

Title

Lessons from *Multivocal Objects*: Object-Based Learning for Ethical Dialogue in the University Museums of the National Universities in Japan

Research Overview

University museums offer distinctive learning settings with the concept of *multivocal objects* through object-based learning that embody conflicting meanings. Cases in the UK and Japan show that engagement with such objects fosters critical reflection, careful observation, and dialogue, helping learners address complexity, uncertainty, and the ethical responsibilities associated with science, technology, and society.

Abstract

Since the dawn of the Anthropocene, humans have extensively damaged the global environment in pursuit of their prosperity. Consequently, we now recognise the severe effects of related substantial planetary health and the need for global sustainability. Achieving sustainability requires the use of diverse methods, such as low environmental impact, safety, and energy/resource conservation, to preserve cultural heritage, museums, and collections. In addition to transferring subject-specific knowledge, higher-education sectors are increasingly attempting to foster ethics, empathy, and the capacity to manage volatility, uncertainty, complexity, and ambiguity through dialogue. Many contemporary issues—including environmental crisis, colonial legacies, and technological risk—cannot be solved by just a leader or a genius. Rather, they require the skills to engage volatility, uncertainty, complexity, and ambiguity, comprehend difficulties, contests, and conflict, diverse perspectives, critical

reflection, and collaboration among diverse stakeholders. Herein, the presenter argues that university museums could offer a distinctive learning setting focusing on object-based learning, as a powerful pedagogy that uses collections and objects to foster not only subject-specific knowledge but also cross-disciplinary knowledge and transferable skills.

In this study, the presenter demonstrated the concept of *multivocal objects*: objects that embody multiple and sometimes conflicting meanings simultaneously, such as *benefit* and *risk*, *life and death*, and *culture and violence*. They encouraged learners to rethink assumptions, listen to the voices of others, and consider the social responsibilities attached to knowledge-based European sciences.

Specifically, the presenter aimed to explore practices based on a multivocal approach developed at the Object-Based Learning Laboratory (OBL Lab) of the University College London in the United Kingdom. At the OBL Lab, students engage with prehistoric stone tools, zoological and botanical specimens, human remains, and death masks associated with eugenics and phrenology. These objects cause reflection on how scientific authority has historically been entangled with exclusion, hierarchy, and injustice.

The presenter surveyed the case of each of three national university museums in Japan. The first was the Museum and Archives of Tokyo Institute of Technology (currently Science Tokyo), where scientific instruments are used to deal with advanced science research. Science Tokyo originated as the Tokyo Vocational School. It was founded by the German scientist Gottfried Wagener, along with several members of Japan's Museum of Education and the Ministry of Education. The institution's original objective was to integrate traditional manufacturing with scientific theory. The surveys afforded participants opportunities to consider environmental and resource issues, showing that addressing the sustainability of the Earth is an urgent priority. In Japan, scientific capabilities that drove technological innovation served as a powerful driving force behind rapid postwar recovery and economic growth. However, while the application of science and technology immensely

benefits societies, past incidents—such as wars, conflicts, and nuclear power plant accidents—demonstrate that, once sciences and technologies are implemented in a society, their impacts become extremely difficult to fully mitigate and may give rise to serious risks.

The second case involved the Nature and Science Museum of the Tokyo University of Agriculture and Technology. The main building was originally the reference exhibition room in the Laboratory of Silkworm Diseases of the Ministry of Agriculture and Commerce in 1886. It grew to be a key institution, fostering the sericulture and textile industries during the Meiji era when silk was Japan's most important export. More than 13,000 objects related to the sericulture and textile industries were displayed in this building, ranging from silkworm cocoon specimens and various fibres, to drivable textile machines, including mechanical looms, embroidery and sewing machines, and yarn spinners. These objects, the museum demonstrates how, although scientific and technological progress ameliorates everyday life, it is also linked to labour exploitation and environmental burdens. Meanwhile, beautiful sericulture *nishiki-e* offer opportunities for both agriculture and technology students to learn from each other, broadening their understanding beyond each discipline.

Third was the case of the Agricultural and Life Sciences Museum and the University Library for Agricultural and Life Sciences of the University of Tokyo, where object-based pilot programs are using animal and botanical specimens, agricultural materials, and historical documents to address contemporary issues such as sustainability, disaster preparedness, biodiversity, and food security.

In each case, the presenter adopted the concept of multivocal objects using specimens, an atlas, and old documents containing ancient writing for cross-disciplinary learning to foster diverse literacy. Three key findings emerged from comparisons of these cases. First, direct encounters (or collisions) with authentic objects slow judgment and prompt careful observation, encouraging learners to address complexity before reaching conclusions. Second, objects associated with contested histories foster critical reflection on injustice,

memory, and responsibility. Third, university museums can offer spaces for dialogue among students, teachers, researchers, curators, and citizens, thereby bridging diverse disciplines and cultures. These findings suggest that university museums should be acknowledged not merely as repositories of objects but as pedagogical environments in which learners practice ethical dialogues.

Keywords

Multivocal objects, Object-based learning, Ethical dialogue, University museums