MATERIALITY AND IMMATERIALITY IN OBJECT-BASED PEDAGOGIES AT THE URE MUSEUM OF GREEK ARCHAEOLOGY

CLAUDINA ROMERO MAYORGA
The Ure Museum of Greek Archaeology, University of Reading
c.romeromayorga@reading.ac.uk

ABSTRACT

The Ure Museum of Greek Archaeology (University of Reading) leads an educational programme closely linked to pedagogies of active teaching, which regard hands-on engagement with the object of study as a key experience to develop own opinions and long term retention of ideas. At the Ure Museum, Key Stage 2 students (7-11 years old) children have the opportunity to handle artefacts and analyse the material, shape, function, decoration, etc. from Ancient Egypt and Ancient Greece.

The introduction of 3D modelling and 3D printing during the school sessions, however, has proven to open a new line of experiential learning dynamic, allowing the audience to interact with the artefacts of our collection that are too fragile to be handled. This paper will focus on the importance of new technologies from a pedagogic point of view, as a didactic resource that allows and motivate insightful discussions.

KEY WORDS: Greek pottery; Education; Museum Studies; Object-based teaching; 3D modelling; 3D printing

MATERIALIDAD E IMMATERIALIDAD EN LA PEDAGOGÍA BASADA EN OBJETOS EN EL *URE MUSEUM OF GREEK ARCHAEOLOGY*

RESUMEN

El Ure Museum of Greek Archaeology, parte integral del Departamento de Clásicas de la Universidad de Reading, lidera un programa educativo íntimamente asociado a las pedagogías de enseñanza activa, las cuales consideran clave la interacción directa entre la audiencia y los objetos para aprender, desarrollar pensamiento crítico y retener nueva información. En este museo, estudiantes de primaria (7 a 11 años) tienen la oportunidad de tocar y manipular materiales arqueológicos procedentes de Egipto y Grecia con el fin de analizar el material del que están compuestos, la forma del diseño, la función del objeto, el tipo de decoración, etc.

La introducción de nuevas tecnologías en el programa didáctico escolar ha representado una oportunidad para abrir nuevas líneas de enseñanza activa, utilizando modelos virtuales en 3D y sus posteriores impresiones (también en 3D). De esta manera, los niños cuentan con otra forma de relacionarse con los objetos de la colección Ure, especialmente cuando éstos resultan ser demasiado frágiles para ser manipulados directamente. El presente estudio se centra en la importancia de la realidad aumentada y las impresiones en 3D como un recurso didáctico más que promueve y motiva discusiones en el proceso de aprendizaje.

PALABRAS CLAVE: cerámica griega; educación; Museología; enseñanza activa; modelos virtuales; impresión en 3D

INTRODUCTION: THE URE MUSEUM OF GREEK ARCHAEOLOGY

The Ure Museum of Greek Archaeology was established in 1922 by Professor Percy N. Ure, the first professor of Classics at the University of Reading, and his wife, Dr Annie D. Ure, who acted as a curator until her death in 1976. Although the museum displays artefacts from different Mediterranean civilizations, it is considered to be the fourth largest collection of Greek ceramics in Britain. The Ures' aim was to build up a teaching collection representative of almost all the main fabrics, types and periods of Greek pottery in order to offer a complete insight into the lives of the ancient Greeks.

In order to make the collection accessible to a wider audience, the museum has developed its own online database (http://uredb.reading.ac.uk/cgi-bin/ure/uredb.cgi), while some of the objects have been 3D scanned and 3D modelled as part of the Virtual Archaeology and Classics Teaching Project carried out by students and volunteers from the Department of Classics and Archaeology[1] at the University of Reading and uploaded on Sketchfab (https://sketchfab.com/feed). Digital and networked media provide new possibilities for interconnection and socialisation, new ways to learn, participate and create (Xanthoudaki 2015:248).

MATERIALITY: OBJECT-BASED LEARNING PEDAGOGY

The Ure Museum runs a successful educational programme which offers school activities to Key Stage 2 students on the Ancient Egyptians and the Ancient Greeks. The Ure Museum has a capacity of 30 children per session, which allows educators to work in small groups and to offer a personal approach to the subjects. Thus, the collection becomes more accessible to learners, since they are not overwhelmed by competing with tourists, as it is usually the case in national museums.

At the Ure Museum, learners analyse Ancient Egyptian and Ancient Greek artefacts and the different materials, shapes, sizes, functions and artistic techniques. The sessions are fully interactive with a "sharing knowledge" introduction, (question and answer style) followed by an object-handling activity in small groups[2]. This activity teaches children how to interpret artefacts and encourages them to think about how they were made, who made them and why. In order to get a better understanding of ancient material culture, our programme is closely linked to pedagogies of active and experiential learning, which sees hands-on engagement with the object of study as a key to personal meaning-making and long-term retention of ideas. Object-based learning has proven to facilitate the understanding of a subject, the development of academic and transferable skills such as team work and communication, lateral thinking,

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[1] The 3D scanning and modelling by James T. Lloyd and Daniel O'Brien.

[2] The handling collection consists of the following artefacts: accession nº 45.6.15, 45.6.43, REDMG:1964.1607.1, 40.6.40, 50.4.20, 2017.05.1, REDMG:1953.25.34, E.23.26, E.23.33, E.62.30, E.62.55.

practical observation and drawing skills. This pedagogy has proven to have a long-lasting effect and relationship with memory, probably due to its multi-sensory approach (Romanek and Lynch 2008:284; Biggs 2003:80), and it can also trigger innovative dissertation topics (Chatterjee 2010:179-181) when applied to Archaeology (Beazley 1989:98-102). Artefacts, although concrete, represent a vast continuum of abstract ideas and inter-related realities that are to be discovered by children (Paris 2002:10).

According to Shuh (1982:8-15), the importance of object-based learning methods can be summarised in three premises: first, objects are not age specific. Objects can be used with children of any age, only the type of questions and the conclusions will vary. This approach is especially useful for children with differing abilities and disabilities, since it minimizes the value of literacy and numeracy skills (Kennedy 2016:2). Thus, objects can be used to draw a class together and encourage conversations. Secondly, objects can be used to look at the lives of ordinary people and, in the case of the Ure Museum, the collection allows learners to engage with people and traditions rooted in Antiquity. Finally, objects enable learners to develop their capacity for careful, critical observation of their world: real objects are genuine evidence of the world around them and of the past, encouraging them to think beyond their everyday experience.

While handling different artefacts in small groups, learners are encouraged to take a detective-like approach in their study of the objects (Price 2013:22-23). They open up and widen their understanding and engagement with a variety of subjects and contexts.

IMMATERIALITY: 3D MODELLING AND 3D PRINTING

After the handling session, learners are given an activity sheet in which they have to draw their favourite Egyptian/Greek artefact and answer some questions regarding the shape, decoration, function, etc. of the selected object. This exercise allows children to look around the museum on their own, get familiar with the collection while recalling every concept they learnt during the first part of the visit. Drawing has proven to enhance students' ability to focus and analyse ancient artefacts while producing a personal creation using different skills (Ainsworth et al 2011: 1096; Van Meter and Garner 2005: 285-325).

While object-handling push children to think differently and to stay curious, drawing enable them to "own" the artefacts, to reinterpret them, especially those which attract their attention. It is only when learners choose to focus on an object that had been previously 3D scanned or a similar one, that we introduce a new didactic resource for them to explore: 3D models and 3D prints (Fig. 1 and 2). Our 3D models are a key tool that offers the possibility of manipulating an object while keeping it safe inside the case. Thus, children have the opportunity to virtually interact on the museum computer with the objects: they can move them, have a 360 degree view and analyse different aspects of the decoration. If teachers allow the use of smartphones, we encourage them to

explore our augmented reality markers[3]: when scanning an image of a 3D-scanned pot they can "play" with the model, manipulate it on their phones and even take the 3D model home as a souvenir (Fig. 3). Students will then decide when to continue to learn using these new technologies, which provide them with the value of personalised learning, eventually emerging as experts on the subject. This approach has proven to be particularly successful with learners with special needs or with limited motivation (Xanthoudaki 257) since it encourages them to develop their own personal and subjective judgement (Kennedy 2016: 2).
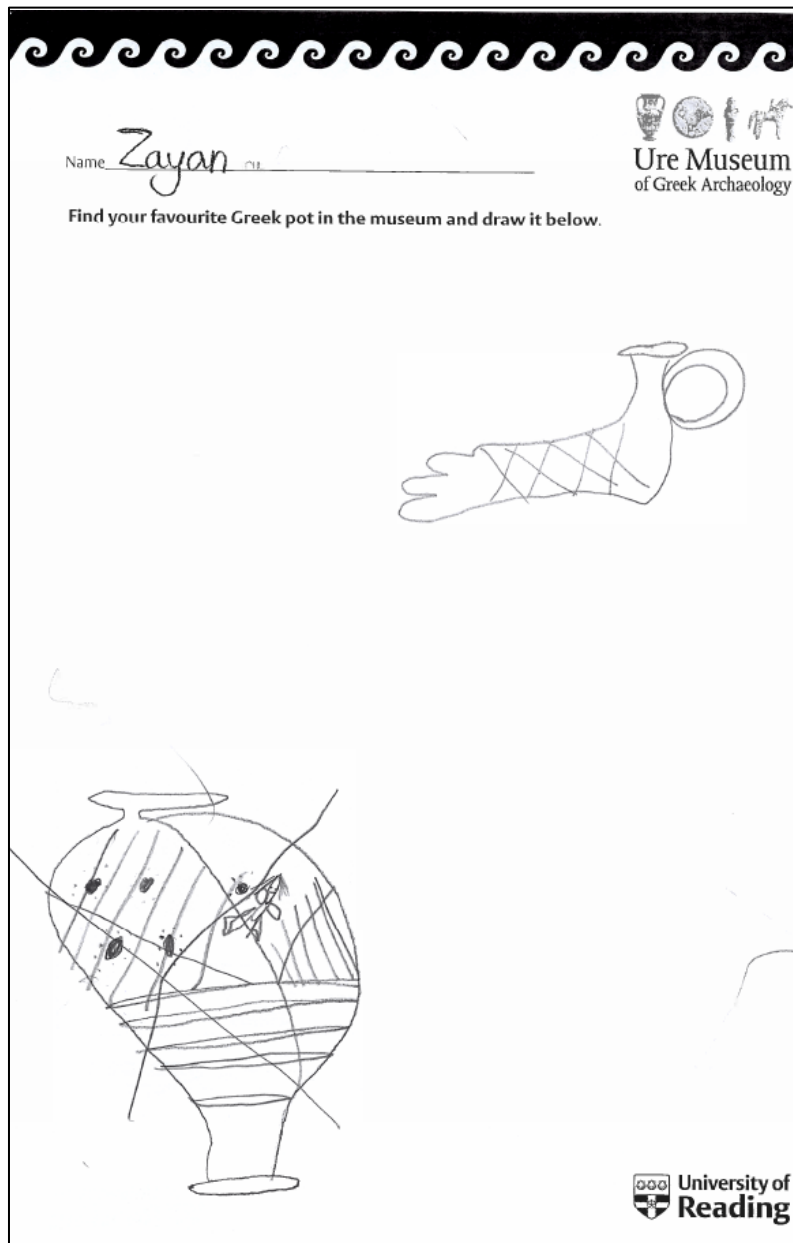

Figure 1. Drawing of the foot lekythos (accession nº 45.9.2) by Zayan, 9 years old, 2017.
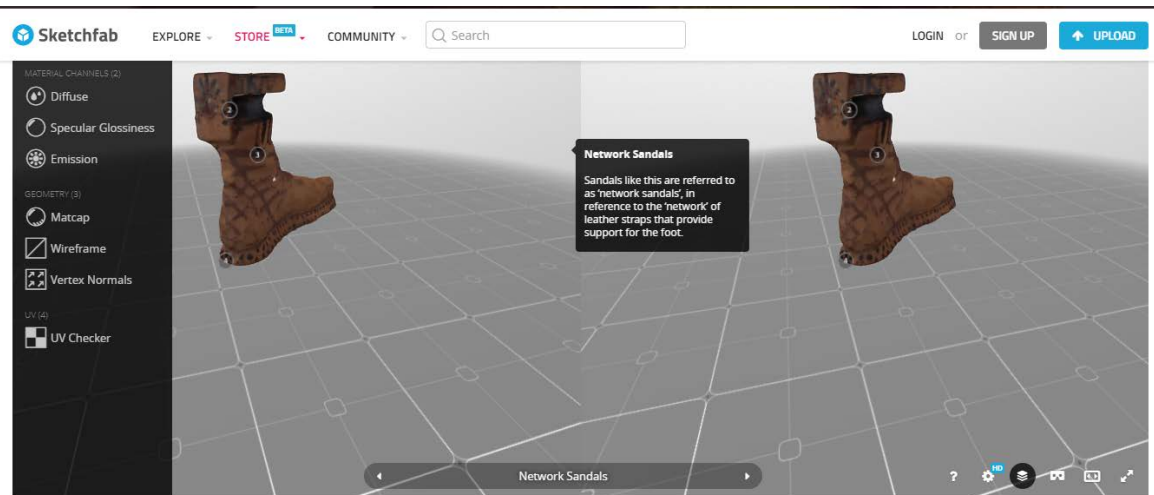
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[3] Using Augment app

Figure 2. Screenshot of a 3D model similar to the drawn vase on Sketchfab

After learners experimented with 3D models of the pot they chose to draw, we unveil the 3D prints of the same artefacts, an experiential and sensorial activity that supports the technological approach and the object-based methodology in an integrated and efficient way (Fig. 4). In the end, it is the tangible quality of the object (its materiality) what provides a palpable and concrete link between the past and the present (Sparks 2010: 191-196; Doonan and Boyd 2008:108). Digital engagement is, therefore, introduced in the pedagogical dynamics of the session as a peripheral resource that do not eclipse the value of the ancient object, but favours a wider access to it while enriching the learning experience. 3D models and prints transcend the "edutainment" and "gamification" tendency present in today's museums, since they are regarded and used as a fundamental tool in the meaning-making process (Lepouras and Vassilakis 2004:96-106; Hammady et al 2016:181-187).
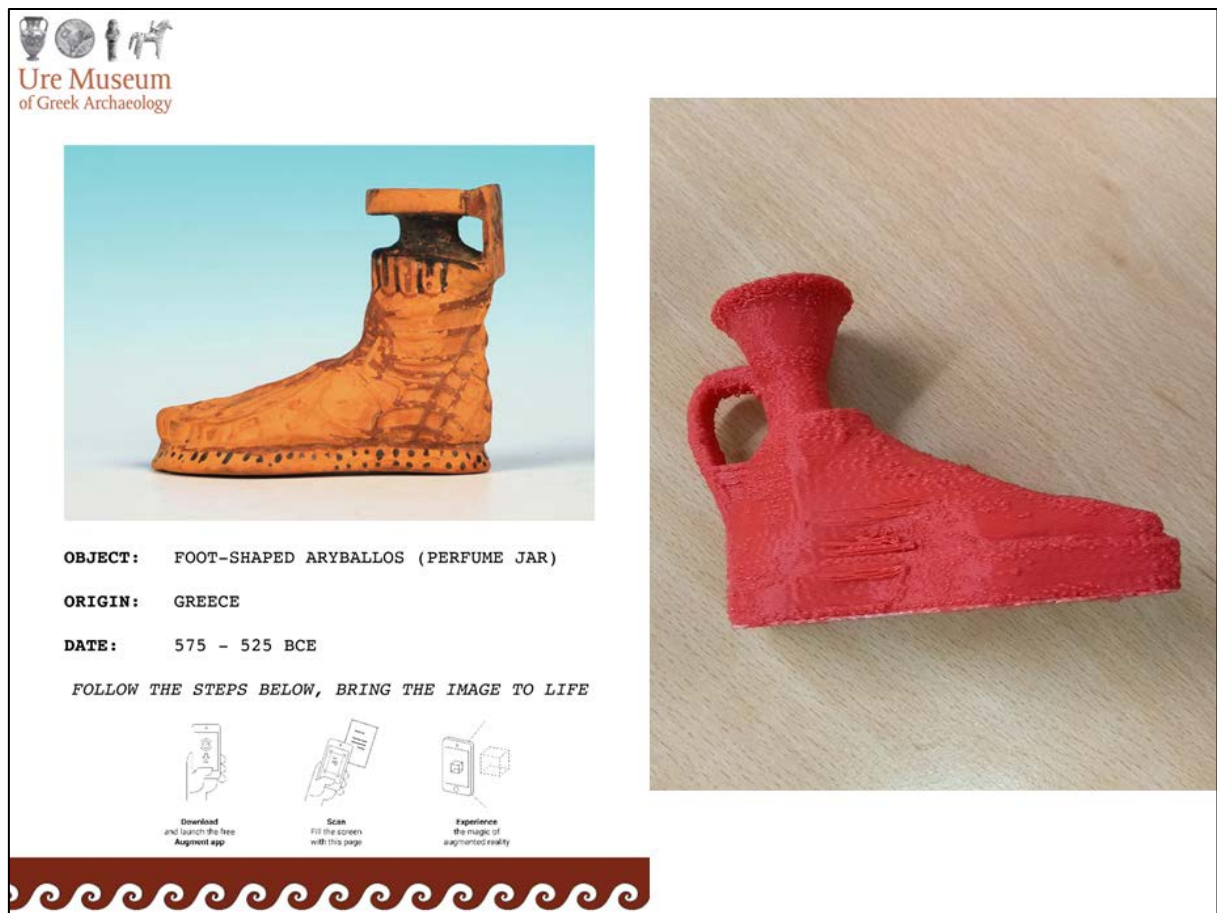
Figure 3 and 4. 3D augmented reality marker and 3D print of the vase

CONCLUSIONS

Object-based learning creates an opportunity for children to engage physically with ancient artefacts: sensorial experiences favour the comprehension of complex and challenging areas of knowledge while creating at the same time an emotional response that helps to long-term retention of ideas. 3D models, 3D prints and augmented reality provides an element of surprise and discussion during the educational session, incorporating dynamism and interactivity with children and potential learners (parents, siblings, etc.) even after the visit to the museum. Digital engagement stimulates their curiosity and helps institutions to expand their collections to a wider audience. The key element shared by these pedagogical approaches is the role of the learner: they both focus on the importance of children as observers, researchers, creators, meaning-makers and thinkers. Learners are perceived and valued as experts in an informal learning environment where they not only acquire new knowledge, but also develop their own personal and subjective judgment

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