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Author(s): Bates, E., & Narkiss, I.

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Can natural science collections support a connection to nature for young children and families?

Elaine Bates* and Irit Narkiss

Address: Manchester Museum, The University of Manchester, Oxford Road, Manchester, M13 9PL, UK

**Corresponding author: Elaine.bates@manchester.ac.uk*

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Abstract

This case study documents a range of responses to objects in the natural history galleries visited by young children and adults at Manchester Museum. Results suggest that museum objects can support a connection to nature, which can lead to environmentally friendly behaviours in adulthood. Parental interaction with children is identified as a key characteristic of supporting a connection to nature.

With this in mind, the Nature Discovery gallery was developed at Manchester Museum, along with a handling table, for the under-fives and their families. The practicalities of setting up the handling table and an assessment of the first year of its operation is also discussed.

Keywords: Connection to nature, museums, handling table, children, families

Introduction

In 2014, Manchester Museum undertook the redevelopment of an existing gallery, *Nature Discovery*, for children under five, who are a key museum audience. The new gallery would use the natural history collections to support a connection to nature and promote a sustainable world, which is a strategic aim of the Museum. To inform the gallery redevelopment, a small research project was undertaken with local families and an early years teacher to find out more about young children's' experiences of - and responses to - the natural history collections (Bates, 2014).

The context for the research was informed by a growing number of studies documenting a decline in urban green spaces and reports that, as a consequence of growing up in a more risk-averse society, young children have fewer opportunities to engage in natural play outdoors (Louv, 2005; Pretty et al, 2009; Moss, 2012; Bragg et al, 2013).The reports highlight concerns for the effect on young children's development, including their wellbeing, creativity, and motivation for learning. They also raise concerns that if children do not experience natural play, they will have less empathy with nature and less interest in caring for it as adults.

As part of the research, studies that examine young children's experience of nature were also explored. The Biophilia hypothesis (Wilson, 1993; Kellert, 2005) was of particular interest. It explores the concept of humanity's relationship with nature. In his chapter on child development, Kellert categorises children's contact with nature as

'direct', 'indirect', and 'vicarious', and gives examples of experience in each category as follows:

- Direct experience: playing outdoors in wild natural spaces.
- Indirect experience: playing in gardens, outdoor play areas, and parks.
- Visiting wildlife parks, zoos, and natural history museums.
- Vicarious experience: reading books, looking at images in books, and watching television and films.

Kellert raises the question of whether or not an increase in opportunities for 'indirect' and 'vicarious' encounters with nature can help to compensate for a decline in 'direct' encounters with nature. This provocation became the basis for the main research question in the study.
A literature review also included research relating to young children's experiences of visiting natural history museums and studies which identify indicators and measures associated with a connection to nature.

Methods

Research activities included:

- Leading a focus group with parents who attend the Baby Explorer programme at the Museum (for babies who aren't yet walking).
- Observing and recording audio of parents and their children during visits to the natural history galleries and vivarium (live animals).
- Families were recruited through the Magic Carpet story sessions at the Museum (for under-fives) and from a local nursery school.
- Recording an in-depth informal interview with an early years teacher who regularly visits the Museum with groups of young children and parents.

Outcomes of the study

There is evidence from this study, and from existing research studies, that natural history collections can support a connection to nature. Children and parents were interested and had a positive emotional response to the natural history objects that they saw at the museum. This response is a key indicator of connection to nature in existing measures, and is associated with caring for nature in adulthood (Kellert, 2005; Ernst and Theimer, 2011; Cheng and Munro, 2012).

Some objects made the children 'fearful', such as an orangutan and large snake, but the museum provides a safe environment for them to encounter their fears.

Natural history collections provide children with opportunities to engage with a variety of nature that is both familiar and unfamiliar, and which they might not be able to experience directly in the real world. The early years teacher commented:

"You can show a picture or a PowerPoint (of a tiger). In the Museum you get a sense of size and awe standing next to it. In a safari park, it would be scary! Children understand that tigers don't live in Manchester, but we learn about the rainforest and the air we breathe - trees make the air. The Museum helps us to make the big connections."

There is also evidence that museum visits can support children to develop intense individual interests in particular objects, including natural history objects, which Crowley and Jacobs (2002) term 'islands of expertise'. These experiences can support motivation for learning and caring for nature.

The view that 'indirect' experience of nature can increase opportunities for children to engage with nature is also supported by studies by Kimble (2013) at the Natural History Museum, and Oxarart, Monroe, and Plate (2013), who observed families using a natural play area at Brevard Zoo in Florida.

Natural history objects visited

The children showed interest in a variety of both familiar and unfamiliar natural history objects. For example, objects such as the apes, birds, fox, badger, hedgehog, lion, and tiger. They also visited the skeletons and skulls, including human skeletons, animal skeletons, and the whale skeleton.

Children were also interested in a range of unusual, unfamiliar, or novel objects such as the armadillo, anteater, pangolin, paper cranes, and a sheep in a woolly jumper.

The results were used to underpin the development and content of the new gallery, which was designed in-house by a team including members of the learning and engagement team, conservation, collections, visitor team, and workshop. The gallery incorporates four main areas, designed to reflect and support children's

connection to nature. Two of the areas, The Meadow and the Tree Tops, are linked to young children's interest in nature that is familiar to them, including butterflies and insects. The Den area incorporates animals that children are familiar with from stories, including a badger, squirrel, and rabbit. This area has also been designed to encourage families to read together. The Forest area includes familiar and unfamiliar nature. For this area, we looked at the model of biodiversity walls and then tried to translate this into something accessible for young children. Working with an artist, Helen Musselwhite, we created a story book setting for a variety of animals including a wolf, an owl, and a harvest mouse (Figure 1).

Figure 1. 'The Forest', Nature Discovery gallery. © Manchester Museum.

In 2015, a follow up research study was undertaken with families, in order to evaluate how well the gallery was supporting young children and families to explore and learn about nature together (Bates, 2015). Outcomes evidenced a range of interactions between parents and children which are documented in existing family learning studies (Allen, 2002; Crowley and Jacobs, 2002; Dooley and Welch, 2013 Fender and Crowley, 2007; Melber, 2007). However, findings suggested that there was a need for further interpretation, which would encourage families to stay longer in the gallery and increase opportunities for learning. Since then, we have trialled a range of resources including books, magnifiers, binoculars, and a nature activity booklet. As part of our interpretation strategy, we have recruited dedicated volunteers to support families in the gallery, and have developed a handling table.

Object handling

The Manchester Museum has long been known for using its collections actively, in interactive public programmes, school sessions, handling tables, and outreach. Direct access to objects plays an important role in the Museum's commitment to widening audiences. As conservator of objects and access, Irit Narkiss has been involved in creating and assessing opportunities for visitors to get closer to museum objects and specimens (Narkiss and Tomlin, 2008; Narkiss, 2009).

Although we consider display to be a natural use of museum objects, we must remember that it is still 'use' and involves some risk. Despite the best efforts of museum conservators, we cannot expect objects to last forever (Michalski, 1994; Lindsay, 2006). Moreover, the benefits of using touch in learning, for both children and adults, are well documented and make object handling a worthwhile activity (Chatterjee, 2008; Pye, 2008).

The Museum's six handling tables are facilitated by volunteers, and use accessioned, 'real' objects (taxidermy specimens are the only exception to this, for obvious health and safety reasons). Volunteers undergo general object handling training, learn about the objects, and develop their facilitation skills. They participate in choosing objects for the handling tables, developing the story they want to weave around the selection of objects, as well as taking into consideration fragility and risk. For the Nature Discovery handling table training, we added a workshop on learning with young children through play.

It is perhaps worth reflecting on the idea of providing an object handling experience for the under-fives; the notion might be alarming to some. It is true that one cannot expect the same degree of care from a three-year-old as from an adult or older child. Experience shows that most children under the age of four will not necessarily put down an object they have had enough of; they may just stop holding it. Another point worth considering is that the awe of ancient objects is lost on a young child under the age of around six: an Egyptian figurine is 'old' and Granny is 'old'; there is little distinction. However, there are the obvious benefits discussed above. And, we are using natural science specimens rather than cultural objects. The connection to the natural environment is much easier to make and more powerful with tangible objects.

As with any use of museum artefacts and specimens, a risk assessment is carried out for each individual item used for handling. In the same way as we would check light levels in a gallery space before displaying a watercolour or herbarium sheet, we assess how the environment of being handled, by toddlers or anyone else, will

affect each specimen. Handling by very young children calls for robust objects or sometimes protection (see below). One would probably not use a type specimen in a handling session: the significance of the type specimen would have to be explained to most adults; it would be meaningless to toddlers. Having said all this, what will lead us in the choice of objects and specimens for handling is the pedagogy: the story we want to tell, learning outcomes, what we would like toddlers, school children, and adults to come away with. Practical solutions can usually be found to using most museum items actively. Lastly, although we would like to give the experience of a close encounter with museum objects to the many, we also need to maintain the aura of a special and privileged experience. We need to keep away from the casual touch of objects that one might employ when browsing in a shop; as Hilde Hein put it, not just 'hands on' but 'minds on' (Hein, 2007). Maintaining focus is easier with fewer objects; less is definitely more. Focus also brings greater safety for the objects.

The Nature Discovery handling table

We initially carried out a pilot project, using accessioned natural science specimens selected from our collections, including safe taxidermy. We experimented with using a low table and a rug on the floor. The table was preferred by the volunteers and a low table was constructed inhouse, with graphics reflecting the gallery's design. The table is on casters with brakes, with small cupboards on either side. These are open at the back and have shuttered Perspex windows facing the visitors. This allows for some peeking and exploration to add to the activity.

Specimens were chosen by the volunteers; all but the taxidermy are accessioned, and most can be touched. There are, however, different levels of touch permitted: some objects can be held and we are aware that they may be waved around – this has been assessed for. Some of the specimens can be touched on the table – these are usually heavy or more fragile objects and taxidermy, which can be stroked gently. Some – insects and butterflies – are sealed in transparent boxes, as they are too delicate to survive touch. This variation in touch levels does not seem to be an issue, even for young visitors. During the selection session, the volunteers also came up with a wish list of taxidermy to be made specially for the handling table. The taxidermist commissioned (Jack Fishwick), was asked to tuck in the owl's sharp claws and beak, and set the squirrel's tail close to the body so that it cannot be pulled. The specimens selected were:

- a sea horse (in Plastozote cut-out so it can be touched but not held)
- a whale's tooth
- frog and toad skin-mould models
- shells
- boxed butterflies
- an antler and cassia tree seed pod (both can be held)
- owl and squirrel taxidermy specimens
- and a bag of not-too-small sea beans, shell, and rattling gourd (Figure 2).

Figure 2. Some of the handling specimens. © Manchester Museum.

Evaluation

Now that the handling table has been in operation for a year, we devised a questionnaire for the volunteers to assess its impact on visitors, and to find out how they feel in their role as facilitators. The most popular specimens are the owl – which is familiar yet not normally touchable, and very soft - and the whale's tooth, which ties in with the whale skeleton in the Living Worlds gallery next door. Volunteers reported conversations over the difference between soft and smooth, and learning to articulate this verbally. The specimens are a conversation conduit. The volunteers bring additional interpretation and a broader sensory experience.

Popular questions include:

- What is it/where does it come from?
- Is this real?
- Is it alive/dead?

- How did it die/did you kill it?
- What's inside (taxidermy)?

There is a lot of curiosity around taxidermy specimens, as they are real animals but not live animals. This is a way of exploring issues around death with children, probably for the first time. We also asked the volunteers how confident they feel answering visitors' questions. Overwhelmingly, they see this as an opportunity: if they don't know the answer, they will research it and find out. Volunteers use their role to develop and learn from their experiences. Volunteers' confidence in managing the handling table during busy times shows that they are thinking about the practicalities of their role, with responses including having fewer and larger objects out, keeping some out of sight, and avoiding the cassia bean and antler.

In our last question, we asked the volunteers to give their assessment of what it means to families to handle real objects. Volunteers reported that many are surprised that the objects are real; they feel privileged and tell children that this is special; visitors have an opportunity to touch and feel specimens that they might be afraid of; parents tell children that it's something to talk about at school. It makes the visit more memorable and provides an opportunity to learn about nature (Figure 3).

Figure 3. The handling table in action. © Manchester Museum.

Much of this is applicable to the gallery as a whole: experiencing and learning about nature is what the Nature Discovery gallery is all about. Live interpretation and specimen handling enhance the experience.

Finally, to go back to our original question, can natural history collections support a connection to nature for young children and families? We find that the evidence is positively compelling.

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