How to visit a Museum?

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**Abstract**

Visiting a museum with primary school students can be a strong learning experience for them. This study presents a model of how a visit to a museum must be organised. Focussing on embedding the visit in the curriculum and stimulating student to be inquisitive. Furthermore it investigates the declarative knowledge attained by a visit to the science museum Boerhaave in Leiden, The Netherlands. Comparing the effect of a history lesson in school to that of visiting the museum showed that the later has a stronger effect on the declarative knowledge. Although the sample sizes are small the effect is significant. The results are discussed in relation to the function and the use of museum visits during the primary school period.

**Introduction**

Every year hundreds of thousands Dutch primary school students visit hundreds of different kinds of museums ranging from art to science museums. Although this sounds like a large number, in general a class of school children visits a museum only once per year (Geukema *et al.*, 2011). A visit to a museum is a school activity that may be classified as Real Life Learning, learning about real life things in the actual environment (Slikke *et al.*, 2010). Often such activities are regarded as fun and not as a learning experience for the children (Morintin and Guesasola 2010) or teachers focus too much on the organisation of the activity (McLoughlin, 2004). Travelling to and from the museum takes up valuable teaching time. In the Netherlands, museums tend to be situated in cities therefore classes from outside the city travel much longer. So what could be arguments to go to a museum instead of using the museum and travel time for regular education? Hooper-Greenhill (2001) argues from a constructionist point of view that museum objects obtain meaning by the prior knowledge of the beholder combined with his attitudes and believes towards the objects. The reverse can be argued too: museum objects provide meaning to an otherwise meaningless knowledge base that often quickly is forgotten.

The aim of this paper is twofold. First to present a model about how a teacher should organise and supervise a museum visit as formulated by the participants of three TIGs formulated the model during the 2013 annual conference of ETEN; second to explore how primary school students can learn efficiently during a museum visit compared to a history lesson on the subject in school.

**Visiting a museum with students**

During the ETEN annual conference 2013 Hasselt in (Belgium) the teacher’s tasks before, during and after a museum visit were discussed. Together with the literature and
the findings of this study, a picture of a ‘perfect’ museum visit can be painted. A good
museum visit starts with a learning goal for the students (Martin, 2001). From there on
the visit can be planned in relation to the curriculum.

**Before the visit**

*Educational decisions.* The teacher decides what subject must be taught and in what
ccontext. Depending on the function of the museum visit in the planned lessons, the visit
is positioned in the time line of the lessons. More to the front if it is an introduction to
the lessons, more to the back if the subject is close to the visit, more to the middle if the
visit is the key component of the learning experience. The educational goals of the visit
should be clear to the teacher but also for the students. Any visit to a museum should be
introduced by either a simple organisational introduction or, preferably, an introduction
lesson where the learning goals of the visit are conveyed and a start of the learning
experience is made.

*Students.* Students have prior knowledge on the subject of the museum and may even
have prior experiences in the planned museum or in similar museums. This knowledge
and experiences should be made clear and expectations should be set. When the
learning goals of the museum visit are clear to the student, they will experience the visit
in a different way especially if they have an inquisitive mind.

*Logistics.* The teacher should call the museum and find out what the exact content of the
exhibition is and if any supplementary lessons are available. If a guide supervises the
visit, the teacher should confer with the guide to discuss his own role during the visit.
Transport and supervision should be arranged.

**During the visit**

*Interaction.* The teacher and other supervisors stay involved with the learning process of
the students during the museum visit. Instead of having a cup of coffee, supervisors help
students answering questions and especially asking questions about the exhibited
objects. Asking questions about the object facilitates the dialogue between the observer
and the observed resulting in a deeper understanding of the object and a stronger
relation (Hooper-Greenhill, 2001). Students should be challenged, encouraged and
stimulated to engage in a more meaningful way with the objects in the museum. This can
be done by helping the students but also by asking additional questions or point out
details. Furthermore, the teacher should be a model for the students and display a
curious mind himself.

*Observe.* Observations made during the visit can facilitate interaction during the
museum visit but also after the visit back in school. Photographs or video can be used
for feedback to parents but also as visual memory in the post-visit lessons.

*Educational decisions.* The exhibited objects and the special environment of the museum
itself appear to contribute to the learning experience. It is important to show the
students how to behave in a museum and make explicit that it is a learning environment,
which is not very different from school. The activities in the museum should be full of
context and experiences that aim to couple with the personal experience of the student
to the potential knowledge in order to obtain the learning goals. In that sense the
student becomes a part of the exhibition and the exhibition part of the student.
After the visit

*Educational decisions*. After the visit the experience can be made explicit by asking questions about the content of the exhibition, the experience of the exhibited objects, the cooperation with fellow students and the learning process itself. The experience should be discussed and reflected upon. The learning process can then be continued by follow up lessons where the knowledge and experience can be deepened by making an exhibition or museum with the students

*Sharing*. The museum experience should be shared between the students but also with parents or even students from other classes. This can be done via the above-mentioned activities or by making a site or report for the school.

**Short term learning effects of visiting the Museum Boerhave**

A visit to a museum is not just ‘fun’ but can be an elaborate learning experience having long-term effects (Henrikson & Jorde, 2001, Morentin & Guisasola, 2011). Comparing a pre-test on the topic ‘forces’ with a post-test, Morintin and Guesasola (2011) found an increase in correct answers from 7.9% to 30.5% after a visit to a Science Centre. This science centre, like many, focuses on explaining science by intensive interaction of the visitor with materials and experimental set ups. Museums in general provide all kinds of learning materials for children and/or groups of children in order to make the visit a meaningful experience.

The Museum Boerhaave in Leiden (the Netherlands) is the Dutch National Museum for the History of Science and Medicine of the last four and a half centuries. It exhibits unique scientific and medical equipment used in groundbreaking research. Visiting school children are not often allowed to explore the museum by themselves. An expert usually guides the group of students through the collection. The guide tells stories about a selection of the collection to explain the importance and meaning of the object to the listeners. Sometimes there is some interaction. The quality of such a guided tour strongly depends on the knowledge and communication skills of the guide. An alternative is to give the children a paper exploration guide. In groups the children can discover and explore the museum on the basis of questions in the paper guide. The Museum Boerhaave provides expert guided tours for school classes but also paper exploration guide booklets for groups of school children.

**Method and Materials**

An 8th grade class from an average school in Leiden (The Netherlands) with 28 students between 11 and 13 years of age was randomly divided into three experimental groups of 9-10 students. A 22 multiple-choice question pre- and a post-test on the subjects was produced by the researchers to test the knowledge of the subjects Medical science and history; the History of botanical science and; Scientific history of the 17th 18th and 19th century. Although these subjects are taught in primary schools the knowledge of the students on these subjects are sketchy since the museum explores the subject much deeper compared to the school textbooks.

Group A (10 students) was presented with a standard history lesson about the above-mentioned subjects. During the lesson only pictures were presented to the students about objects in Museum Boerhaave. Group B (9 students) was offered a guided tour through three exhibition rooms of the Museum Boerhaave on the three subjects. Group C
(9 students) explored the same three rooms like group B with an exploration booklet. The history lesson and the museum visit lasted an hour. All groups were tested on their knowledge of the subjects with the post-test a week after the history lesson or the museum visit. The total number of correct answers was used as a measure for the level of declarable knowledge (Anderson, 1982) about the subjects.

Results

Before the intervention the 28 participating students scored an average of 7.4 points (sd=3.34, n=28) for the pre-test with a minimum of 2 points and a maximum of 14. After the intervention the students scored on average better on the post-test averaging 16.6 points (table 1) with the lowest score of 9 points and the highest score of 22 points. Table 1 shows the absolute scores of the three groups in the post-test. Figure 1 shows the score of the post-test compared to the pre-test combined with the standard error of mean bars. It is clear that all groups scored more points on the post-test but groups B and C both scored significantly higher than group A ($F_{2,25}=34.3$, $P<0.05$).

Table 1: The scores of the post-test of the three groups: group A (history lesson in the school); group B (guided tour in the Museum Boerhaave); and group C (exploration tour). Maximum number of correct answers = 22.

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<th></th>
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Figure 1: The number of correct answers of the pre-test (n=28) and post-test of group A (history lesson in the school. n=10); group B (guided tour in the Museum Boerhaave. n=9); and group C (exploration tour. n=9). Maximum number of correct answers = 22. Bars indicate standard errors of mean.

Discussion

This study shows that a visit to a museum can have a significant contribution to the declarative knowledge of primary school students. The effect is so strong that it can be shown using a limited number of students. The results concur with the findings of Morintin and Guesasola (2011) who also found a significant effect on the declarative knowledge after the visit to a science centre. They however used the active learning system of experiential learning (Kolb, 1984) while we used a more static and less 'hand on' learning style. The sample size is really small and random factors in the subgroups could have influenced the outcome of this assessment. Similar experiments should be conducted with larger randomized experimental groups.

Falk and Dierking (2000) formulated a model for learning in a museum setting. The Contextual Model of Learning describes eight factors that may influence the learning experience in a museum: 1. Motivation and expectations. 2. Prior knowledge, interest, and beliefs. 3. Choice and control. 4. Within-group socio-cultural mediation. 5. Mediation facilitated by others. 6. Advance organizers and orientation. 7. Exhibit design. 8. Reinforcing events and experiences outside the museum. The current experiment was not set up to test the model of Falk and Dierking (2000) but can be used to explain some of the findings. The success of the museum visit in the current study can be contributed to several of these factors. The ‘special’ environment in which the learning took place may have stimulated active learning. Furthermore, especially in the self-exploratory group students had much choice and control over their learning experience. In the guided tour group there was little control and choice but the ‘mediation facilitated by others’ possibly had a strong effect depending on the quality of the mediator, the guide. The other factors in the model probably did not play an important role in the learning experience.
Hooper-Greenhill (1999) argues that the experience a person has with the exhibited article shapes the persons understanding of the article. The museum creates the opportunity to interact with the exhibited articles in a way pictures cannot facilitate. According to Hooper-Greenhill a dialogue can take place between the observer and the article where any question posed by the observer can be answered by a closer inspection of the object leading to new questions. If such a dialogue indeed did take place it might have contributed to the learning experience of the students.

After organizing the trip to the museum, most teachers look forward to a nice museum visit with their students. Most teachers tend to think of museum visits as leisure time and seldom relate such a school trip to the school curriculum (Guisasola and Morentin, 2010). During the field trip teachers tend to be passive and not engaged with the learning of the students (Offsted, 2004). Anderson et al. (2003) argue that an active involvement of the teacher is essential to the student learning. Not just during the visit but also before and after the visit. Adding extra supplementary lessons before and after the planned visit may enhance the learning effect of the museum visit (Henrikson and Jorde, 2001; McLoughlin, 2004). Embedding the visit in the curriculum might work even better in order to gain the highest learning experience for the students (Martin, 2001; Anderson, et al., 2003).

A museum visit requires more school time compared to a standard lesson about a similar subject. In total, the visit to Boerhaave museum took at least a whole morning, which is four times longer than a history lesson of 60 minutes. One can argue that four hours of history lessons would have a stronger effect on the declarative knowledge than a four-hour visit to a museum, which only includes one hour of actual museum work. Any teacher would however disagree with this argument but would have hard time explaining why the argument is not true. It does however make a good research question for further research.

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Literature


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