
Getting Closer: Conservation Detectives



Introduction

In April 2011 during Edinburgh International Science Festival, National Museums Scotland hosted a week of free “Science Secrets” drop-in events for visitors of all ages. Seizing an opportunity to spotlight the behind-the-scenes-work of the Conservation and Analytical Research Department, the Artefact Conservation team offered to organise one of these events.

We hoped to highlight the role science plays in our work by allowing young visitors to get as close as possible to artefacts from the museum and provide a hands-on opportunity for participants to use conservation techniques to solve mysteries of the past.

This was achieved by creating four stations each addressing a different analytical technique, arming visitors with lab coats, and providing activity sheets with tasks to complete at each base. It was crucial that a real scientific message would be communicated through each interactive activity, educat-



ing participants with an understanding that science is around us everywhere and not just in science class at school.

Hosting such an ambitious event was a great learning curve, offering valuable lessons of what can be accomplished and how activities could be improved. The popularity of the event far exceeded our expectations, highlighting the extent of public interest in the work of conservators and their desire to engage with conservation practice.

The Importance of Forward Planning

To satisfy marketing deadlines a flexible event title of “Conservation Detectives” was conceived at an early stage, allowing it to be later decided that the occasion would be used to illustrate how objects are investigated. Each activity station was hosted by two conservators and the four analytical techniques addressed were microscopy, radiography, microchemical testing and ultraviolet fluorescence.

In hindsight the presence of an additional conservator who interchanged between activities and allowed staff to take breaks would have been useful. Museum volunteers had been enlisted to perform this role but were unable as they, unsurprisingly, did not understand the science or techniques demonstrated. A more thorough briefing of volunteers may have achieved this.

The event took place in Howden Court, a busy foyer area of the museum which could not be closed off to the public making preparation difficult. Unpacking equipment immediately attracted attention and the subsequent early visitor interaction prevented the conservators from briefing volunteer staff as planned. The conservators wore lab coats and “Conservation Detectives” logoed badges to ensure we were easily identifiable whilst participants were also given lab coats to encourage them to think like conservators and be detectives. This was a great success.

We targeted the event at 7-8 years olds, the stage in a child’s development where a basic understanding of science is achieved. However as the event was required to engage visitors of all ages, the activities were designed with a scientific message that could be simplified or expanded upon depending on the age of the participant. To incite interest and increase the accessibility of the sometimes complex scientific



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principles used within conservation, each activity included a link to the children's own lives and an object from the collection. It is easy to forget the privileges of our work, but the children were quick to remind us how "cool" it is to be "so close to something really, really old."

The event was advertised as an afternoon of "drop-in" sessions and so each activity station was required to work independently from its companions. However some crowd management was successfully achieved with the activity sheet that directed visitors to move from one station to another. We were engulfed by a constant stream of excited children eager to get involved and were indebted to the team of museum volunteers for handling the swarms. The hand-outs also provided structure for the event, challenging the children with tasks to complete and supplying information to take home.

In planning "Conservation Detectives" we were grateful for the knowledge of public engagement shared by other conservators*. Staff's personal experiences of other public events at institutions such as the V&A, Museum of London, National Trust and the Field Museum were also valuable.

The Activities

Microscopy

Benefits of increasing magnification were demonstrated using insect pests. A recently accessioned wooded object damaged by furniture beetle was displayed and a beetle's life cycle explained. Participants were challenged to look at different pest specimens to identify which caused the damage with the aid of enlarged photographs and SEM images.

By asking the children to draw each insect examined we encouraged them to look closely at what they saw, capturing their attention to the extent that many had to be dragged away. The children were encouraged to use magnifying glasses and optivisers to look at spiders and moths, insects which were instantly recognisable, easily identified and accompanied by stories of the moths inside Grandmas' cupboards!



The children then progressed to being "real scientists" looking at the "tiny, tiny" examples of beetle pests using a microscope. Specimens were fixed into position ensuring they could not be moved and focus adjusted by conservation staff. The children were mesmerised by the effects of increasing magnification, however we underestimated their desire to touch the "giant" insects they saw- unfortunately all the carpet beetle's scales were wiped away. Having substitute specimens on hand to replace those that sustained damage was advantageous.



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Radiography

To highlight the applications of radiography an Ancient Egyptian crocodile-shaped mummy bundle was presented to participants. They were asked to try to guess its contents before being shown the x-ray, with guesses ranging from “a mouse” and “a very small dinosaur” to “an old sandal!” The children were then shown a ceramic figurine and tried to spot where it had been repaired before the x-ray revealed if they were right.

Constant supervision of the accessioned objects was required. Displaying objects from the handling collection and corresponding radiographs would have been more practical, allowing children to be more involved with the artefacts and the conservators to be a little more relaxed. As many of the children were too small to stand over and properly look at images on the light box a thinner and more manoeuvrable light sheet would have facilitated further engagement. More digitized images should also have been used. The children were eager to relate their own experiences of x-rays which enhanced their interest and understanding in the activity.

Micro-chemical testing

This station illustrated how micro-chemical tests are used to assess an object's condition. Two tests were demonstrated: the silver nitrate test for identifying chloride salts and pH



test strips for determining acidity. Using a chloride salt-encrusted flower pot and an image of a salt-contaminated archaeological ceramic, the children were introduced to the harmful effect of soluble salts. They were then invited to select salt solutions to test for the presence of chloride ions. The test itself was carried out by one of the conservators with the children recording their observations on the work sheet.

Acidity and the acidic nature of materials was addressed through discussions of common acids found at home and by looking at a stiff and misshapen leather boot from the collection. Conservators explained how the boot would benefit from humidification and re-shaping and how the acidity of the boot would affect its treatment. Using pH test strips the children then tested two leather samples to determine which was more acidic.

During this activity the children had also been given a ‘mystery’ piece of litmus paper to hold which had changed colour when they were asked to open their hands, revealing to their shock and horror that they were all sources of acid!

UV fluorescence

An appreciation of Ultra Violet light and its uses in conservation was achieved by asking the children to write a secret message in white chalk on a white piece of paper. Wearing safety glasses they entered a black tent illuminated by UV light and were surprised (and often embarrassed) to see we could all read their now visible words. Participants were then shown how to identify damage and repairs on ceramic objects and spot the differences between real and fake pearls.

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The knowledge of acidic fingers gained at the micro-chemical station was developed to explain inappropriate handling of objects. This was illustrated with a metal teapot covered in fingerprints made from fruit acids, wax and shellac, invisible under natural light. The exaggerated fingerprints glowing under UV provided a very visual display of how acid residues from handling remain on objects and ultimately cause damage.

It was very difficult to get many of the children to leave the tent which became very hot with the UV light constantly on, creating a stuffy, difficult environment for the conservators to work in.

Conclusion

“Conservation Detectives” was a huge success, attributed to the investigative methods and activities chosen, the enthusiasm of the conservators, and the support of the Learning and Programmes team.



In organising the event we had underestimated the number of participants and the need to work in conjunction with volunteers who could have been deployed to greater effect if we had sufficiently briefed them beforehand.

The scientific themes we selected tied in well with the education curriculum, as one child explained: “this is great, I’m doing beasts as my next project in school.” The activities were engaging to the extent that many children had to be dragged away. The simplest tasks of drawing magnified insects, writing secret messages and seeing litmus paper change colour proved to be the most successful.

Running four activities with a team of eight conservators was ambitious, but the challenges were fully rewarded by the brilliant engaged children. They certainly kept us on our toes with their insightful and occasionally unanswerable questions.

* The Preservation Box, *Icon News*, January 2011, 19; Conservation’s relevance to the school curriculum. *Discuss! ICON News*, November 2010, 19; *Icon News*, March 2011, 17.

Archaeology Conservation outreach: Hands-on, *News in Conservation*.

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