Natural History Dioramas - dusty relics or useful tools in Biological Education?

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Abstract

The key objectives of our study are to find out which specific features in dioramas in natural history museums, which combine preserved organisms and painted or modelled landscapes, draw the attention of visitors and encourage sustained and then focused observations rather than a glance by visitors. Moreover, we want to elicit the interpretation visitors give to the aspects upon which they focus and identify the origins of their interpretation. Such information will inform strategies that can be used to provide effective learning environments at natural history dioramas.

This paper reports data from observational studies of visitors in natural history museums in several countries. The behaviour of visitors was observed, their comments recorded. Additional structured interviews were conducted with some visitors, children’s drawings were used to examine their ideas. Analysis of the data indicates that visitors are especially attracted by young animals (babies) and by very big or dangerous animals as well as by unexpected settings. Visitors explain/interpret using their own knowledge with little reference to the information given by the museum (texts). They tell stories and comment about artefacts within the diorama that they can relate to personally. The comments of visitors can be categorized into at least four main themes: personal, factual, aesthetic and cultural. The predominant theme of responses depends on the age, gender and the visitors’ frames of reference.

We conclude that specific natural history dioramas attract visitors and can provide ideal initial conditions for teaching biological science in an out-of-school setting for all categories of learners – dioramas can be accessed and interpreted in different ways according to the highly variable scientific knowledge, interests and experiences of the visitors.
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Rationale of the study
Natural history dioramas typically combine preserved organisms and painted or modeled landscapes. They were historically designed to evoke feelings and to promote an ethic for the preservation of species and their habitats. Our particular interest is in dioramas, not only the stories of biodiversity, behaviour and habitats they tell but also the personal perspectives they yield, the interpretation learners give and the inquiry they can stimulate. We therefore want to find out which specific features in dioramas draw the attention of visitors and encourage focused observations. We want to elicit the interpretation visitors give to the aspects upon which they focus and identify the origins of their interpretation. Such information will inform strategies that can be used to provide effective learning environments at natural history dioramas.

Theoretical framework
We used several references as a starting point for our study, e.g. literature on museum learning (e.g. Falk & Dierking 2000, Hein 1998), the “theory of interest” (Krapp 1999, Schiefele 1991) which refers to interest as a psychological construct that includes attention, persistence in a task and continued curiosity, and the “Model of Educational Reconstruction” (Duit et al. 2005) which draws on the need to bring science content related issues and learners’ perspectives into balance when designing effective learning environments.

The educational literature on dioramas is small, and dioramas do not feature in major texts on museums learning. Nevertheless, dioramas have a tremendous biological educational potential: they have a high intrinsic value (Breslof 2001), they are a powerful technique for emotional access (Insley 2007), they are depictions of reality and represent authentic contexts, they draw the attention of visitors, and many visitors spontaneously see phenomena associated with the presented objects and use narratives to share their knowledge (Tunnicliffe 2005, Tunnicliffe & Reiss 2007). By their stillness, dioramas offer opportunities to “stand and stare” – however, visitors often do not observe carefully and require some time to discover biological phenomena (Tomkins and Tunnicliffe 2001). Based on this theoretical background, the following research questions were deduced from the above objectives:

- What do learners looking at natural history dioramas notice and discuss? What stories
do they tell?
- How do visitors explain what they notice?
- Which specific features in dioramas encourage focused observations?
- How can visitors be encouraged to take more than a quick look but to observe carefully which may lead them to ask inquiry questions and search for answers?

Methods

We started our iterative approach with the analysis of the biological subject matter shown in dioramas and their educational significance. At the same time we found the perspectives of visitors/learners - school groups, individual and family visitors - including their cognitive and affective ideas, using different methods in several natural history museums: The behaviour of visitors looking at dioramas was observed and their spontaneous comments were recorded. Additional structured interviews were conducted with some visitors of different age groups. Children’s drawings were used to examine their ideas on the biological contents.

Results

The data indicates that visitors are especially attracted by young animals (babies) and by big or dangerous animals as well as by unexpected settings in dioramas. Visitors explain/interpret using their own knowledge with little reference to the information given by the museum (texts). They tell stories and comment about artefacts within the diorama that they can relate to personally. The comments of visitors can be categorized into at least four main themes: personal, factual, aesthetic and cultural. The predominant theme of responses depends on the age, gender and the visitors’ frame of reference. Within the personal theme, they link their own experiences to the artefacts and specimens in the diorama using memories or secondhand experiences, such as links to storybooks or films and draw upon their personal experiential space. Factually, visitors recognize and identify aspects of the exhibit, naming organisms and artefacts and comment upon the location. They describe the habitat, the physical aspects and the behaviours of the animals as portrayed in the diorama. The aesthetic impact of the settings elicits emotional responses in some visitors. The cultural role and use of organisms and artefacts portrayed are part of the fourth theme.

Conclusion

We conclude that specific natural history dioramas attract visitors and can therefore be used as a focus for developing biological understanding in an out-of-school setting. Dioramas that provide different anchor points and enable visitors to relate their previous experiences to the scenes or artefacts presented, are appealing, invite exploration and therefore facilitate learning. To provide effective learning environments at these dioramas, the visitors’ conceptions will be related to the scientific concepts. Consequently, subjects will be taught in accordance with the learners’ perspectives. There is a need for further investigation of the value of dioramas in terms of evoking emotions and curiosity about
the natural world which can provide ideal initial conditions for teaching biological science for all categories of learners.

References


Note: The photograph from the Saiga Antilopes's diorama was taken by Sven Traenkner, the Senckenberg Museum's photographer

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