to foster exploration and learning. A skilled and adequately trained facilitator can be quite effective at channeling exploration in the novel environment of a museum.

After the field trip and back in the classroom, teachers should follow up with lessons, activities and/or discussions about the experience. Bitgood (1989) Novel instructional resources could also offer a post-activity kit to benefit teachers and students. Post-visit activities help to highlight, enhance, and serve as a link between the field trip experience and the classroom. Hurd (1997)

Conclusion

Field trips to museums have a great potential to improve the quality of education. They provide real world, hands-on experiences that can positively affect attitude and motivation toward a subject. Key factors for motivated learning in the museum setting

include the museum-goer's personal feelings, beliefs, and attitudes. Visitors interpret what they see through their own lens of prior knowledge, experience and beliefs, so efforts to increase relativity and connect the museum-goer with what he sees, hears, touches, etc. will enhance learning outcomes.

In addition the physical and social contexts come together to create an integral component, the "behavior setting." Field trips allow a special opportunity for learning and socialization that cannot be engendered in the classroom.

Museums as a "novel instructional resource," have the tremendous potential to enhance learning goals of students across the world but first, the link between classroom educators and museum educators must be strengthened.

In the case of Cape Fear Museum, museum educators have developed two top-notch programs, which meet NC Standards for third- grade and fourth- grade students, so the curriculum links are definitely there. However scheduling may not always allow for the field trip to coincide with the particular lesson in the classroom. In other words time may have lapsed since the teacher taught the unit on "naval stores." Or conversely, the teacher may have had to schedule the field trip before having covered the unit on "naval stores" in the classroom. In either case, a pre-visit activity packet would be beneficial in preparing the students for what they are going to see and learn about, on their visit to the museum.

During the field trip, a "docent" can be very effective, if adequately trained and able to communicate and connect with the students. Such a museum facilitator can help to guide learning and even strengthen the links with curriculum. The museum visit needs to be structured but in the same, children also should be given the opportunity to explore

freely and interact with peers. That is to maximize the personal and social aspects of the experience.

Because learning requires reinforcement, post- visit activities should be generated by the institution and provided to the teachers for application in the classroom. That is to maximize retention.

In an ideal world, all of the strategies would be carried out, and learning outcomes would improve for students on field trips everywhere. But in the real world this proposition involves commitment, energy, communications, and hard work. One strategy alone, providing “docents” for example, requires many steps: recruiting; training; tracking; scheduling; not to mention developing the script, according to NC standards of curriculum.

Another realm of consideration is the motivation and attitudes of teachers with regard to taking their class on a field trip. Teachers often face the lack of support from school administrators when trying to schedule a field trip, or they may experience difficulties with transportation and cost. Some teachers are intimidated by the possibility of having to deal with attitudes and behavior problems in the informal learning environment.

Of course, many teachers bring their classes to the museum year after year and possess high levels of familiarity and enthusiasm for the field trip experience. Most likely, these instructors have witnessed the beneficial effects on their students’ learning and further believe that the opportunities for peer interaction generate positive outcomes.

The role of museums in education has been evolving steadily over the years. Now when museums plan future exhibits, the discussions often include considerations for school programming. Museum educators are becoming more aware of strategies coming forth from visitor study research, aimed at improving learning outcomes for students on field trips. Museum educators also are aware of strategies that can motivate teachers, such as offering CEU credits for attending a museum workshop.

The relationships between museum and school educators should continue to grow, and the trend to integrate formal classroom settings with the informal, novel museum settings should continue to strengthen and flourish.

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